

A WORK OF RESEARCH AND INSTITUTIONAL DESIGN

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The Humanity Compact

A functional accountability architecture for cross-border and
intergenerational effects

*The Global Accountability Chain — A Rights-Grounded, Function-First Architecture Where Equity and
Resilience Hold by Structure*

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“Placing the human being at the heart of the decision holds only by inscribing it in the very structure of that decision, rather than entrusting it solely to the conscience of the decision-maker.”

Author's note

This document was born of field experience before becoming a theoretical proposal. For nearly three decades, I have worked at the intersection of three worlds that still communicate too little: the academic and scientific world; the public sector, where I held governmental responsibilities; and the private sector, where I was, within one of the Big Four, Global Digital Leader for the public sector and also responsible for development-assistance activities. This career unfolded across several continents, with a substantial part devoted to Africa. Each of these worlds produces part of the answer; their logics often remain separate.

This career — made up of a great deal of fieldwork, of travel and comparison, and of numerous interactions with the major international bodies — allowed me to observe the same problems from different angles. I mention it not in order to derive authority from it, but because the repetition of the same findings in highly diverse contexts eventually outlined a structural rather than a local problem. Above all it taught me caution: the diversity of cultures and situations rules out uniform answers, and a solution that ignores these differences does not hold up under the test of execution. From this repeated observation a recurrent paradox emerged: institutions have substantial data, expertise, rules and financing mechanisms, but struggle to link them into a coherent chain of responsibility. The information exists, the effects are sometimes documented, programmes are launched and financing mobilised, without it always being clearly established who measures, who qualifies, who decides, who finances, who controls and who can be seised in the event of error or injustice.

This question took concrete form when I served as Minister of Finance of Tunisia at the beginning of the Covid-19 crisis. National decisions had to be taken rapidly in the face of a global shock, under high uncertainty and with limited room for manoeuvre. There I took the measure of the gap between the transnational nature of crises and the essentially national character of the available instruments — and recalled that countries also absorb the effects of monetary, financial, commercial, technological or health choices made elsewhere, without always having the means to measure them, to contest them or to obtain their correction.

The ideas presented here matured gradually. As early as December 2022, at a joint ERF-IMF panel, I had put forward four initial instruments and called for a systematic study of the hidden cross-border costs of monetary tightening in the advanced economies; the quantification of these spillover effects followed in 2023. At IEEE TSYP13, in December 2025, these proposals had matured into a diagnosis — the Humanity Test — and a family of accountability mechanisms. Deepening them showed that they could not function in isolation: between the detection of a harm and its correction lie several distinct transformations — measuring, qualifying, possibly translating the impact into a financial consequence, applying it, financing the response, certifying the procedures and settling challenges. Each obeys a logic of its own, concentrates a form of power, and therefore requires a legal basis, an identifiable responsibility and a possibility of redress. It is from this observation that the idea of a Global Accountability Chain was born. The starting point is not the creation of institutions, but the identification of the necessary functions: the approach is rights-grounded, function-first — rights, dignity, consent, non-discrimination, equity, sustainability and access to redress first; the functions next; their institutional placement last.

These ideas were refined over dozens of conferences and debates bringing together academics and researchers, as well as representatives of the United Nations, UNESCO, ESCWA, the International Monetary Fund, the World Bank and other institutions. These exchanges — which I cite as sites of challenge and not of endorsement — moved the reflection from the register of intuition to that of explicit formulation: they helped to clarify the concepts, to bring objections to the surface and to confront the proposals with different disciplines and sensibilities. They were also a reminder that a problem of global governance cannot be

addressed from a single field: it mobilises at once political economy, law, the theory of institutions, data science, technology and the analysis of organisations.

The 7+3 architecture presented here constitutes a first complete and explicit hypothesis for the organisation of this chain, offered so that it may be tested and improved. It is firm in its ambition and rigorous in its method, but it remains a work: several results still have to be replicated, certain legal avenues confirmed by specialists, and the political economy of adoption — coalitions, resistances, power asymmetries and risks of capture — deepened. The genesis of a piece of work does not establish its validity: field experience may reveal a question and orient a hypothesis; it replaces neither the literature, nor the data, nor the law, nor the confrontation with evidence.

Artificial intelligence has been used as an instrument of assistance — documentary research, structuring of analyses, exploration of alternatives and improvement of the drafting. It has been neither a scientific authority nor a validation mechanism: the conceptual choices, the interpretations, any errors and the final responsibility remain those of the author. The same rule holds for the proposed architecture: AI may analyse, signal, compare or simulate; an identifiable human authority must decide and answer for the decision.

The objective of the present work is not to win assent to a model already settled, but to submit an architecture explicit enough to be criticised, compared and tested. The reader is invited to examine not only what the Humanity Compact might make possible, but also the assumptions it underestimates, the rights it protects insufficiently, the costs it displaces and the points at which the demonstration still needs to be strengthened. It is on this condition that a reflection arising from experience may become an academic contribution useful to a more responsible, more equitable and more sustainable global governance.

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Executive Summary

This summary is intended for public leaders, heads of international institutions, central banks, donors, parliamentarians, businesses and research partners. It distinguishes the decisions that the present work makes it possible to take now from those that still require validation.

Decision in brief — The international system is not devoid of institutions; it lacks a governed continuity between knowledge, qualification, consequence, financing, prevention and redress. The Humanity Compact proposes a grammar and a candidate architecture for building that continuity without automatically creating a world government, without automating pricing and without transferring the decision to artificial intelligence.

1. The strategic problem

Decisions have changed scale. A monetary policy adopted in a large jurisdiction alters, elsewhere, the cost of financing, capital flows, the exchange rate, central bank responses, fiscal space and investment. A digital infrastructure may exert effects on water, electricity, data, labour, competition and access to public services beyond the territory that authorises it. A value chain may concentrate value in certain jurisdictions and displace social or environmental costs towards others. Benefits, risks and response capacities no longer coincide in space, in time, or across categories of actors.

The problem does not lie first of all in intention. Upstream institutions act according to domestic mandates, defined objectives, models and accountability obligations. Downstream actors observe the effects that materialise. Both perspectives may be legitimate and incomplete. Credible governance must therefore replace the imputation of intent with a common procedure: documenting what was decided, what was transmitted, through which mechanisms, with what uncertainties, who benefited, who bore the cost, which internal vulnerabilities amplified the shock and what consequence is admissible in the light of the level of proof and of the applicable law.

2. The diagnosis

The international system is dense but discontinuous. It produces norms, data, financing, sectoral mechanisms and specialised forums. It rarely connects the chain as a whole while preserving the evidence, the uncertainty, the objections and the correction pathways. The internal coding of 99 primary instruments and of 130 Sevilla initiatives is consistent with this hypothesis: financing and standard-setting are strongly represented; cross-cutting qualification, continuity towards a consequence and the organisation of redress much less so. This finding remains provisional pending double coding and the full opening of the corpora.

The gap is therefore not simply “more institutions are needed”. It is functional and procedural: who measures? who qualifies? who decides on a consequence? who finances? who certifies the systems that produce the evidence? who answers before which forum? what becomes of the uncertainty when a case file passes from one actor to another?

3. The central proposal

The Global Accountability Chain provides a grammar for answering these questions. It rests on three completenesses. Functional completeness verifies that the necessary transformations are covered. Relational completeness identifies, for each duty-holder, the forum before which it must explain and justify its conduct. Procedural completeness protects the case file as it crosses the interfaces: source data, assumptions, versions, uncertainties, dissents and redress.

This grammar is reinforced by four safeguards: negative mandates, which prohibit the combination of the most conflict-prone roles; stopping rules, which permit not attributing or not pricing;

comparison with lighter architectures; and the strict distinction between fact, causality, equity and law.

4. The 7+3: what it is and what it is not

The 7+3 is a first candidate instantiation. It distinguishes seven functions: to measure; to qualify; to determine the admissible consequence; to apply certain adjustments; to finance prevention, transition or solidarity; to certify digital systems; to organise redress. Three instruments frame them: the Carthage Charter, the Global Accountability Framework and the Call of Carthage.

The 7+3 is not the theory itself, does not impose seven new organisations and does not presume that every case file passes through every link. A function may be hosted by an existing institution, a network, a panel, a protocol or a distinct body. An architecture with three or five bodies, or a federated protocol, must be preferred if it protects evidence, independence and redress equally well at lower cost.

5. A two-loop architecture

The Global Accountability Chain deals with effects that are observed or sufficiently measurable. The Preventive Accountability Loop acts upstream: anticipating a cascade risk, detecting exposures and thresholds, qualifying the alert, notifying decision-makers, obtaining a reasoned response, preparing a possible anticipatory action and evaluating the results. This loop is not an eighth institution. It distributes responsibilities: HuIB or an accredited network produces the prospective evidence; GIRA qualifies the alert level; the GAF organises notification and response; the GSF may support an anticipatory action; the competent forum reviews the procedure.

The duty of prevention is procedural. It does not oblige a central bank, a government or a company to follow an external recommendation; it requires that reasonably foreseeable risks be able to enter into the decision, that the response be reasoned and that the quality of the alerts be evaluated. The loop must be rejected if it leads to government by forecast, to unstable alerts, to self-fulfilling panic or to a burden greater than its value.

6. The monetary programme

The monetary programme is one of the most distinctive contributions, but it must be presented as an offer of empirical collaboration, not as an established causal result. It decomposes spillovers into fifteen signed mechanisms, includes offsets, distinguishes flows from stocks, and prevents double counting through allocation to primitive causal components. It analyses the superposition of instruments, the synchronisation of source jurisdictions, the defensive reactions of recipient countries and the exhaustion of fiscal and financial buffers.

The shock is conceived as a multidimensional vector with testable signatures. Attribution is partial, bounded and conditional on a coherent counterfactual. The gains from easing and the costs of tightening are compared over the full cycle, by agent and by mechanism. The “100 units injected” protocol does not naively track a quantity of money; it distinguishes reserve creation, balance sheets, financing, asset valuation, incomes and exposures, which are never added together as a single budget.

The Monetary Cascade Early-Warning Protocol extends this programme: it can inform decision-makers before the stacking of interest rates, quantitative tightening, exchange-rate reactions and the exhaustion of buffers produces a systemic contraction. Its function is to make the risk visible and to prepare the responses, not to set a global interest rate.

7. The other applications

The artificial intelligence data centre constitutes an integrated demonstrator: it tests whether a case file can cross the functions without losing provenance, uncertainty or redress. It does not prove effectiveness in the field.

The application to Sevilla proposes an actionability layer for development financing: initiative passport, maturity scale, decision gates, financial dictionary, tracking of useful flows, corrective loop and portfolio pilot. It can create operational value without waiting for the whole of the 7+3.

Preventive peace is an exploratory extension. It studies how an undocumented grievance, with no forum and no correction mechanism, can contribute to mistrust and escalation. It does not claim that more measurement resolves conflicts grounded in incompatible interests or in power relations.

8. Artificial intelligence, data and crisis

Artificial intelligence can reduce measurement costs, detect inconsistencies and bring analytical capacities closer together. It can also concentrate data, suppliers and the power to define the categories. The framework therefore distinguishes assistance, recommendation, validation and decision; no official alert, no pricing, no financing and no jurisdictional decision may be triggered automatically.

Resilience rests on pre-commitment: thresholds, fast-track procedures, pre-arranged financing, expiry and oversight. Speed does not authorise the disappearance of provenance, of the human signature, of contestation or of operation without AI.

9. What can be asserted now

The present work can maintain that it proposes an explicit theory of the three completenesses, a doctrine of interfaces, negative mandates, stopping rules, a function-first method, a set of pre-specified models and protocols, as well as a candidate architecture submitted to comparison.

It can maintain that the available internal coding is consistent with a functional asymmetry and that the monetary programme provides a more disciplined decomposition than unaudited aggregate estimates.

It can maintain that prevention, AI and resilience are integrated in the form of procedural duties, authority matrices and rejection criteria.

10. What must not yet be asserted

The present work does not demonstrate that the seven functions are exhaustive, that seven organisations are necessary, that the 7+3 is superior, that the monetary amounts are causally validated, that a general legal obligation to prevent spillovers exists, that the instruments are compatible with all applicable bodies of law, that the preventive loop improves decisions, that the AI prototype is safe or that the architecture actually reduces conflicts.

Zero-residual reconciliation is a form of accounting consistency; the corpora remain coded principally in-house; the demonstrator is a simulation; the full cost and the political economy of adherence are not established.

11. Recommended programme of action

The next phase must replace internal improvement of the text with organised external validation: publishing the corpora, codebooks, scripts and version logs; having the double coding carried out; executing and replicating the monetary estimation; obtaining legal opinions act by act; costing the minimal, federated and integrated configurations; conducting a three-arm pilot; auditing the AI

systems; financing the independent counter-assessment of affected parties; and mandating a red team tasked with searching for the conditions of failure.

For general academic communication, the project must be led by the most mature institutional core. For the IMF, central banks, the BIS and econometric teams, the monetary programme must be presented as a protocol to be executed jointly. For decision-makers, the entry point is functional discontinuity, modularity and the pilot. For development partners, the entry point is the actionability of Sevilla.

Decision table — status of the main proposals

Proposal	Current status	Recommended decision
Three completenesses and interface governance	Structured theoretical contribution	Submit to academic discussion and a theoretical article
7+3	Candidate architecture	Compare with lighter models; do not fix the number of bodies
Fifteen mechanisms and monetary cumulation	Advanced conceptual and methodological programme	Form an empirical consortium and pre-register
Bounded partial attribution	Specified formal model	Execute, publish the code and replicate
Preventive Accountability Loop	Design proposal	Shadow pilot; no binding effect initially
Sevilla	Operational application	Launch a portfolio pilot
Preventive peace	Exploratory extension	Retrospective studies and reinforced safeguards
Institutional AI	Internal architecture and safeguards	Independent audit and non-AI comparator

Approval pathway. The project does not call for the immediate adoption of the 7+3. It proposes a graduated trajectory: external validation and the opening of the evidence; technical incubation within the development financing process; a procedural General Assembly resolution authorising a report and comparative pilots; incorporation of the validated functions into participating institutions or legal systems; then, only where the lighter mechanisms are insufficient, negotiation of legally binding modules. This trajectory is designed to complement, and not to reproduce, the commissions of 2009 and of 2025: it bears on execution, interfaces and redress, not on a new general list of reforms (§12.7).

Executive conclusion

The Humanity Compact does not ask that the whole world immediately adopt a new architecture. It asks first that every decision liable to displace significant effects be open to examination through a common grammar: what evidence, what causality, which beneficiaries, which vulnerabilities, what admissible consequence, what prevention, what financing and what redress? Its value will be demonstrated not by the scale of its institutions, but by its capacity to produce more reliable information, a better reasoned decision, better preparedness and more effective redress than the alternatives, at a proportionate cost. The first reasonable commitment is therefore not the adoption of the 7+3; it is the opening of the evidence, methodological cooperation and a comparative pilot designed to be able to conclude that the architecture must be maintained, simplified or abandoned.

Extended abstract

This abstract is intended for academic readers, for evaluators and for research institutions. It sets out the question, the method, the provisional results, the contributions and the limits without conflating a specified programme with a validated result.

Problem statement. Globalisation has extended the reach of public, financial, commercial, technological and infrastructural decisions well beyond the jurisdictions and the generations that take part in their formation, while accountability mechanisms remain principally territorial, sectoral and fragmented. An effect may be observed without being qualified, qualified without proportionate consequence, recognised without financing, or handled without the affected persons having effective access to information, to counter-assessment, to reasons and to redress. The present work names this discontinuity the global accountability deficit. It does not interpret it as a simple moral opposition between source jurisdictions and recipient countries: a decision may be lawful, technically rigorous and rational with respect to a domestic mandate while producing effects that do not fully enter its objective function; conversely, the existence of downstream harm does not suffice to establish exclusive causality, fault, a net global loss or an automatic claim.

Question and theoretical proposal. The document formulates the Global Accountability Chain as a theory of the completeness of cross-border and intergenerational accountability. An architecture is said to be complete when it satisfies three cumulative requirements: functional completeness, covering the necessary transformations of the case file; relational completeness, linking each duty-holder to an identifiable forum capable of demanding explanation, justification and correction; and procedural completeness, preserving at the interfaces the provenance of the data, the assumptions, the model versions, the uncertainty, the objections, the dissents and the avenues for review. The contribution is therefore not the invention of each link taken in isolation, but their organisation into an end-to-end chain, governed by rights, by negative mandates, by stopping rules and by comparison with lighter architectures.

Positioning. The framework draws on the literature on actor-forum accountability, global administrative law, the rational design of international institutions, regime complexes, polycentric governance, orchestration and experimentalist governance (Bovens, 2007; Grant and Keohane, 2005; Kingsbury, Krisch and Stewart, 2005; Koremenos, Lipson and Snidal, 2001; Ostrom, 2010; Abbott et al., 2015; de Búrca, Keohane and Sabel, 2014). It proposes four specific extensions: treating the interface as an autonomous institutional object; defining functions by their prohibitions as much as by their competences; recognising the institutional right not to conclude or not to price; and subjecting the proposed architecture to a test of parsimony, of cost, of contestability and of resistance to capture.

Method and materials. The research combines institutional analysis, political economy, international law, welfare economics, organisational design, data science and the governance of artificial intelligence. The approach is rights-grounded, function-first: legally protected rights, procedural guarantees, decision principles and normative objectives are distinguished before the identification of the functions and of their housing. The research record comprises: a register derived from 136 analytical records relating to the instruments of the United Nations, de-duplicated into 99 primary instruments; a functional mapping of 130 initiatives of the Sevilla Platform for Action; a taxonomy of twenty families of externalities; a decomposition of monetary spillovers into fifteen signed mechanisms; a qualitative comparison of competing architectures; an integrated demonstrator relating to an artificial intelligence data centre; a model of bounded partial attribution; and protocols for international extension, for distributive tracing and for piloting.

Provisional descriptive results. The internal coding currently available is consistent with the hypothesis of an international system dense in norms, programmes, expertise and financing, but asymmetric in the continuity of its functions. The register lists 99 distinct primary instruments, of which 6 are binding, 8 consultative and 85 political or non-binding. In the Sevilla corpus coded as at 12 July 2026, 71 initiatives have financing as their principal function, as against 3 for rating; none is principally devoted to adjudication and none to direct legal constraint. These results indicate a possible break between the production of evidence, qualification, consequence, financing and redress; they become robust only after publication of the corpus, double coding, measurement of intercoder agreement, examination of negative cases and comparison with competing nomenclatures.

Monetary contribution. The monetary sub-programme transforms the general notion of spillover into an auditable anatomy. It distinguishes fifteen mechanisms distributed across monetary and financial channels, imported price shocks, real-economy effects and offsets, while separating stock variations from attributable flows. The theory of cumulation holds that tightening instruments overlap and interact, that the defensive reactions of receiving jurisdictions may amplify the shock, that synchronisation among the major central banks strengthens the global factor, and that the exhaustion of reserves, of fiscal space and of bank margins may shift the adjustment onto public investment and prolong the harm. The source-country shock is specified as a multidimensional vector with testable signatures; attribution is partial and bounded, mechanism by mechanism, under joint restrictions; the primitive components prevent double counting; gains and losses are tracked over the full cycle and distributed among sovereigns, central banks, banks, firms and households before aggregation.

The discipline of attribution. The present work separates intention, incidence, causality, domestic vulnerabilities, net loss, equity and legal breach. The S0–S6 classification operates as a routing mechanism and not as an automatic scale of severity: certain situations call for closure, for monitoring or for domestic mitigation; others may justify a consent-based solidarity; only certain classes open the possibility of an efficiency correction; breaches of an applicable obligation fall within the forums and remedies of law. Accounting reconciliation, causal identification, economic attribution and normative or legal qualification constitute four distinct validations. A zero accounting residual establishes neither the counterfactual, nor causality, nor responsibility.

Institutional architecture. The Humanity Compact proposes a first instantiation termed the 7+3: seven candidate functions — to measure, to qualify, to determine the admissible consequence, to apply certain adjustments, to finance prevention or solidarity, to certify digital systems and to organise redress — framed by the Carthage Charter, the Global Accountability Framework and the Call of Carthage. The number seven is neither sacred nor presumed optimal. A function may be carried by an existing institution, an accredited network, a protocol or a distinct body. Separation is justified only where it protects evidence, independence, contestability or the non-propagation of errors better than a merged architecture. Where guarantees are equivalent, the lightest configuration must prevail.

Two loops. The main chain is completed by a Preventive Accountability Loop, a cross-cutting loop of prevention and alert. The Global Accountability Chain answers the question of how to handle an observed or sufficiently measurable effect, from evidence to redress. The preventive loop acts where mechanisms, exposures and vulnerabilities make a cascade reasonably foreseeable: anticipating, detecting, qualifying the alert, notifying, obtaining a reasoned response, preparing a possible anticipatory action and assessing ex post the false positives, the false negatives and the effects of the alert itself. It does not create a scientific veto power, does not

impose a substantive policy and does not constitute an eighth institution taken as given. It proposes a procedural duty of diligence, of examination, of notification, of response and of learning.

Artificial intelligence and resilience. The institutions are designed as tooled by artificial intelligence but governed by identifiable human authorities. An authority matrix distinguishes assistance, recommendation, validation and decision; data governance, the plurality of models, error containment, algorithmic assurance and degraded-mode operation aim to prevent a technical failure or a single supplier from becoming an incontestable authority. In a crisis, speed must come from pre-established rules, public thresholds, prepared financing, automatic expiry and maintained redress, not from a general suspension of the guarantees.

Applications and adoption. The framework is put to the test on four fields of differing status: the artificial intelligence data centre tests the internal coherence of the interfaces; the monetary case constitutes the principal methodological and empirical programme; Sevilla provides an operational application centred on the actionability of development finance; preventive peace remains an exploratory extension founded on a theory of change. Adoption is gradual and grounded in consent: data protocols, comparable measurements, simulations, advisory chambers, contracts, national platforms and pilots precede any binding effect. The pilot must compare the existing process, a light federated protocol and the 7+3, on the same case files, data and pre-registered indicators.

Scientific status and limits. The document establishes a problem of discontinuity precise enough to be studied, proposes a theory, specifies several models and protocols, and verifies by simulation the internal coherence of certain interfaces. It does not yet establish the exhaustiveness of the seven functions, the empirical superiority of the 7+3, the general causality of the monetary estimates, the legal compatibility of each act in every jurisdiction, the full cost, the assent of the dominant actors, resistance to capture strategies, the predictive value of the preventive loop or field effectiveness. Its credibility depends on the opening of the corpora, the publication of the code, independent replication, act-by-act legal opinions, the costing of the architectures, a comparative pilot, a red-team and the effective participation of the populations concerned.

Conclusion. The central contribution is a transportable grammar of accountability: covering the necessary functions, linking each holder of power to a forum, preserving evidence and uncertainty at the interfaces, preventing without governing by forecast, and preferring the lightest solution that protects the guarantees. The 7+3 is an open institutional hypothesis; the monetary sub-programme is a research infrastructure to be estimated and replicated; the preventive loop is a proposal to be tested. The Humanity Compact should be judged less by the ambition of its institutions than by the quality of the conditions it creates for it to be contradicted, simplified or rejected.

Keywords. Cross-border externalities; global accountability; institutional design; interfaces; prevention; monetary policy; partial attribution; governance of artificial intelligence; development finance; preventive peace.

JEL codes. F02, F33, F38, F53, H23, H87, K33, O19.

Abstract.

Abstract. The globalisation of public policy, financial flows, value chains and digital infrastructure has extended the reach of decisions beyond the borders and generations that bear their consequences, while the institutions that could hold such decisions to account remain fragmented. This monograph formulates the Global Accountability Chain as a theory of functional, relational and procedural completeness: an architecture is accountable only when every necessary function is covered, when duty-holders answer to identifiable forums,

and when the interfaces between functions preserve evidence, uncertainty, reasons and avenues for redress. Combining institutional analysis, political economy, international law, welfare economics and data governance, it proposes a first instantiation — the “7+3” — of seven functions and three instruments, tooled by artificial intelligence but governed by identifiable human authorities. A provisional diagnosis maps a dense but discontinuous international system; a formally specified model of bounded partial attribution decomposes monetary spillovers mechanism by mechanism without over-attribution. The contribution is a transportable grammar for evaluating any accountability architecture, together with negative mandates, stopping rules, and a discipline that separates measurement, causation, equity and law. Empirical results remain provisional; the framework is offered as a refutable proposal, not an established result.

Keywords: cross-border externalities; global governance; accountability; institutional design; international financial architecture. JEL classification: F02, F33, F38, F53, H23, H87, K33, O19; political economy; procedural rights; development finance; AI governance; resilience.

The argument in one page

The reasoning of the present work comes in six movements.

The problem. Decisions — monetary, digital, commercial, climate-related — cross borders; accountability, for its part, stops at the threshold of the jurisdiction that decides.

The diagnosis. The international system is not empty: it is dense but discontinuous. Between measuring a harm, qualifying it, drawing a consequence from it, financing that consequence and opening a remedy, the evidence is lost from one link to the next.

The theory. The Global Accountability Chain states what complete accountability requires: functional completeness (all the functions are covered), relational completeness (each is linked to an identifiable forum) and procedural completeness (evidence and uncertainty are transmitted at the interfaces), ordered by the functions and grounded in rights.

The instantiation, the 7+3. Seven functions — measure, qualify, price where applicable, adjust, finance, certify, adjudicate — and three instruments — the Carthage Charter, the Global Accountability Framework and the Call of Carthage. It is a candidate instantiation, not the theory itself, and above all not necessarily seven new organisations: a function may be carried by an existing institution, a protocol or a federated network.

The testing. The chain is tested on four testing grounds: an integrated demonstrator (an artificial intelligence data centre), monetary policy spillovers, development financing (Sevilla) and preventive peace.

The decision. A minimum viable pilot, graduated and non-binding adoption pathways, and explicit criteria for maintaining, simplifying or rejecting the architecture in the light of what it produces.

The landscape: twenty families, five modes, the same order of magnitude. Before any theory, the magnitude. The benchmarks below come exclusively from third-party sources; they are not results of the research programme. They measure different objects and do not add up — but each lens, independent of the others, arrives at the same scale. The detail of the twenty families appears at §2.4; the five modes of transmission at §2.3.

What the lens measures	Order of magnitude	Third-party source
Fossil fuel subsidies — including the under-pricing of environmental and health damage	≈ 7,400 billion dollars per year (2024), of which 6,700 implicit	IMF (Black et al., 2025)
Sustainable Development Goals financing gap	≈ 4,000 billion dollars per year	United Nations (2025a)
Illicit financial flows out of developing countries	≈ 1,000 billion dollars per year	Global Financial Integrity (2021); Tax Justice Network (2023); FACTI (2021)
Sovereign rating asymmetry (mid-2024)	68 developing countries below investment grade, as against 24 within it	UNCTAD (2024)
Financial and technological mechanisms: high-frequency trading, tax havens, algorithmic biases, data extraction	Tens to hundreds of billions of dollars per year, each	BIS (2023); UNCTAD (2023); OECD (2023); ILO (2023)
What is not counted in dollars — air pollution, ambient and household	≈ 7 million premature deaths per year	World Health Organization (2024)

None of these figures is a sum, and none is claimed by the present work: they are orders of magnitude established by third parties. They suffice to pose the question to which everything else

responds — these effects cross borders and generations; which institution measures them, qualifies them, draws a consequence from them, and before which forum can they be contested?

Diagram of the accountability chain

A policy effect spills across borders — a cost, a risk or a harm falls outside the jurisdiction that decided it — and then travels through the chain of the seven functions:



Foundation — the three instruments: the Carthage Charter (the principles), the Global Accountability Framework (the enforceable obligations) and the Call of Carthage (participatory legitimacy).

At each interface, the same case file passes to the next link carrying its justification — never a mere number. The correct answer may be not to price, or not to activate a link.

The chain is not an automatic escalator. The passage from one link to the next is never presumed. After measurement and qualification, the case file divides among several pathways: closure without consequence; recommendation or capacity-building; preventive measure; consent-based solidarity; efficiency correction; or legal remedy where an applicable obligation has been breached. Pricing is only an exceptional branch. The correct institutional outcome may be a reasoned decision not to activate the GFEA, the BFM, the GSF or the jurisdiction.

The map of the system — how the pieces fit together

This work assembles some twenty named objects — three completenesses, ten principles, seven functions, three instruments, two loops, seven classes, three epistemic rungs. None is decorative: each consumes what another produces. Each is defined in the right place; no single place, until now, showed how they fit together. It is this burden on memory that the present map relieves. It replaces the former boxes “How to read this document” and “How to read the boxes”, whose substance it takes over in full.

The five levels not to be confused

An externality is not a fault; an incidence is not a causal relation; a causal relation is not a legal liability; a theory of accountability does not impose a determinate institution; and a proposed architecture is not yet an empirical result.

Level	Content	Question	Cross-reference
1. The field of effects	Twenty families of externalities, five modes of transmission, several time horizons and categories of actors.	Which costs, risks, benefits or transfers cross borders or generations?	§2; applications §8–11
2. The analytical foundations	Externalities, accountability, global administrative law, institutional design, welfare economics, causal inference, resilience and AI governance.	Which lenses explain part of the problem, and what limits do they retain?	§1, §4, §9, §15
3. The distinctive theoretical contribution	Accountability deficit; three completenesses; interfaces; negative mandates; stopping rules; S0–S6 routing; two loops.	Which general conditions must any credible architecture satisfy?	§1.3–1.7; §4; §9.7; §15
4. The candidate instantiation	Seven functions and three instruments, which may be hosted by existing institutions, networks or distinct bodies.	Which institutional configuration satisfies the design requirements?	§5–7
5. Testing and adoption	Applications, empirical protocols, stress tests, competing architectures, pilots and graduated trajectory.	Does the arrangement produce more value than its alternatives, at a proportionate cost?	§8–15 and annexes

The three keys — the misreadings to avoid

The theory is not the organisation chart. The Global Accountability Chain — the three completenesses — is the contribution; the 7+3 is only a candidate instantiation of it, compared with lighter architectures and revocable if one of them protects evidence, independence and redress just as well at lower cost (§4.4–4.6). Refuting the 7+3 does not refute the chain; refuting one case — the monetary one is one family out of twenty — refutes neither the one nor the other.

Two loops, one case file. The chain responds to effects that are observed or sufficiently measurable; the preventive loop acts on reasonably foreseeable cascades (§1.5, §15). No alert creates a consequence: it creates procedural duties — to examine, to notify, to give reasons for the response.

Nothing beyond its status. Every claim carries a category (Table 1, *infra*), every figure a rung (Box 10, *infra*), every box a type. An accounting incidence is neither a welfare loss nor a fault; a rating is not a liability; “programme-derived” means “to be replicated”.

The map-table — each object, what it presupposes, what it feeds

Object	In one sentence	Defined at	Builds on	Feeds into
Invisible externalities	A harm unmeasured, measured but unpriced, or priced but not justiciable — three deficiencies, three remedies	§2.2	—	The triage that grounds the seven functions (§5)
Twenty families · five modes	The landscape of harm, by form and by transmission channel, anchored in third-party sources	§2.3–2.4	§2.2	The choice of test cases (Part III); the mandate of the HuIB
Accountability deficit	Functions without a duty-holder; duty-holders without a forum; affected parties without information or avenue of redress	§2.5	§2.2–2.4	The three completenesses — the answer, term by term
Law of attrition · power hypothesis	What survives is what obliges no one; the “blank” arises from the absence of a duty-holder, not from the veto alone	§2.6–2.7; Box 9	§3	P3 (consent); the adoption strategy (§12)
Global Accountability Chain	Accountability as a property of architecture: three cumulative completenesses — functional, relational, procedural	§1.4; §4	§2.5	The 7+3; the test of rival architectures (§4.5)
Negative mandates	Each body defined by what it forbids itself — the architecture’s first firewall	§4.2 (P2); §4.7	The completenesses	Each §5.x; Table 12
Stopping rules	The institutional right not to conclude, not to attribute, not to price	§1.7; §4.2	—	S0–S6; Box 9; §9
Interface integrity	No consequence on an output that does not carry its supporting evidence pack	Boxes 4–5; §5.9	Procedural completeness	Table 13; the demonstrator (§8)
Principles P1–P10	The normative specification for any instantiation	§4.2; §15.5	The convictions of §4.1.1	Sections 5 to 7; the instruments (§6)

Object	In one sentence	Defined at	Builds on	Feeds into
The seven functions	Measure → rate → price → adjust → finance → certify → adjudicate: one function, one duty-holder	§5	§4.7; P1–P9	The four test cases; Tables 12–13
The three instruments	The Charter (the norms) · the GAF (the parties' obligations) · the Call (participation)	§6	P3	Adoption (§12); Annexes N–P
The two loops	Respond to the observed effect (the chain); prevent the foreseeable cascade (the preventive loop)	§1.5; §15	The completenesses	The alert protocol (Annex L)
Four categories of claim	Verifiable · programme-derived · design proposal · normative commitment — every sentence carries its own	Tab. 1 (§1.10)	—	The typology of the boxes; all the evidence
Three-rung ladder	Accounting incidence → plausible attribution → identified causality — never above its rung	Box 10 (§9.2)	Table 1	The estimates of §9; Annexes F–G, I
S0–S6 routing	Seven classes of spillover; only two (S3–S4) open efficiency correction	§9.7	Stopping rules	GFEA (§5.4); the Court (§5.8)
Non-additivity A / B / C	Market costs, welfare, transfers: three ontologies that never add up	Box 2; §9.2	—	All the aggregates (Box 3; Table 26)
Fifteen mechanisms · seven rules	The anatomy of monetary spillover and its discipline of bounded attribution	§9.1–9.2	Rungs; S0–S6	Annexes F, G, I, J, M
The four test cases	Data centre · monetary · Sevilla · peace — four evidential statuses, never added together	§8–11	7+3; the discipline	The pilot (§12.5)
M / F / I configurations · L, AP scales	The gradation of adoption: from light protocol to regime, through decision gates	§4.6; §12	P3; P7	The UN sequence (§12.7); the rejection criteria (§14)

The status of claims

Not all propositions have the same force. Reading must preserve the distinction between what is documented, what results from the internal programme, what constitutes a design proposal, what

formulates an objection and what forbids any conclusion. This discipline is part of the theory: a decision cannot be more certain than the evidence it carries.

Status	Meaning	Consequence for reading
VERIFIABLE FACT	Item documented by an identifiable source.	May support the diagnosis, not necessarily a causality or an obligation.
PROGRAMME RESULT	Estimate, coding or simulation still contestable and sometimes not replicated.	Requires data, code, assumptions, ranges and publication threshold.
DESIGN PROPOSAL	Institutional or procedural choice offered for comparison.	Must be compared with lighter alternatives and submitted to a pilot.
OBJECTION	Criticism, conflict of principles or anticipated failure mode.	Must remain visible even when an answer is proposed.
STOPPING OR REJECTION CRITERION	Condition prohibiting attributing, pricing, activating or maintaining.	Protects against automaticity and makes the proposal refutable.

Reading pathways

The work can be read continuously, but its structure allows targeted pathways. The durations are indicative: they give an order of priority, not a hierarchy of audiences.

Pathway	Priority sections	Reading question
15 minutes — grasp the thesis	Executive Summary; The argument in one page; the diagram of the chain; the final rule of this guide.	Understand the problem, the three completenesses, the status of the 7+3 and the proposed decision.
45 minutes — understand the core	§1.3–1.7; §2.5; §4; §5.9; §15.1–15.5.	See how deficit, completenesses, interfaces, functions and prevention fit together.
Public decision-maker / international institution	Abstract; §2–3; §5–7; one application §8–11; §12–13.	Assess utility, modularity, cost, risks and avenues of adoption.
Institutional researcher	§1.9–1.11; §4; §13–14; Annexes A, D, E.	Examine theoretical originality, alternatives, refutability and research programme.
Central bank / economist / econometrician	§9; Annexes F, G, I, J, M and L.	Audit mechanisms, counterfactuals, bounds, full cycle and protocols.
Lawyer	§3; §5.4–5.8; §6; §9.6–9.7; §12.1; Annexes H, N, O.	Distinguish incidence, equity, breach, consent, jurisdiction and redress.
AI, data and algorithmic audit	§7; §8; §15; Annexes L and O.	Assess authority, provenance, plurality, non-propagation and operation without AI.
Development, peace and resilience	§10–11; §12; §15.	Test actionability, theory of change, do-no-harm and rapid modes.
By the 25 contributions	Begin with the F1–F7 family corresponding to the question, then follow the cross-references.	Use the matrix as a conceptual index rather than as a ranking.

Acronyms, terms and conventions

This nomenclature brings together the acronyms and the terms that this document itself coins. It is given at the front so that the reader never has to encounter an acronym before the body it designates. The acronyms are in English because the proposed institutions are intended to be adopted under those names.

The architecture, known as the “7+3”. Seven single-mandate institutions, arranged along a single accountability chain — measure, rate, price, adjust, finance, certify, adjudicate — and three cross-cutting instruments that frame it. The 7+3 is the name of the candidate architecture developed here; it designates neither the theory nor its only possible instantiation (§1, §4.4).

The seven institutions (§5). Each does a single thing, and is barred from the others.

HuIB (Human Impacts Board) — measure. The measurement stratum: it produces the exposure and harm magnitudes; it neither rates nor prices (§5.2).

GIRA (Global Impact Rating Authority) — rate. The rating stratum: it qualifies and ranks; it sets no monetary price (§5.3).

GFEA (Global Financial Equity Authority) — price. The pricing authority: it attaches the financial consequence, through two distinct normative windows (correction, equity); it neither measures nor rates (§5.4).

BFM (Border Fairness Mechanism) — adjust. The border adjustment layer: it applies the schedule settled upstream at the point of crossing; it produces no tax doctrine (§5.5).

GSF (Global Solidarity Fund) — finance. The financing layer: it allocates; it neither taxes nor collects (§5.6).

IPDA (Inter-Parliamentary Digital Authority) — certify. The democratic certification of digital systems (§5.7).

Humanity Court — adjudicate. The jurisdictional layer: it settles challenges along the chain (§5.8).

The Humanity Compact. Name of the intellectual and institutional initiative developed in this work; its central theoretical contribution is the Global Accountability Chain, of which the 7+3 architecture constitutes a first candidate instantiation. The term does not designate any particular legal instrument.

The three instruments (§6). They bind by consent, never by the force of the text alone (principle P3).

Global Accountability Framework (GAF). The binding instrument, which binds those who consent to it (§6).

Carthage Charter. The Carthage Charter — the foundation of principles (§6).

Call of Carthage. The Call of Carthage — the instrument of open accession (§6).

PAL — Preventive Accountability Loop. A cross-cutting loop of prevention and alert, an exploratory extension of the framework (§15, Annex L).

The spillover classes, So to S6 (Table 29, §9.7). Any qualification of a spillover places it in one of these seven classes, which govern the burden of proof and the consequence. Only two classes — S3 and S4 — can support a correction grounded in efficiency.

So. Pecuniary transfer — gains and losses offset one another; no distortion.

S1. Friction in the recipient country — an instrument of the integrated framework was available to it.

S2. Domestic externality under constrained instruments.

S3. Uninternalised global loss — at least one Korinek condition failing.

S4. Terms-of-trade externality — the source jurisdiction is not a price-taker.

S5. No net loss demonstrated; incidence judged inequitable.

S6. Breach of an applicable obligation.

The nine design principles, P1 to P9 (§4.2). P1 complete the chain, at a minimum; P2 single mandates and negative mandates; P3 jurisdiction by consent; P4 non-substitution; P5 a single measurement stratum, and rating is not pricing; P6 non-circular budgets; P7 the pilot before the regime; P8 some things are not for sale; P9 do no harm — the architecture holds itself to its own standard.

The research questions, RQ1 to RQ5 (§1), and the items of evidence, EP1 onwards (§1). The EPs designate the pieces of the supporting evidence pack that accompanies this document.

Recurrent external acronyms.

BIS. Bank for International Settlements.

CBAM. Carbon Border Adjustment Mechanism of the European Union.

UNCTAD. United Nations Conference on Trade and Development.

SDRs. Special drawing rights (International Monetary Fund).

FACTI. United Nations Panel on Financial Accountability, Transparency and Integrity.

IMF. International Monetary Fund.

IPCC. Intergovernmental Panel on Climate Change.

OECD. Organisation for Economic Co-operation and Development.

ILO. International Labour Organization.

WTO. World Trade Organization.

LMICs. Low- and middle-income countries.

npr-PPM. Non-product-related processes and production methods — processes and production methods not incorporated into the product. A decisive category of WTO law: see §5.5.

PART I — THE MISSING LINK OF GLOBAL ACCOUNTABILITY

This first part establishes the problem before proposing its solution: a fact — decisions cross borders — a gap — accountability stops at their threshold — and a diagnosis — the international system, dense though it is, does not connect its functions.

1. Introduction

1.1 Territorial decisions, networked effects

Globalisation has displaced the effects of decisions far faster than it has displaced the mechanisms of responsibility. Public policies, financial flows, digital infrastructures, value chains, technologies and climate risks are still governed within determinate legal boundaries; their consequences cross borders, combine, alter the reactions of other actors and may extend over several generations. The central question is therefore no longer only whether a decision is procedurally sound, rational and effective in the jurisdiction in which it is taken. It is also to determine how effects displaced onto third parties become visible, debatable, predictable where this is possible and, where the conditions of proof and of law are met, correctable.

A monetary decision taken in a large economy may alter, elsewhere, the cost of refinancing, capital flows, the exchange rate, debt service, monetary policy responses and fiscal space. A digital infrastructure may transform access to information, to work, to credit and to public services, while exerting pressures on the water, electricity, land, competition and data of territories that do not fully participate in its governance. A value chain may distribute production across several continents, concentrate value in certain jurisdictions and displace social or environmental risks towards those whose bargaining capacity is weakest. In such systems, benefits and costs coincide neither in space, nor in time, nor across the same agents.

1.2 The problem is not primarily moral: it is institutional

This mismatch is often described as a conflict between those who decide and those who bear the consequences. This formulation is too simple. A central bank expert, a ministry, an agency, a firm or an international organisation acts within a mandate, with an objective function, models, indicators, legal constraints and determinate account-giving mechanisms. Even where external effects are studied, they do not necessarily receive the same weight as the domestic objectives for which the institution must answer. A decision may thus be rigorous, lawful and rational within its own framework, while remaining incomplete with regard to the systemic scope of its effects.

At the other end, the affected authorities, firms and populations observe the consequences: depreciation, a rise in the cost of debt, credit contraction, job losses, rising food costs, pressure on water or energy, reduced public investment. Their experience of the harm is real; it is not, however, sufficient to establish the share imputable to an external decision. The structure of the debt, domestic policies, the exchange rate regime, balance-sheet imbalances, the depth of markets, adaptive capacity and other simultaneous shocks may amplify or attenuate transmission. The upstream decision-maker may under-observe the cascade; the downstream actor may overestimate the contribution of a single cause. Both perspectives are situated and partial.

The object of an accountability architecture is therefore neither to put the source jurisdiction's intentions on trial nor to accept without examination the account given by the recipient country. It is to construct a common, documented and contestable representation: what was decided; what was transmitted; through which mechanisms; with what uncertainty; who benefited; who bore the cost; what share stems from internal vulnerabilities; and what consequence may be attached to the level of proof attained. An externality presupposes neither malice nor conscious fault. Symmetrically, compliance with a domestic mandate does not render non-existent the effects produced on third parties.

1.3 The global accountability deficit

The international system lacks neither organisations, nor expertise, nor norms, nor funding. It produces data, adopts standards, coordinates certain policies, examines disputes and mobilises resources. But these capacities remain sectoral, unevenly distributed and imperfectly connected. An effect may be measured without being qualified; qualified without proportionate consequence; recognised without funding; funded without responsibility being identifiable; or dealt with without the affected persons being able to know the reasons, produce a counter-assessment and obtain a re-examination.

The present work gives the name global accountability deficit to the situation in which the transformations required to move from knowledge of an effect to a legitimate response are not all covered, are not entrusted to identifiable duty-holders, or are not connected by procedures capable of preserving provenance, uncertainty, reasons and remedy. The deficit is not to be confused with the absence of a world government, nor with the lack of development finance, nor with the non-implementation of international law. It designates a discontinuity: the functions often exist separately, but no stable architecture guarantees that the evidence survives their linkage.

1.4 The theoretical contribution: three completenesses

The central proposition is the Global Accountability Chain. It defines accountability as a property of the complete architecture rather than of an isolated body. Functional completeness requires that the operations necessary to the handling of the case file be covered. Relational completeness requires that each duty-holder of a function answer before an identifiable forum capable of demanding information, explanation, justification, correction and, where the law permits, consequence. Procedural completeness requires that the interfaces carry not a mere number or a final decision, but the source data, the assumptions, the version of the models, the uncertainty, the objections, the dissents and the avenues of re-examination.

This theory is situated within established literatures. Accountability has defined the actor-forum relation; global administrative law has brought transparency, participation, reason-giving and review to the fore; rational design has studied the institutional variables suited to cooperation problems; regime complexes and polycentric governance have shown the benefits and the costs of fragmentation; orchestration and experimentalist governance have described forms of action without central hierarchy. The contribution proposed is to connect these achievements within a multi-stage chain, to raise the interface to the rank of an object of governance, and to combine negative mandates, stopping rules, comparison of architectures and procedural preservation of the evidence.

1.5 Two loops: responding and preventing

A chain that begins only after the harm has materialised remains insufficient where the mechanisms of propagation are reasonably foreseeable. In interdependent systems, an initial decision alters the conditions to which other actors react; these reactions in turn become shocks. A cascade may thus result from locally justified decisions without having been globally intended.

The present work therefore distinguishes two loops. The Global Accountability Chain remains the principal loop: it handles an observed or sufficiently measurable effect, from evidence to redress. The Preventive Accountability Loop is cross-cutting: anticipating trajectories, detecting exposures and thresholds, qualifying an alert, notifying decision-makers, obtaining a reasoned response, preparing anticipatory action and evaluating ex post the quality of the alert and of the

response. Prevention is neither a guarantee that no harm will occur nor a transfer of competence to the forecaster. It is a procedural duty of diligence: a material risk, cross-border or intergenerational, reasonably foreseeable and still actionable, must be able to enter into the decision.

The two loops share a versioned case file. An alert may remain under monitoring, trigger a capacity or solidarity measure, or open a case file of the chain where effects become observable. Conversely, an effect dealt with ex post may reveal a recurrent mechanism and improve future scenarios. No alert automatically creates pricing, a sanction or a presumption of responsibility.

1.6 Functions before institutions

The approach is rights-grounded, function-first. It first distinguishes four registers: legally protected rights; procedural guarantees; decision principles such as proportionality, precaution and subsidiarity; and normative objectives such as equity, sustainability and solidarity. These registers precede the definition of the functions; the choice of bodies comes afterwards.

The 7+3 is a first candidate instantiation. The functions are: measuring; qualifying; determining the admissible consequence; applying certain adjustments; financing prevention, transition or solidarity; certifying digital systems; organising remedy. They are framed by the Carthage Charter, the Global Accountability Framework and the Call of Carthage. They should be separated only where their merger compromises the quality of the evidence, independence, contestability or the containment of errors. An identifiable and accountable institutional capacity is necessary for each applicable function; a distinct legal person is not always so.

1.7 Negative mandates, stopping rules and routing

Negative mandates constitute the principal safeguard: the measurer neither qualifies nor prices; the qualifier does not reconstruct the science; the consequence authority does not collect on its own account; the financer does not modify the base; the certifier does not govern through the algorithm; the judge does not design the policy he or she reviews. This separation limits role conflicts, but creates interface costs. It must therefore be justified by a demonstrable benefit.

Stopping rules give the architecture the right not to conclude. Insufficient data, an unidentifiable counterfactual, an unreconciled overlap, an absent competence or a release liable to produce disproportionate harm must suspend the inference or reduce the status of the result.

The S0–S6 classification organises the routing: closure, domestic mitigation, capacity, solidarity, efficiency correction or legal remedy. It prevents measurement from automatically becoming a price and equity from being presented as causality.

1.8 The monetary programme as a methodological laboratory

Monetary policy constitutes the originating case and the principal methodological laboratory. The present work decomposes spillover effects into fifteen signed mechanisms, supplemented by a separate stock item. It distinguishes adverse costs and offsets, flows and valuations, visible mechanisms and primitive causal components. This anatomy does not assert that each channel is new; it organises the channels within an auditable system intended for attribution, distribution and remedy.

The theory of cumulation studies the superposition of rates, of the curve, of quantitative tightening, of liquidity and of communication; synchronisation among source jurisdictions; the interest-rate, exchange-rate, credit and fiscal reactions of recipient countries; and the exhaustion of buffers. The

mechanisms combine and interact without their raw estimates being added before allocation to the primitives.

The source-country shock is specified as a multidimensional vector with testable signatures. Bounded partial attribution fixes exposures before the shock, imposes a joint set of coefficients and publishes the bounds. Full-cycle symmetry requires that gains and losses be tracked by date, mechanism and beneficiary; the “100 units injected” protocol separates the registers of reserves, balance sheets, funding, assets, incomes and exposures.

1.9 Research questions

The present work is organised around seven questions. RQ1: how to define and measure an accountability deficit without confusing it with a political disagreement or a general lack of institutions? RQ2: which minimal functions and which actor-forum relations are necessary to ensure completeness? RQ3: how to govern the interfaces so as to preserve evidence, uncertainty, reasons and remedy? RQ4: how to distinguish incidence, causality, net loss, equity, solidarity and legal breach, notably in monetary spillovers? RQ5: how to anticipate reasonably foreseeable cascades without governing by forecast? RQ6: how to use artificial intelligence without transferring originary authority to it and without creating an irreversible dependence? RQ7: which architectures, legal pathways, coalitions and pilots make it possible to obtain practical value without coercive world government and with a real possibility of simplification or of rejection?

1.10 Method, evidential statuses and materials

The research is interdisciplinary and design-oriented. It combines literature review, institutional mapping, corpus coding, economic formalisation, graduated legal analysis, comparison of architectures, demonstrators, adversarial scenarios and pilot protocols. The document distinguishes verifiable facts, programme results, design proposals, normative commitments, objections and stopping criteria.

The empirical materials comprise the register of United Nations instruments, the Sevilla corpus, the taxonomy of externalities, the Tunisian case, the international comparative protocol and the forty-four least developed countries. Their status is differentiated. The counts still rest principally on internal coding; the monetary amounts are not causally validated; the simulations do not prove effectiveness; the legal pathways are mappings to be confirmed act by act.

The validation programme requires publication of the corpora and the scripts, double coding, replication, independent legal opinions, bottom-up budgeting, a multi-arm pilot, AI audit, consultation and red-teaming. Transparency does not replace validation; it is its condition.

Table 1 — Categories of claims, burdens of proof and interpretation

Category of claim	Examples in this document	Required justification	Rule of interpretation
Externally verifiable	Official resolutions, treaty provisions, published institutional statistics	Precise and dated primary citation	May be stated as a fact within the limits of the source’s scope
Programme-derived	Review of the 136 sources; Sevilla mapping; estimates of spillover effects and externalities	Corpus, codebook, data, equations, sensitivity analysis and version	To be treated as a reported research result, pending independent replication
Design proposal	Seven institutions, three instruments, interfaces and safeguards	Requirements, alternatives, scenarios and failure tests	To be treated as a candidate architecture, not as a discovered law

Category of claim	Examples in this document	Required justification	Rule of interpretation
Normative commitment	Equity, non-compensable exclusion, parliamentary legitimacy	Explicit axiological grounding and distributive implications	Make the value choice visible rather than disguising it as technique

Table 2 — Supporting evidence pack: available artefacts and remaining gaps

Artefact	Available evidence	What it helps to close	Remaining limit	Epistemic status
EP1 Sevilla	130 initiative-level rows; primary/secondary function; method; initial coding v0.2, closed on 12 July 2026 (earlier snapshot: 129 items, 16 April 2026)	Exhaustiveness and the 115+15 reconciliation	Independent double coding (the 130th initiative is incorporated into the v0.2 coding, §3.4)	Verifiable
EP2 UN Register v2	136 archived pillar records; 99 de-duplicated instruments; closed codes; URLs	Unit-level traceability and binding count recoded from 12/101 to 6/99	Independent legal recoding and inter-coder reliability	Verifiable
EP3 Spillover effects schema	15 mechanisms, attribution rules and published aggregates	Transparency of the accounting taxonomy	Country-level data, equations, causal identification and code	Programme-derived
Global workbook of the 20 families	A/B/C breakdown; 66 overlap pairs; adversarial audit; source sheets	Internal traceability and the non-additivity rule	External replication; channel-level reconciliation	Programme-derived
Tunisia workbook V5	Assumptions, channels, offsets, source questions and internal validation	Sets out the parameter choices and the open-data needs	Cash debt service, identified shocks and independent validation	Programme-derived
Simulation consolidation	Register of inconsistencies, team details, risks and corrections	Documents the internal design changes	External teams, pre-registration and public scenarios	Programme-derived
Final legal synthesis	Cross-cutting clauses and institution-specific guarantees	Provides a drafting basis	Specialist opinions by legal regime and jurisdiction	Programme-derived
EP4 AI data centre demonstrator	Three-location parameterised scenario; HuIB passport; simulated outputs of the seven institutions; three disputes; comparison of four architectures	Verifies interface continuity, non-additivity and the chain's stopping points	Real operator data, validated GIRA thresholds, legal opinions, affected parties and external replication	Programme-derived

1.11 The twenty-five axes of differentiation

The contributions of the present work fall into seven families. The first is the general theory: three completenesses, accountability deficit and the distinction between the theory and the 7+3. The second concerns design: interfaces, function-first method, negative mandates, S0–S6, stopping rules, separation of registers, alternative architectures and epistemic statuses. The third bears on monetary anatomy: fifteen mechanisms, cumulation, synchronisation, buffers and multidimensional shock. The fourth concerns attribution and distribution: bounds, full cycle, non-additivity and tracing of beneficiaries. The fifth is the empirical diagnosis of a system that is dense but discontinuous. The sixth concerns AI and resilience: authority matrix, containment of errors, degraded operation and fast modes under fixed mandates. The seventh bears on adoption and

applications: gradualism, Sevilla and preventive peace. The preventive loop runs across these families without automatically becoming a new institution.

The twenty-five contributions do not form a single hierarchy. An idea may be highly original, conceptually mature, publishable as a protocol and yet unfit to carry a claim of result. The tables that follow therefore distinguish the function in the narrative from evidential maturity. The M1-M5 scale measures what the present work is today authorised to assert, not the importance of the contribution.

Level	Condition	Permitted formulation
M1	Intuition	Exploratory hypothesis.
M2	Bounded concept	Conceptual proposition; no performance claimed.
M3	Specified method	Protocol or offer of collaboration; estimation/replication required.
M4	Partial validation	Advanced doctrine, robust simulation or initial test, with limits.
M5	Robustness within the domain addressed	Consolidated contribution within the scope actually tested.

The twenty-five contributions fall into seven families.

Code	Family	Contributions	Editorial function	Maturity
F1	General theory of the Global Accountability Chain	1, 15, 16	Cross-cutting academic core	M4–M5
F2	Interface governance and institutional design	2, 10–14, 17, 19	Design doctrine and guarantees	M4–M5
F3	Anatomy of monetary spillovers	3, 4, 7	Macro-financial conceptual programme	M3–M4
F4	Attribution, non-additivity and distributive tracing	5, 6, 8, 9	Methodological and econometric programme	M3–M4
F5	Empirical diagnosis of global fragmentation	18	Provisional descriptive result	M3
F6	AI, data and institutional resilience	20, 21, 22	Sociotechnical governance doctrine	M4
F7	Applications, adoption and implementation	23, 24, 25	Pilots and exploratory extension	M3–M4

F1 — General theory of the Global Accountability Chain.

No.	Original contribution	Function in the narrative	Current status	Further detail
1	Theory of the three completenesses of accountability	General completeness criterion: functions, duty-holder–forum relations and procedural continuity.	M4 — conceptual lead	§1.4; §4
15	Accountability deficit towards affected parties	Diagnosis of a breakdown in information, representation, adversarial process, reasons or redress.	M4 — conceptual lead	§1.3; §2.5

No.	Original contribution	Function in the narrative	Current status	Further detail
16	Distinction between the theory of the chain and its 7+3 instantiation	Protects the theoretical core and makes the number of bodies revisable.	M5 — conceptual lead	§4.7; §5

F2 — Interface governance and institutional design.

No.	Original contribution	Function in the narrative	Current status	Further detail
2	Interface governance as an autonomous institutional object	Treats the transmission of the case file as a locus of power, information loss and responsibility.	M4 — conceptual lead	§4; §5.9
10	Rights-grounded, function-first method	Derives the functions from rights and guarantees before choosing institutions.	M4 — conceptual lead	§1.6; §4.1–4.2
11	Doctrine of negative mandates	Defines each function by its prohibitions as much as by its powers.	M4 — conceptual lead	§1.7; §4.2; §5
12	S0–S6 classification as a routing mechanism	Separates transfer, vulnerability, efficiency, equity and legal breach before any consequence.	M4 — conceptual lead	§9.7 ; Figure 5
13	Stopping rules and the institutional right not to conclude	Organises uncertainty and prevents the automatic conversion of a weak estimate into a strong decision.	M4 — conceptual lead	§1.7 ; §4.4 ; annexes F/J/M
14	Separation of intention–incidence–causality–equity–law	Provides a common language for economists, lawyers and decision-makers; takes the passion out of attribution.	M4 — conceptual lead	§1.10 ; §9.6–9.7
17	Mandatory comparison with lighter architectures	Subjects the 7+3 to the status quo, to minimal protocols and to federated forms.	M4 — conceptual lead	§4.3–4.6 ; Annex E
19	Typology of epistemic statuses and burdens of proof	Links each type of claim to a burden of proof and to authorised decisions.	M5 — conceptual lead	§1.10 ; tab. 1 ; Annex A

F3 — Anatomy of monetary spillovers.

No.	Original contribution	Function in the narrative	Current status	Further detail
3	Anatomy of monetary spillovers in fifteen signed mechanisms	Turns the aggregate spillover into auditable mechanisms, offsets included.	M4 — empirical collaboration	§9.1 ; annexes F/J

No.	Original contribution	Function in the narrative	Current status	Further detail
4	Cumulative monetary impact and exhaustion of buffers	Links instrument stacking, synchronisation, defensive reactions and fiscal persistence.	M3 — empirical collaboration	§9.8 ; annexes F/J
7	Multidimensional shock vector with testable signatures	Decomposes the source-jurisdiction shock into components with signed predictions and rank conditions.	M3 — empirical collaboration	§9.2 ; Annex J.5

F4 — Attribution, non-additivity and distributive tracing.

No.	Original contribution	Function in the narrative	Current status	Further detail
5	Bounded partial attribution, mechanism by mechanism	Replaces the single figure with bounds under joint restrictions and a coherent counterfactual.	M3 — empirical collaboration	§9.2–9.7 ; Annex F
6	Full-cycle symmetry and distribution across agents	Tracks benefits, exposures and losses from easing to tightening, by agent and over time.	M3 — empirical collaboration	§9.3 ; Annex F.7–F.9 ; M.4
8	Non-additivity and allocation by primitive economic components	Prevents double counting across flows, stocks, valuations, incomes and exposures.	M4 — conceptual lead	§9.2 ; Annex F.6
9	Distributive tracing of the “100 units injected”	Turns a political intuition into a protocol through non-additive registers and beneficiary ranks.	M3 — empirical collaboration	Annex M

F5 — Empirical diagnosis of global fragmentation.

No.	Original contribution	Function in the narrative	Current status	Further detail
18	Mapping of an international system that is dense but incomplete	Provisionally documents the asymmetry between norms, financing, qualification, consequence and redress.	M3 — provisional result	§3 ; annexes A/D

F6 — AI, data and institutional resilience.

No.	Original contribution	Function in the narrative	Current status	Further detail
20	Authority matrix for AI-native and human-governed institutions	Distinguishes assistance, recommendation, validation and decision; identifies the responsible authority.	M4 — conceptual lead	§7.3

No.	Original contribution	Function in the narrative	Current status	Further detail
21	Error containment and degraded operation without AI	Prevents a single technical or supplier failure from becoming an incontestable authority.	M4 — conceptual lead	§7.1–7.2
22	Fast modes within fixed mandates	Accelerates crisis response through pre-commitment, thresholds, expiry and a maintained avenue of redress.	M4 — conceptual lead	§11.15–11.17

F7 — Applications, adoption and implementation.

No.	Original contribution	Function in the narrative	Current status	Further detail
23	Gradual adoption without a coercive world government	Organises a modular, consented, reversible trajectory conditional on the results of the pilot.	M4 — pilot / policy	§12
24	Actionability layer for development financing	Turns announced amounts into a passport, decision gates, useful flows and a corrective loop.	M4 — pilot / policy	§10
25	Accountability as infrastructure for preventive peace	Tests whether visibility, adversarial process, reason-giving and correction of grievances can reduce certain escalation mechanisms.	M3 — exploratory extension	§11

1.12 Scope and non-claims

The Humanity Compact is not a world government, a settled universal jurisdiction, a global tax ready to be applied, a theory of strict liability for every cross-border decision, nor a promise of automatic justice. It does not propose to subordinate domestic mandates to a single external calculation. It does not assume that all externalities are monetisable, that every inequity is a global loss or that every alert justifies an intervention.

The document proposes a grammar, a candidate architecture and protocols. It seeks to specify what should be measured, by whom, before which forum, with what limits, under what conditions of law and with what capacity for contestation. Its ambition is to be explicit enough to be tested and modular enough to be corrected.

1.13 Organisation of the present work

The first part defines the deficit and examines the existing system. The second sets out the theory, the design principles, the functions, the instruments, the preventive loop and the governance of artificial intelligence. The third tests the architecture on a data centre, monetary spillovers, development and peace. The fourth examines the law, the political economy, the pilot, the objections, the costs, the limits and the conditions of rejection. The annexes develop the corpora, the formal model, the empirical protocols, the Tunisian case, the international extension and distributive tracing.

The reader should not look in the pages that follow for the confirmation of an already settled regime. The reader should look there for a complete institutional hypothesis, criteria for contradicting it and a programme allowing a collective decision as to what deserves to be retained.

2. The accountability deficit

The scale of the accountability deficit is not a matter of scarce means. Over two centuries, world income per capita has risen roughly fourteenfold — an increase of more than 1,200 % between 1820 and 2020 (Bolt and van Zanden, 2023); the share of humanity living in extreme poverty has fallen from around 80 % at the beginning of the nineteenth century to less than 10 % today (Roser and Ortiz-Ospina, 2023; World Bank, 2022), and life expectancy has more than doubled (Dattani et al., 2023). Never has humanity produced so much, nor accumulated so much knowledge. And yet some 735 million people were still suffering from hunger in 2022, according to the 2023 edition of *The State of Food Security and Nutrition in the World* (FAO et al., 2023), while, since 2020, the richest percentile is reported to have captured close to two thirds of newly created wealth, according to the analysis by Oxfam (2023) — a non-governmental organisation estimate, based on its own sources and methodological choices, and not an institutional statistic. The problem this architecture sets out to address is therefore not scarcity, but allocation and accountability — the capacity to make costs fall on those who cause them, and to measure what, so far, is not measured.

2.1 A practitioner's vignette

A documented episode illustrates how these abstractions combine in a lower-middle-income country. The monetary tightening undertaken by the major central banks from 2022 onwards — a legitimate response to inflation, falling within a domestic mandate — mechanically raised debt-service and refinancing costs for countries that had no say in the decision. For Tunisia, I estimated this imported cost at 4.2–4.5 billion dinars (approximately 1.3–1.4 billion euros; illustration, §F.16) at that stage of the cycle (first estimate 2023, refined and decomposed in §9.3) — the same order of magnitude as the IMF programme of approximately 1.9 billion US dollars that the country was then negotiating (Yaiche, 2023). The external assistance under discussion and the external cost imposed were, in effect, offsetting entries — except that one came with conditionality and the other with no address to which the invoice could be sent. Nothing in this observation implies bad faith on the part of any actor; the central banks were executing their mandates. That is precisely the point: the harm is systemic, lawful, measurable — and with no identified party responsible. No claim in this book depends on the Tunisian case; the reader may substitute any one of the twenty families of externalities modelled. But the vignette pins down the phenomenon: real costs, identifiable transmission channels, no mechanism of visibility, and still less of redress.

I did not arrive at this architecture through theory; I arrived at it through a ledger. As Minister of Finance of Tunisia, I watched costs that I had not chosen and on which I could not vote land in my country's accounts — lawful, measurable, and with no address to which the invoice could be sent. The lesson was not about managing a crisis. It was that taking account of one's effect on others cannot be left to goodwill, because goodwill runs against the short-term interest of the actor who would have to exercise it: what a structure does not require does not survive contact with incentives. The answer could not therefore be better conduct; it had to be one of design.

2.2 Invisible externalities, a definition

An externality, in the classical Pigovian sense (Pigou, 1920), is a cost or a benefit imposed on parties that did not choose it and are not compensated for it; Coase (1960) recast this framework by emphasising the reciprocal character of harm and the role of property rights (see note 4 and §9.6). This document is concerned with a specific and growing sub-category: cross-border externalities (the harm lands outside the jurisdiction whose actors generate it), intergenerational externalities (a material share of the cost falls on people not yet born), or both at once. Such externalities arise when decisions optimise a local or private benefit while

shifting costs, risks or harms onto other societies, other countries or future generations (Yaiche, 2025).

Box 1 — VERIFIABLE FACT · The 2022-2025 work: the genealogy of the proposal.

The foregoing definition generalises a sequence of proposals developed and publicly tested between 2022 and 2025: four instruments put forward at a joint ERF-IMF panel in December 2022, together with a call for a systematic study of the cross-border costs of monetary tightening in the advanced economies (Yaiche, 2022); their quantification in 2023 (Yaiche, 2023); then, at IEEE TSYP13 in December 2025, their maturation into two complementary objects — a diagnostic, the Humanity Test, and four mechanisms (Yaiche, 2025). The four mechanisms of 2025 prefigure four links in the chain — adjudicate, adjust, finance, price — that Section 5 establishes and separates. The full genesis, with the detail of the instruments and the five questions of the Humanity Test, is given in §4.1.

A word on terminology. A technological externality is a genuine market failure: no price exists for a harm that ought to have one. A spillover effect is broader and more neutral: an effect that propagates from one jurisdiction to another, whether through market failure or through ordinary functioning. The hardest cases addressed here — the cross-border transmission of monetary and regulatory policies — are for the most part pecuniary spillover effects, carried by prices; and standard theory is right to say that such an effect is not, in itself, a market failure (§9.6, §11). This document therefore uses “externality” as an umbrella term for any uncompensated cross-border and intergenerational harm reaching parties with no forum in which to contest it, and reserves “spillover effect” for policy transmission. Its thesis goes beyond the welfare-economics thesis of missing prices: a harm that crosses borders and generations without any institution being mandated to account for it, to price it or to answer for it is not governed — whether or not it is a market failure in the textbook sense (first welfare theorem: Arrow, 1951a).

These externalities are “invisible” by three distinct mechanisms, and the distinction matters institutionally because each mechanism calls for a different remedy. Some harms are not measured at all: no shared taxonomy, no accepted metric, no institution mandated to account for them. Some are measured but not priced: the science exists, but no fiscal or market consequence attaches to the figure. And some are priced somewhere but are justiciable nowhere: a cost is recognised, sometimes even paid, but there is no forum in which the injured party — a State, a community, a generation — can contest it, claim it or have it enforced. Measurement failures call for a scientific institution; pricing failures, for fiscal and customs institutions; justiciability failures, for a court. The architecture of section 5 follows directly from this triage.

This intuition is an old one. Writing in Tunis six centuries ago, Ibn Khaldūn argued that appropriating the fruits of another’s labour without compensation removes the incentive to produce and, if it spreads widely enough, ruins civilisation itself (Ibn Khaldūn, 1377). The externality, in the sense understood here, is that appropriation become systemic, cross-border and intergenerational — an ancient moral intuition recast as a problem of measurement and governance. Two contemporary forms of this appropriation deserve to be named at the point of definition: unconsented risk transfer — exposing others to a potential loss without their agreement or compensation, an expected cost even before the loss materialises — and value capture without productive counterpart, of which the speed race of high-frequency trading offers the documented example: real resources are consumed there to capture a transfer with no corresponding creation of wealth (Budish, Cramton and Shim, 2015); apparently zero-sum, such transfers are net losses for those who bear them (Box 2, category C).

2.1.1 Boundary conditions and exclusions.

A phenomenon enters the architecture only if five conditions are met: an identifiable third party bears a material cost or risk; the affected party did not genuinely choose that exposure; a defensible causal chain links the originating decision or flow to the observed effect; the cost is not properly internalised or redressed; and the chain is cross-border, intergenerational, or both. A financing need, an inequality, a loss of market, an unpopular policy or a harmful outcome does not automatically constitute an externality. Nor does qualification as an externality establish illegality, fault or a right to compensation.

Table 3 — Conceptual boundaries: externality, wrongful act, transfer, risk and financing gap

Category	Core question	Default consequence	What must not be inferred
Economic externality	Is a cost or a risk shifted onto a non-consenting third party?	Measurement and possible internalisation	Illegality or fault
Internationally wrongful act	Has an applicable legal obligation been breached?	Responsibility and avenues of redress under the applicable law	That every externality is wrongful
Cross-border transfer	Has value moved between jurisdictions without altering the global total?	Distributive visibility and policy response	A net loss of global welfare
Systemic risk	Does an action increase correlated tail risk at the scale of the system?	Surveillance, buffers and preventive governance	A realised loss or an attributable responsibility
Financing gap	Are the available resources below an agreed target?	Mobilisation and prioritisation of resources	An externality without a causal shifting mechanism

2.3 Modes and sectors: a working taxonomy

Externalities differ not only in their scale but also in their mode of transmission — and that mode determines which institutional link can take hold of them. Five modes organise this landscape (Table 4).

Table 4 — Five modes of transmission of cross-border externalities

Mode	What propagates	Typical examples	Indicative orders of magnitude for third parties	Who bears the burden
Market-mediated	Prices, volatility, contagion	High-frequency trading rents; speculation on commodity derivatives; shadow banking risk	Tens to hundreds of US\$ bn per family, annually (Bank for International Settlements, 2023; International Monetary Fund, 2020)	Savers; food- and energy-importing countries; future crisis payers
Policy spillovers	Interest rates, exchange rates, standards	Monetary tightening in advanced economies; unilateral climate regulation; tax competition	Debt-service shocks of several tens of US\$ bn per episode in LMICs (UNCTAD, 2023)	Countries with no seat in the decision room
Technology-mediated	Algorithms, data, content	Algorithmic credit exclusion; cross-border data extraction; disinformation; e-waste exports	10-120 US\$ bn per family, annually (International Labour Organization, 2023; order of magnitude derived from the programme for the components not covered by that source — see Box 2)	Users, workers, destination communities

Mode	What propagates	Typical examples	Indicative orders of magnitude for third parties	Who bears the burden
Embedded in flows	Goods, capital, services	Goods embodying forced labour; illicit financial flows; profit shifting	~1,000 billion US dollars annually for illicit flows alone (Global Financial Integrity, 2021; FACTI Panel, 2021)	Public treasuries and populations of source countries
Commons and intergenerational	Climate, biodiversity, air, health	Greenhouse gas accumulation; habitat loss; air pollution; antimicrobial resistance	Several trillions annually (IPCC, 2023; Dasgupta, 2021; Black, Parry and Vernon, 2023)	Everyone — disproportionately the poorest, and the generations yet to be born

Three features of this taxonomy carry institutional weight. First, policy spillover effects deserve separate treatment, because they are the least theorised institutionally and the most delicate politically: the harm follows from legitimate exercises of national mandates. When the major central banks tightened policy from 2022 onwards, the resulting debt-service and refinancing shock struck dozens of countries that had neither a say nor a hedge. When a large bloc regulates carbon at its border, exporters from low-capacity countries face compliance costs they had no part in designing — a spillover effect of the corrective policy itself, which is why the border institution of section 5.5 couples adjustment with special and differential treatment rather than reproducing the asymmetry it corrects — and routes the proceeds of the adjustment to the solidarity fund, not to the budget of the jurisdiction that applies it (§5.5). And when jurisdictions engage in tax competition, the eroded base benefits all the others. The response to a policy spillover effect cannot be prohibition — these policies are lawful, mandated and often necessary — but it can consist in measurement, visibility and a consequence in terms of equity: exactly the chain this document proposes. Second, technological externalities converge with financial externalities — data extraction functioning as an unpriced capture of behavioural value (Zuboff, 2019) — : algorithmic credit rating, data extraction and high-frequency trading are single phenomena appearing in two registers, which is why this architecture treats finance and technology within a single framework rather than two. Third, sectoral concentration is extreme: the programme synthesis behind Box 2 ranks climate (~6,400 billion US dollars), air quality (~5.3), industrial health damage (~2.4; the human toll documented by the World Health Organization, 2023), chemicals (~2.0) and biodiversity (~1.5) as the five largest families in annual terms including welfare (gross magnitudes, potentially overlapping, whose sum by construction exceeds the net envelope of Box 2 and does not add up to it) — with the caveat, developed in Box 2, that these amounts fall predominantly under type (B) “welfare” and must never be read as market flows. A living taxonomy of precisely this kind — contestable, versioned, public — is what the measurement institution of section 5.2 is mandated to keep up to date.

This climate figure is conditional, and the document flags that dependence rather than concealing it: an aggregate close to 6,400 billion US dollars presupposes a particular discount rate and a particular social cost of carbon, and it varies appreciably with both — established estimates range from about 50 US dollars to values above 180 US dollars per tonne of CO₂ as damages are accounted for more fully (Rennert et al., 2022). The mandate of the Human Impacts Board (HuIB, the measurement stratum of the architecture — §5.2) consists precisely in publishing such magnitudes as ranges tied to stated assumptions, and not as single points; this figure is an order of magnitude, not a settled total.¹

¹The social cost of carbon is itself contested: recent comprehensive estimates lie well above earlier official values (Rennert et al., 2022), and the figure varies strongly with the discount rate adopted.

2.4 Orders of magnitude

The scale of the phenomenon can be established from third-party sources alone, while remaining deliberately conservative. The International Monetary Fund estimates fossil-fuel subsidies — explicit and implicit, the latter being precisely a measure of the unpriced externality — at approximately 7.4 trillion dollars for the year 2024 alone — 725 billion in explicit subsidies and 6,700 billion in implicit subsidies, the latter measuring the underpricing of environmental and health damages (Black et al., 2025). Illicit financial flows drain on the order of one trillion dollars a year out of developing countries (Global Financial Integrity, 2021; Tax Justice Network, 2023; FACTI Panel, 2021). The financing gap for the sustainable development goals is officially assessed at four trillion dollars a year (United Nations, 2025a). Sovereign credit assessment reveals a structural asymmetry: in mid-2024, sixty-eight developing countries carried ratings below investment grade, against only twenty-four at investment grade, with documented consequences for the cost of capital (UNCTAD, 2024). Sectoral syntheses of financial and technological mechanisms — high-frequency trading rents, revenue losses linked to tax havens, the costs of algorithmic bias, data extraction — each yield tens to hundreds of billions of dollars a year (BIS, 2023; UNCTAD, 2023; OECD, 2023; ILO, 2023). These magnitudes measure different objects and do not add up; but each lens, independent of the others, arrives at the same scale: trillions of dollars a year. Legitimate debate bears on the methods; the scale, for its part, depends on none of them in particular.

Box 2 — PROGRAMME RESULT • An aggregate estimate, and why it must be disaggregated. The research programme underlying this book has modelled twenty families of global externalities. What emerges is an exposure envelope on the order of 17,700 to 20,900 billion US dollars a year of net unpriced externalities (central point $\approx$ 19,000 billion) — a programme synthesis, offered for the scale and not for the figure: it constitutes neither a single economic total, nor a share of GDP. Its status is that of Table 1 — programme-derived — and the publication of the workbook of the twenty families, of its register of sources and of its sensitivity analysis remains the precondition for holding it to be independently reproducible. The most important methodological rule that follows is that such aggregates break down into three watertight sub-aggregates, which must never be added together — and whose sum must never be compared with GDP: (A) market and budgetary costs — $\sim$ 5,600 billion US dollars, the only component legitimately comparable with world output, of which it represents about five per cent, and the only one calling for a price response; (B) welfare costs — $\sim$ 11,900 billion US dollars, dominated by mortality and morbidity valued through the value of a statistical life: the rendering into monetary units of a human harm that national accounting does not capture, not a flow of money — and that they dominate the whole is the central result, not an artefact: the bulk of the cost is in lives and in health, where GDP is silent; (C) cross-border transfers — $\sim$ 1,700 billion US dollars, zero-sum at world level, but real losses for the losing jurisdictions, often those least equipped to obtain redress: a question of distributive justice, not of global efficiency. Headline figures that sum A, B and C — as the advocacy literature commonly does — are category errors: adding a cost, a valuation and a transfer amounts to conflating three distinct ontologies. This document's argument does not rest on this aggregate: it stands on the third-party figures cited above alone. A rule of use, which this document applies to itself: this envelope appears neither in the abstract, nor in the title, nor in any communication material, and it will not appear there before the publication of the workbook and its independent replication. A programme result whose repository has not reached its publication threshold does not enter the body of the text; nor does it leave it.

Economic interpretation. Reading the three sub-aggregates separately is what makes the estimate honest: a cost is corrected by a price (A); a welfare loss is counted first in lives and in health (B); a transfer is judged in terms of equity (C). From this follows an aggregation rule that must not be broken: since implicit fossil-fuel subsidies are already a measure of the unpriced climate and health externality, one cannot price both the subsidy

and the underlying damage without counting the same harm twice — only explicit subsidies, direct budgetary transfers, constitute a distinct target. The limits of the synthesis are acknowledged — aggregation, overlaps, causal attribution — and its external replication remains a condition of publication (Table 1). This caution converges with that of the capabilities approach, reluctant to reduce human harm to a single monetary index (Sen, 1999).

Disaggregated, this same synthesis distributes the twenty families across three broad orders-of-magnitude tiers; these tiers carry more information than a single figure.

Box 3 — PROGRAMME RESULT · Twenty families of cross-border externalities, by order of magnitude (programme-derived; to be read with the caveat below).

Family / form of externality	Sector	Order of magnitude, US\$ / year	Indicative third-party anchor
Climate change (greenhouse gases)	Climate	several trillions	IPCC 2023; Rennert 2022
Air pollution (particulate matter)	Environment / health	several trillions	World Bank 2022 (~8,100 billion)
Industrially caused health harms	Health	~1,000–3,000 billion	WHO & ILO 2021
Persistent chemical pollution	Environment / health	~1,000–3,000 billion	Fuller et al. 2022; Larsen & Sánchez-Triana 2023
Biodiversity loss and deforestation	Environment	~1,000–3,000 billion	World Bank 2021; Dasgupta 2021
Systemic financial instability	Financial	~1,000–3,000 billion	Laeven & Valencia 2020
Military spending and conflict	Geopolitics	~1,000–3,000 billion	SIPRI 2024
Antimicrobial resistance	Health	hundreds of billions	World Bank 2017
Concentration of market power	Economic	hundreds of billions	De Loecker, Eeckhout & Unger 2020 (mechanism)
Water overuse and pollution	Environment	hundreds of billions	World Bank 2016; 2019
Pandemics and zoonoses	Health	hundreds of billions	G20 HLIP 2021
Fossil fuel subsidies	Financial / climate	hundreds of billions	Black et al. 2025 (explicit)
Illicit financial flows and evasion	Financial	hundreds of billions	GFI 2021; Tax Justice Network 2023
Social and environmental costs of trade	Trade	hundreds of billions	derived from the programme (no third-party anchor)
Unregulated AI and algorithmic bias	Digital	hundreds of billions	derived from the programme (no third-party anchor)
Digital platform externalities	Digital	hundreds of billions	derived from the programme (no third-party anchor)
Monetary policy spillovers	Financial / monetary	hundreds of billions	Yaiche 2025 (§9)
Global talent capture (brain drain)	Human	hundreds of billions	derived from the programme (no third-party anchor)
Plastic pollution and waste	Environment	hundreds of billions	UNEP 2021; OECD 2022

Family / form of externality	Sector	Order of magnitude, US\$ / year	Indicative third-party anchor
Overfishing and ocean degradation	Environment	tens to hundreds of billions	World Bank 2017 (Sunken Billions)

These ranges are deliberately coarse. They are programme-derived order-of-magnitude estimates, not measurements: the cost of each family is extremely sensitive to method — discount rate, value of a statistical life, attribution share and baseline scenario — and the three categories A, B and C above are non-additive. What survives this uncertainty is not a single figure but a shape: the burden is real, it spreads across some twenty forms and sectors, and it concentrates in a handful of environmental and health families. Two consequences follow. First, no figure here should be cited as precise, and the total is never a sum. Second, the most extensive treatment in this book (Section 9) is not reserved for the largest of these families but for one of the smallest and least theorised institutionally — the monetary policy spillover effect — precisely because the existing literature has treated it least. Small in the nomenclature, this family is not small in the system: it is through finance that the others are financed, priced and propagated — and the International Monetary Fund itself puts the spillover of a dollar appreciation cycle at close to two per cent of the output of the emerging economies (§9.3). The largest families are already well quantified in the third-party sources cited above, and a fuller family-by-family treatment is reserved for separate work.

The cost of externalities is not measured in dollars alone. Air pollution alone — ambient and household — is associated with approximately seven million premature deaths a year (World Health Organization, 2024); to which are added the losses linked to hunger, to lack of access to care and to conflict. Reducing these harms to their monetary expression alone would be a fault of method as much as of morals: their ultimate measure is counted in lives (Yaiche, 2026). This figure is not invoked as a total — the present document forbids itself to add heterogeneous magnitudes (§9) — but as a floor order of magnitude that grounds the urgency of a shared diagnosis.

2.5 The deficit, stated

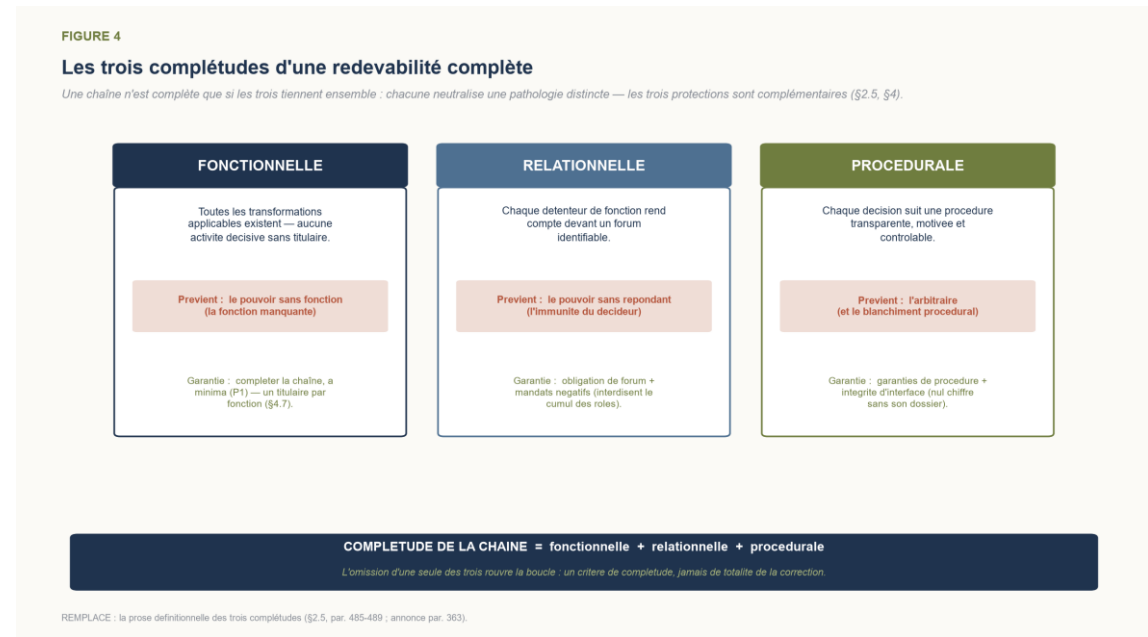


Figure 1. The accountability deficit: a broken chain

The deficit is therefore not primarily informational. The IPCC exists; the System of National Accounts has just been revised — the 2025 SNA, adopted in March 2025, succeeds the 2008 SNA — the better to capture well-being and sustainability (United Nations Statistical Commission, 2025); the United Nations Secretary-General’s expert group has proposed a “beyond GDP” dashboard (United Nations, 2026). Nor is the deficit principally financial: Section 3.3 shows that financing is the most crowded function in the present landscape. In the vocabulary of global public goods (Kaul, Grunberg and Stern, 1999), what is missing is not the goods themselves but their architecture of provision. The deficit is architectural: no arrangement identified today brings together measurement → rating → pricing → border adjustment → financing → certification → justice in a single mutually coherent chain. Every existing initiative occupies at most one or two links and stops — as the following section documents — precisely where bindingness would begin.

This deficit is both functional and relational. It is functional when a necessary transformation — rating, pricing or recourse — is performed by no competent actor. It is relational when a function exists, but its holder is required neither to explain its choices before an identifiable forum, nor to answer the questions of affected parties, nor to bear a consequence in the event of error or default. In the sense of Bovens (2007), an architecture may thus be rich in institutional capacity while remaining poor in accountability.

Definition. — A functional accountability gap exists when a necessary function is assigned to no actor possessing simultaneously a mandate, a capacity, an obligation to justify, a forum of judgement and a regime of consequences.

This deficit is also a deficit of representation. Global institutions may answer to the actors that have entrusted them with powers or resources without answering to the outsiders who bear the effects; conversely, powerful actors that have received no global delegation — States, corporations or private networks — may escape the classical principal-agent mechanisms even as their decisions produce cross-border harms. The holders of the right to demand accounts therefore coincide neither with those who delegate power nor with those who possess the means to sanction its abuse.

Definition. — An accountability deficit towards affected parties exists when the persons bearing the effects of a decision have no effective avenue of information, representation, contestation or consequence with respect to the holder of the power.

Three forms of completeness are distinguished, developed in chapter 4: functional completeness (all applicable transformations exist), relational completeness (every function-holder accounts before an identifiable forum) and procedural completeness (every decision follows a transparent, reasoned and reviewable procedure; Kingsbury, Krisch and Stewart, 2005). The forum obligation prevents unanswerable power, negative mandates prevent the conflict of functions, procedural guarantees prevent arbitrariness — the three protections are complementary.

This deficit is not fragmentation in itself. All global governance is fragmented to some degree: regimes, public and private institutions, territorial levels and procedures coexist within it (Biermann et al., 2009). The deficit arises when this plurality becomes functionally incomplete, institutionally disconnected or normatively conflictual — when the outputs of some do not become the traceable and contestable inputs of others. The 7+3 does not therefore claim to eliminate fragmentation or to replace existing regimes: it seeks to transform a largely conflictual and incomplete fragmentation into a synergistic fragmentation — separate but interoperable functions, linked by shared standards, explicit interfaces and conflict rules.

The architecture proposed below answers this deficit in the form of a closed chain — measure, rate, price, adjust, finance, certify, adjudicate. Its structure echoes the classical circle of equity — no authority without wealth, no wealth without prosperous subjects, no prosperity without

justice — which Ibn Khaldūn transmits and systematises (Ibn Khaldūn, 1377): a loop in which the omission of a single link breaks the whole, and which, like the chain proposed here, ends in justice as the condition of the rest.

Closed, that is to say: closed back upon the decision. The chain does not end at adjudication — its worth lies in its feedback point: its outputs — the account, the rating, the price, the prospect of recourse — are designed to enter the decision of those whose choices generate the spillovers: their risk models, their impact assessments, their deliberative fora. A chain that measured, rated, priced and adjudicated without anything returning to the decision table would reproduce the open loop that the IPCC has been documenting for six cycles (§5.2). It is by this feedback that the justice of the architecture is judged, in the end: not in redress afterwards, but in the decision beforehand — when the displaced cost ceases to be invisible to the one who displaces it.

Box 4 — DESIGN PROPOSAL • Five named concepts. The architecture rests on five notions that run through the whole of the reasoning; naming them makes the sections that follow easier to read. 1. Accountability-chain completeness. A chain is complete only when all applicable functions — measure, rate, price, adjust, finance, certify, adjudicate — are covered, and when each is surrounded by an appropriate accountability relation (§1, §2.5). It is a criterion of completeness, never of totality of correction. 2. Functional accountability gap. It exists when a necessary function is assigned to no actor possessing simultaneously a mandate, a capacity, an obligation to justify, a forum of judgement and a regime of consequences (§2.5). It is distinct from mere fragmentation (§2.5, §13). 3. Negative mandate. Each institution is defined as much by what it does not do as by what it does: the list of functions forbidden to it prevents the concentration of powers and fixes the boundaries through which the interfaces pass (§5.2–5.8). 4. Interface integrity. No consequence may be computed on an output that does not carry its justification case file: each link passes to the next not a bare number, but a result accompanied by its evidence — failing which a category error propagates along the chain (§5.9). 5. Reflexive assurance. An architecture that proposes to certify the world's algorithms first submits its own — rating pipelines, contribution schedules, allocation engine, adjustment computations — to the regime of certification and judicial review that it imposes on others (§5.7).

Box 5 — OBJECTION • Procedural laundering. One particular pathology threatens every chain of interfaces: procedural laundering, whereby a formal passage — a form transmitted, a box ticked, an opinion delivered — takes on the appearance of accountability without carrying its substance. The output crosses the interface, but its evidence, its uncertainty or the affected party's avenue of recourse is lost along the way: the form survives, the continuity of rights is extinguished. It is a category error disguised as due process (Barnett and Finnemore, 1999). Five indicators signal it: an output transmitted without its justification case file; an uncertainty erased between two links; a statement of reasons replaced by a circular cross-reference; an affected party that loses its standing downstream; a decision recomputed without the original version remaining verifiable. The requirement of interface integrity — no consequence computed on an output that does not carry its case file — is designed precisely to prevent it.

2.6 Two rival explanations of the deficit — and how to decide between them

The deficit just defined admits of two competing explanations, and this document's thesis is admissible only if it confronts the second instead of circumventing it. The first — the design hypothesis, defended here — holds the incompleteness of the chain to be a failure of architecture: the missing functions are carried by no one because no arrangement was ever conceived to connect them, and completing the chain would alter outcomes. The second — the

power hypothesis — holds incompleteness to be an equilibrium: the links are missing precisely because the actors that dominate institutional creation have no interest in their existence. On this reading, international institutions are not independent variables but the reflection of the distribution of power (Mearsheimer, 1994); supranational organisations are created by the powerful in order to impose on others outcomes they would obtain in any case, so that abstention costs them more than membership (Gruber, 2000) — this is, in its theoretical form, the law of attrition stated below; and when their interests are at stake, dominant States exercise, within the formal institutions themselves, an informal control that the statutes do not describe (Stone, 2011) — so that what would be added in the design would be taken back in practice. The conclusion is final: completing the chain resolves nothing, since every attempt will be blocked upstream, captured along the way, or hollowed out at the interfaces.

This document is in no position to treat the power hypothesis as an external objection: it has itself formulated a version of it. The law of attrition stated in Box 9 (*infra*, §3.3) — what survives is what obliges no one; what disappears is what obliges someone who has not consented to it — is a law of power. It asserts that the selection criterion applied by international negotiation is neither rigour, nor urgency, nor the quality of the proposal, but the incidence of the constraint. Keynes's charge, the 2009 compensatory payments, the Palais-Royal penalties: all of them obliged someone; none survived. To reject the power hypothesis after having written that would be incoherent. The question is therefore not whether it is true — it is in part, and the document takes that as given. It is whether it is sufficient.

It is not, and three trajectories suffice to show it. Where the harm possesses a contract — sovereign debt —, the chain was drawn in full: the 2009 Commission proposes a restructuring court whose decisions are legally binding, and which obliges creditors, that is to say the powerful. It was not adopted; but it reached the table. Where the harm possesses a rule and a science of attribution — climate —, the chain was built as far as the fifth link, then amputated: decision 1/CP.21, at its paragraph 51, “agrees that Article 8 of the Agreement” — the one on loss and damage — “does not involve or provide a basis for any liability or compensation”, and this clause was obtained by the United States as the price of its adherence (§13). There is the power hypothesis, observed: the wound is dated, it is attributed, it is visible. Where the harm possesses only a pathway — the policy spillover, which has neither creditor, nor debtor, nor breach —, there is no wound of that kind. No dead treaty. No rejected clause. No paragraph 51.

One does not veto what no one has proposed. The absence of this chain is not an amputation: it is a blank — and this blank, so far as the survey conducted by this programme allows one to assert it, is not the residue of a balance of power, but that of an absence of concept. Power explains why the links that were proposed die; it does not explain why this one was never proposed. Nor, moreover, can it be the variable that distinguishes the three trajectories, since the same dominant States are present in all three: they set aside the debt court, they amputated climate liability, and they had nothing to set aside in the third case, because no one ever asked them for anything. The distinguishing variable is the existence of a duty-holder. What would refute this reading can be stated: if interface breaks were likewise concentrated where the distributive threat is strong — if existing measurements fed no rating only where the rating would cost someone —, design would add nothing, power would be the whole explanation, and the document would hold its thesis to be disproved.

A serious objection arises, and it must be confronted. The law of attrition that this document defends itself predicts anticipatory self-censorship: authors knowing that a proposal obliging the powerful will not survive may refrain from formulating it, and Box 9 (*infra*, §3.3) records the trace of this. The blank would then be overdetermined — compatible with the design hypothesis as much as with the power hypothesis. The answer is not to deny this mechanism, but to note what the duty-holder changes in it: it shifts the game of anticipation. Where every earlier proposal presupposed obtaining the issuer's consent at the outset — and died of not obtaining it —, a chain whose first links oblige no one (measuring, rating, publishing) can exist

before that consent, and therefore makes formulable what the anticipation of a veto used to discourage. The condition of refutation is thereby made more precise: if, with the duty-holder available and the first links laid without obligation, the complete chain still proved impossible to bring to life, the design hypothesis would yield to the power hypothesis.

An objection arises here, and it must be put at its full force: the system did indeed attempt, once, to endow itself with a binding jurisdiction over capital movements. As early as 1994, the management of the International Monetary Fund — Michel Camdessus foremost among them — proposed amending the Articles of Agreement so as to forbid members from imposing restrictions on international capital movements without the Fund's approval: a reversal of the burden of proof, since Article VI of 1944 permitted them subject to exception. The Interim Committee adopted the principle of it almost unanimously at Hong Kong, on 21 September 1997 — “it is time to add a new chapter to the Bretton Woods agreement”. Then the Korean crisis, the United States Congress and the Russian crisis buried it, and the Articles of Agreement were not amended (Abdelal, 2007, chapter 5). There is a dead treaty, dated, archived.

But consider the direction of that jurisdiction. It ran from the Fund towards the recipient country: the power to forbid it from protecting itself. No one, at any moment of the episode, proposed that it should run towards the issuer — towards the one whose policy produces the spillover. The one time the system attempted to inscribe in its law a binding instrument on capital movements, that instrument obliged the victim. The objection therefore does not refute the thesis: it supplies the archival proof of it. The asymmetry noted above — the system's only genuinely binding instrument points only towards the recipient (§3.1) — is not an inflection of practice: it is what the system deliberately attempted to bring into its Articles of Agreement.

The position adopted takes its shape from this decision between the two, and it is not a compromise. The design hypothesis without the power hypothesis would be naive; the reverse would be fatalistic. Incompleteness is treated here as an equilibrium sustained by interests, and the chain as a device for shifting the equilibrium, not as a remedy that would abolish the veto of the powerful: graduated incorporation (§12) alters the payoff of abstention where a treaty would leave it intact, and makes adherence individually rational before making it collectively obligatory. It is through this channel, and not through virtue, that an architecture acts upon power. The law of attrition is therefore not an objection to the architecture: it is its design constraint. One does not fight a law of power; one builds beneath it — and principle P3, nothing binds without incorporation or consent (§4.2), is the architecture written in the only form that this law permits. From this follows what the document can promise and what it cannot. It cannot promise that the chain will be adopted, nor that the link of consequence will come about: it will do so only by consent, jurisdiction by jurisdiction, and it may never do so. But measuring obliges no one; rating obliges no one; publishing obliges no one. These three links can exist before power has conceded anything, and they change the ledger on which it decides. The minimal thesis of this document therefore asks no one to concede: the duty-holder can exist before consent, and its existence alone shifts the decision.

2.7 The power objection tested against the century

There remains the objection that every practitioner will formulate before any other, and which deserves to be put in its harshest form: the great powers will never consent to it — the dominant issuer least of all. Paragraph 51 of decision 1/CP.21 demonstrated this where the science was most established (§13); the law of attrition (Box 9 — *infra*, §3.3) describes its mechanism; and the present chapter has just granted the power hypothesis the essential part of its premise. On the political clock — that of terms of office and campaigns —, this objection is not an objection: it is an observation, and this document takes it as such.

But the clock of terms of office is not that of the architecture. The lineage in which this document places itself is almost a century old: Keynes's charge, the 2009 compensatory payments, the Palais-Royal penalties — each generation has reformulated the same demand, and each rejection has left a case file that the following generation took up. The Palais-Royal, buried in 2011, arms the demonstration of the present chapter fifteen years later: proposals survive their rejection — indeed that is how they travel. An idea that presents itself again in every generation for eighty years is not a dead idea; it is an idea that the century is instructing.

On this scale, a second fact changes the nature of the problem: the seat rotates. The dominant monetary position is not the permanent attribute of a nation; it is a seat that the florin occupied, then sterling, then the dollar (Eichengreen, Mehl and Chițu, 2017) — and none of the configurations of power that opened the twentieth century closed it. An architecture written against the incumbent of the day would be obsolete at birth; this one is written for the seat. The rules that yesterday's issuer did not want when it dominated are the ones from which it would benefit today.

It is here that the objection turns around. Impersonal rules do not ask the powerful to be generous; they ask them to be far-sighted. Behind the veil of uncertainty — when no one knows which position they will occupy tomorrow —, rational actors choose the rules that protect every position, because they may occupy each of them (Buchanan and Tullock, 1962). Institutional history confirms it: powers lock in impersonal rules precisely when they anticipate rotation — it was at the peak of its relative power, and because it knew that power to be temporary, that the victor of 1945 built the existing institutional order (Ikenberry, 2001). The architecture does not beg the consent of the present; it addresses the interest that each power has in its own future position.

The addressee then changes with the clock. An elected government reasons on the scale of its term of office, and nothing in an electoral campaign rewards the pricing of an invisible spillover; to reproach it for that would be to ignore the law of attrition. But the first links of the chain — measuring, rating, making visible — require no mandate: they work on the long clock, and what they produce is addressed to those whose interest in equity knows no alternation — the peoples who suffer the propagation. Public awareness is not a moral supplement: it is a mechanism of the architecture — it is what, in time, changes the political price of abstention (§13). The three instruments of the 7+3 are moreover designed for this clock: the GAF, the Call of Carthage and the Charter require neither organ nor majority in order to exist — a compact to which one adheres, a call that publicly names the demand, a charter that records it: the part of the architecture that travels without waiting for the consent of the powerful (§6).

This chapter does not, for all that, wager on a direction of history. Nothing guarantees that the coming century will converge towards equity, and eighty years of attrition forbid claiming it. The proposition is narrower: uncertainty about future positions suffices — without any assumption about the direction of the world — to make impersonal rules individually rational for any power that looks beyond a generation; and visibility, for its part, accumulates. In the sense of Table 1, the foregoing is a design proposal backed by two verifiable facts: the lineage is documented, and so is the rotation.

3. A dense international system that stops along the way

3.1 The United Nations level: a diagnosis without means of constraint

Over the past three years, the United Nations has produced the most complete diagnosis of this problem ever drawn up — and has stopped, with remarkable consistency, at the threshold of binding implementation. The Pact for the Future commits Member States to “develop a framework on measures of progress on sustainable development to complement and go beyond gross domestic product” (United Nations General Assembly, 2024, action 53). The Secretary-General’s high-level expert group has since proposed a compass of some thirty indicators — the report “Counting What Counts” (United Nations, 2026). The General Assembly has launched negotiations towards a framework convention on international tax cooperation (United Nations General Assembly, 2023, resolution 78/230) — a genuine step towards bindingness, the reach of which nevertheless remains confined to taxation. The International Court of Justice, in its 2025 advisory opinion on climate obligations, affirmed that “a responsible State is under an obligation to make full reparation for the injury caused by the internationally wrongful act” (International Court of Justice, 2025; ARSIWA, art. 31) — an advisory pronouncement that is not binding as such; article 94 concerns compliance with judgments, for which recourse to the Security Council may be contemplated. An Independent International Scientific Panel on Artificial Intelligence has been established (United Nations General Assembly, 2025, resolution 79/325) — expressly advisory. The Secretary-General himself has stated on several occasions that the international financial architecture was “outdated, dysfunctional and unfair” (Guterres, 2024) and has called for a “new Bretton Woods moment” (Guterres, 2023). By the end of 2025, the tone had hardened further — the least developed countries facing tariffs of forty per cent while accounting for barely one per cent of global trade flows (Guterres, 2025).

To move beyond anecdote, the research programme behind this document assembled 136 United Nations source documents at pillar level bearing on externalities, measurement, financing and accountability, then de-duplicated them so as to arrive at 99 distinct primary instruments — resolutions, outcome documents, expert group reports, advisory opinions — verifying the classification and, for the most sensitive, the exact wording. According to the closed-coding register, 6 of the 99 distinct instruments are binding on identifiable subjects, 8 are advisory, and 85 are political or non-binding; the earlier range of 17-20/136 reflected documents duplicated at pillar level and is superseded by the de-duplicated count. The finding is unambiguous: the United Nations has the diagnosis and the language; it stops at dashboards. This is not a criticism of the organisation — it reflects the limits its members have set for it — but it is a fact as to where the world’s most legitimate deliberative body stops today, and where something else must begin. The critique is a generation old — the governance of globalisation has lagged behind its integration at least since Stiglitz (2002) named its discontents; what is new is the precision of the diagnosis that the United Nations now makes itself. In the words of the FACTI Panel (2021): “there is no single body responsible for global coordination, which allows incoherence and duplication”.²

The category “binding” calls for a clarification. It means neither that these instruments bind all States, nor that all their provisions are directly invocable before a court, nor that coercive enforcement is automatically available. It means that, within a determined personal, material, territorial and temporal scope, the instrument or certain of its provisions produce a legal obligation for an identifiable subject by virtue of a title recognised by the applicable law — one of the six routes set out in §3.1.1.

²De-duplicated from 136 source records at pillar level; the counts are filters applied to the versioned evidence register (Annex A), and not an exhaustive census of international instruments.

The coding was taken up again on 27 July 2026 in the light of this grid, and the earlier count of twelve binding instruments was brought down to six: two General Assembly resolutions appeared there as binding, which §3.1.1 contradicts; three further lines coded a mechanism, a press release or a decision of a conference of the parties whose cited source was not the legal text itself; one ministerial decision of the World Trade Organization fell outside the corpus's United Nations scope. The symmetrical check for false negatives found nothing: no treaty instrument had been wrongly classified as non-binding. The complete nominative register, the coding rule and the line-by-line justification are published in the evidence pack (EP2, version of 27 July 2026).

The finding must therefore be graduated rather than absolute: binding instruments exist — some among the most effective in international law — but they are sectoral, limited to their parties and to their subject matters, and no procedure links them from the measurement of an effect to its qualification, to consequence, to financing and to remedy. Legally strong within their scope, functionally discontinuous end to end: it is this discontinuity, and not a normative void, that the Global Accountability Chain calls the accountability deficit.

Where constraint is missing. The aggregate count indicates how many instruments bind; it does not say which of the chain's functions they cover. The projection of the register onto the components of the architecture — each binding instrument attached to the function it touches — is more instructive than the count itself. The table that follows is not numbered: it is a reading of the register, published with it in the evidence pack, and not a design result of the present work.

Chain function	Binding instruments in the corpus	Reading
Humanity Court — adjudicate (§5.8)	Statute of the International Court of Justice; Rome Statute	Covered
Call of Carthage — participate (§6.3)	CRPD, art. 29; ICCPR, art. 25	Covered
Carthage Charter — found and revise (§6.1)	Charter of the United Nations, arts. 108-109	Covered
BFM — adjust (§5.5)	Paris Agreement, arts. 2 and 4	Covered indirectly: a procedural obligation, not a border obligation
HuIB — measure (§5.2)	none	Silence
GIRA — rate (§5.3)	none	Silence
GFEA — price (§5.4)	none	Silence
GSF — finance (§5.6)	none	Silence
IPDA — certify (§5.7)	none	Silence
Preventive loop — prevent (§15)	none	Silence

Six functions out of ten are covered by no binding instrument in the corpus, and they are exactly those that this document designates as the core of the deficit: measure, rate, price, finance, certify, prevent. Constraint exists where the system knows how to adjudicate and how to secure participation; it disappears as soon as it is a matter of measuring an effect and of drawing a consequence from it.

The most significant silence is the one that activity conceals. Before the legal recoding of the register, the pricing and financing functions appeared to be covered: attached to them were two General Assembly resolutions on international tax cooperation and the decision of the twenty-eighth conference of the parties establishing the loss and damage fund. These texts have been recoded as non-binding — they open negotiations, create funds fed by voluntary contributions, but impose no identifiable obligation on any determined subject (§3.1.1). It is precisely where the

system has produced the greatest amount of recent activity that it has produced no obligation: normative density is there taken for constraint, and the deficit is there all the harder to see.

Box 6 — VERIFIABLE FACT · The chain broken inside the Fund

The International Monetary Fund describes its own mission in terms that cover the whole chain. Its External Sector Report of July 2023 presents itself as forming part, together with the World Economic Outlook and Article IV consultations, of “an ongoing effort to assess and address the possible spillover effects of members’ policies on global stability” (p. viii). Assess and address: the claimed mandate is complete.

The “measure” link works, and remarkably well. Chapter 2 of the report, wholly devoted to the implications of the global dollar cycle, “finds large negative spillovers to emerging markets” (p. ix). The Executive Board endorses this: dollar appreciations “had large negative cross-border spillovers, disproportionately affecting emerging markets” (p. x).

It is at the next sentence that the chain breaks. The Board “stresses that more flexible exchange rates and better-anchored inflation expectations can mitigate negative spillovers to emerging market economies” (p. x). The harm is recognised, attributed, quantified — and the consequence drawn from it is addressed to the one who suffers it. Not a line, in the Board’s summary, attaches the slightest obligation to the jurisdiction whose policy produced it. “Address” means, in the end: that the victim adjusts.

The break, moreover, precedes the conclusion: it is already in the method. To estimate spillovers, the chapter adopts a trade-weighted dollar index against advanced currencies, on the ground that such an index is more plausibly exogenous for the study of spillovers to emerging markets, and it identifies the shock by exclusion — as the residual that the established determinants of the exchange rate do not explain. These are legitimate econometric choices in view of the question posed, which is that of the impact suffered. But they have a consequence: the shock, so constructed, has no author. It is a price, not a decision. The measurement is therefore, by construction, incapable of carrying a consequence — not because it would be imprecise, but because it was designed without an addressee.

It would be wrong to see in this a deficit of knowledge. The prescribed remedy — exchange rate flexibility — is precisely the one that research establishes does not insulate in the presence of a global financial cycle (Rey, 2015) and that loses most of its expenditure-switching power under a dominant-currency pricing regime (Gopinath et al., 2020) — work conducted in part by the Fund’s own economists, and under whose general direction this report was prepared. The knowledge is in-house. What is missing is not knowledge: it is the force of what carries it.

It will be objected that an institution is nonetheless charged with this conversion, and the objection would be well founded: the Fund built, after the crisis, a spillover surveillance apparatus that did not previously exist — spillover reports devoted to the five systemic economies, external sector reports, Article IV consultations. The deficit is therefore not a defect of mandate, and it would be inaccurate to present it as such. Ocampo (2017) establishes its exact nature, in two steps. On the one hand, the Fund’s surveillance “has always been considered not only a weak mechanism but also an unbalanced one” (p. 79); it remains “largely ineffective in relation to developed countries” (p. 29) and without “traction” on the policies of the major economies (p. 93). On the other hand — and this is the decisive point — “conditionality does exercise a strong influence on countries that use Fund resources; but it is obviously exercised only in relation to deficit countries, and it therefore constitutes one of the asymmetric features of adjustment processes” (p. 79).

The only genuinely binding instrument of the system thus points in one direction only: that of the recipient country. The source jurisdiction is monitored without being obliged; the recipient country is obliged without being heard. The asymmetry is not a void in the architecture: it is its structure.

This is the clearest illustration of the functional accountability deficit defined in §2.5. And it comes from no adversary of the financial order: it comes from the most authoritative institutional document on the subject, endorsed by the organ that represents the member States themselves.

Box 7 — VERIFIABLE FACT · The 2009 Commission: another question, another architecture

In 2008, the President of the sixty-third session of the United Nations General Assembly constituted a commission of experts on the reform of the international monetary and financial system. Chaired by Joseph Stiglitz, it counted among its members José Antonio Ocampo, Jean-Paul Fitoussi, Charles Goodhart, Jomo Kwame Sundaram, Avinash Persaud — and three monetary officials from the South: Yaga Venugopal Reddy, former Governor of the Reserve Bank of India; Zeti Akhtar Aziz, former Governor of Bank Negara Malaysia; Yu Yongding, former member of the monetary policy committee of the People's Bank of China. Its final report is dated 21 September 2009 (United Nations, 2009).

What it proposed. An intergovernmental panel of experts charged with assessing and monitoring systemic risks, whose organisation would follow the model of the Intergovernmental Panel on Climate Change, and which would act in support of a Global Economic Coordination Council — itself “at a level equivalent to that of the General Assembly and the Security Council”. A global financial authority charged with coordinating regulation. A financial products safety commission. A global reserve system. And an International Debt Restructuring Court.

What it saw. The report names the externality thirty-eight times, and it names it well: “the actions of any one country have effects on others; too often, these externalities are not taken into account in national policy decisions — developed countries in particular”. Propagation, it did identify.

What it built — and it did indeed build. On debt, the Commission did not produce a wish: it produced a chain. It recommends “the creation of an ‘International Debt Restructuring Court’, similar to national bankruptcy courts”; this court would enforce “the agreed international principles as to the priority of claims”; “creditors and debtors will therefore follow its decisions”; and an International Mediation Service would form, as an intermediate step, the preparatory soft law. A harm, a debtor, a rule, a judge, enforcement. All the links are there.

Where it stopped. Paragraph 34 of the same report notes that the bank rescues of the advanced economies “aggravate long-standing asymmetries in the functioning of global financial markets”, and writes: “unless measures are taken [...] to provide developing countries with compensatory payments intended to offset the distortions liable to result from bailouts, guarantees and asymmetric expansionary fiscal policies, there is a risk that the global inequalities that contributed to the crisis will increase.” The asymmetry is named. The harm is named. The remedy is named. And no one is designated to carry it.

The difference is not one of quality: it is one of object. The Commission was answering a contractual question — in a debt crisis, who owes what to whom, and in what order? That question already possesses a creditor, a debtor and a claim; all it lacked was a

judge, and the Commission proposed one. The present document answers another question: what stops a harm that has no counterparty? A policy spillover is not a contract. It has neither creditor, nor debtor, nor claim. It has only a path. And one cannot attach a consequence to what has only a path without first measuring it, rating it, pricing it, and making it enforceable somewhere.

This is why that report, which names the externality thirty-eight times, does not contain even once the words price of the externality, border adjustment, negative mandate or interface. Not through negligence on its authors' part — because its question did not call for them. It built a court where the harm already had a debtor; it stopped at the wish where the harm had only a path.

The functional accountability deficit (§2.5) is therefore not an oversight. It is the property of a harm that propagates without a counterparty: where there was no contract, there has been no institution. And it is this void that the chain undertakes to fill — not by prohibiting propagation, but by endowing it with a meter, a price and a remedy.

This document therefore claims novelty for none of its organs taken in isolation. A global scientific panel, an international court, a reform of the reserve system were all proposed in 2009 — by better-placed authors, at a more favourable moment, and nothing came of it. What it does claim is to supply the 2009 sentence with the addressee it lacked: a chain in which “compensatory payments” cease to be a wish and become a claim that is measured (§5.2), rated (§5.3), priced (§5.4), made enforceable (§5.5) and contestable before a judge (§5.8).

Finally, the signature must be read. Paragraph 34 was subscribed to by a former Governor of the Reserve Bank of India, a former Governor of Bank Negara Malaysia and a former member of the monetary policy committee of the People's Bank of China. The idea that a consequence might be attached to the spillovers of monetary policy is not an outsider's thesis: it has been carried, since 2009, by central bankers themselves. And the Commission had, moreover, disarmed the commonest objection in advance, writing: “we understand the concern about the proliferation of international institutions and the reluctance to create new ones; the need for such a Council is no less compelling”. The objection is sixteen years old. The most authoritative commission there ever was faced it head-on — and went ahead regardless.

3.1.1 How does an international norm become legally binding?

International legal constraint does not proceed from a general world authority that would turn every resolution into a binding order. It results from a title of competence and a rule of attachment. Before qualifying an instrument as binding, one must identify: the source of the obligation; the subject bound; the scope of the obligation; the date of its applicability; the organ competent to find a breach; and any mechanisms of recognition or enforcement.

First route: the treaty. A State is bound when it has validly expressed its consent — ratification, accession, acceptance — and the instrument has entered into force in respect of it. The principle *pacta sunt servanda* requires performance in good faith; internal law cannot, in principle, be invoked to justify non-performance. A treaty creates no obligations for a third party without its consent, subject to customary law and to peremptory norms.

Second route: the decision adopted on the basis of a constituent instrument. The members of the United Nations have accepted, by article 25 of the Charter, to carry out the decisions of the Security Council that conform to it. More generally, an organisation may adopt acts binding on its organs, its agents or its members where its constituent treaty so provides — including, in a remarkable case, by tacit acceptance: the regulations adopted under articles 21 and 22 of the

Constitution of the World Health Organization bind all members that do not reject them within the prescribed time limit, which makes the International Health Regulations an instrument binding on 196 States without ratification.

Third route: the judicial decision. In contentious matters, the judgment of the International Court of Justice binds the parties for the case decided; article 94 of the Charter commits each member concerned to comply with it. This inter partes authority is distinct from the advisory opinion, which is not binding as such but which may set out with particular authority the state of the applicable law (§5.8.1).

Fourth route: contractual and arbitral consent. States, organisations or private actors may accept an arbitral jurisdiction in a treaty, a contract, statutes or a pilot agreement. The award binds the parties according to the arbitration agreement and the applicable law; its recognition and enforcement are facilitated by the New York Convention of 1958, subject to the limited grounds of refusal and to immunities.

Fifth route: domestic or regional incorporation. A non-binding standard acquires legal force when a legislature, an administration or a regional organisation integrates it into a law, a regulation, an authorisation, a public procurement contract, a financing condition or a decision. The immediate source of the obligation becomes the legal order that has incorporated it.

Sixth route: international custom and peremptory norms. A resolution, a set of draft articles or an opinion may constitute an element of evidence of practice and of opinio juris without itself being the source of the obligation. The 2001 Articles on State Responsibility are not a treaty; several of their provisions are nevertheless frequently treated as reflecting customary law. The qualification bears on the rule applied, not on the title of the document that formulates it.

The Global Accountability Chain takes up this discipline: no act of measurement, of rating, of pricing, of financing or of adjudication is presented as binding without identifying its legal vehicle, its duty-holder, its addressees, its scope, its avenue of remedy and its enforcement regime.

Matrix of the routes to binding force. Deliberately unnumbered: it sets out a typology of sources, not a result of the present work.

Pathway	Basis	Subjects bound	Principal limit
Treaty in force	Consent to be bound; entry into force	States or organisations parties	Scope of the treaty; reservations and withdrawal possible
Security Council decision	Charter, in particular art. 25	Members targeted by the decision	Competence and terms of the decision; articulation with art. 103
Organisational regulation subject to tacit acceptance	Constituent instrument (e.g. WHO Constitution, arts. 21-22)	Members that have not exercised the opt-out	Power of refusal or reservation within the time limit; scope of the mandate
ICJ judgment	Statute, art. 59; Charter, art. 94	Parties to the case	Inter partes; enforcement not automatic
Internal act of an organisation	Constituent treaty, delegated competence	Organisation, organs, agents, members	Mandate, procedure, review of legality
Contract or arbitration	Written agreement, arbitration clause	Consenting parties	Arbitral mandate, applicable law, public policy, immunities
National or regional incorporation	Statute, regulation, authorisation, public contract	Addressees of the domestic legal order	Constitutional, administrative or judicial review

Pathway	Basis	Subjects bound	Principal limit
Customary or peremptory rule	General practice accepted as law; jus cogens	Subjects covered by the rule	The instrument cited records or codifies; it does not create

Box 8 — VERIFIABLE FACT · What the existing binding instruments teach the architecture

The legally binding instruments of the international system do not merely circumscribe the diagnosis: they supply, piece by piece, the techniques the chain needs. The Paris Agreement (art. 4.2, 13 and 15) and the International Health Regulations (art. 6) demonstrate that a procedural obligation — to communicate, to notify within a fixed time limit, to submit to review — can bind in a quasi-universal manner precisely because it does not dictate the substance of policies: this is the structure of the preventive loop's duty of prevention (§15). The WHO Constitution (art. 21-22) shows that a technical content can bind all the members of an organisation by tacit acceptance.

The Montreal Protocol brings together on its own four techniques: the adjustment of parameters without re-ratification (art. 2.9), the border as a multilateral incentive to accession (art. 4), compliance facilitated before being sanctioned (art. 8) and the financing of compliance for the least well-endowed (art. 10, Multilateral Fund). The Basel Convention makes the case file travel with the flow (prior informed consent); the Espoo Convention makes transboundary impact measurement, notification and consultation before decision mandatory; the Aarhus Convention makes information, participation and remedy justiciable, and opens its compliance committee to communications from the public; the United Nations Convention on the Law of the Sea makes compulsory jurisdiction acceptable through the choice of forum (art. 287) and declarable exclusions (art. 298); the New York Convention provides the enforcement of awards in more than 170 States.

None of these techniques needs to be invented; none is today linked to the others. The proposed architecture does not invent constraint: it links its proven forms along a single chain — and each borrowing remains subject to the limits of its precedent, reservations, opt-outs, immunities and consent included.

3.2 The instrument level: one link each

Outside the United Nations, a family of celebrated instruments each solves one link of the chain, then stops. Table 5 offers a synthesis of them.

Table 5 — Existing instruments: one link each

Instrument	What it covers	Where it stops	What the 7+3 adds
Financial transaction tax (Tobin, 1978; debates on the European FTT)	Pricing of speculative flows	Never implemented at scale; no link to measured harm or to redistribution	A rating-based coefficient links the levy to measured impact; the proceeds feed a dedicated fund
OECD BEPS Pillar Two (OECD, 2021)	A floor on corporate tax competition	Tax only; no grounding in externalities; costly adoption for developing countries	A general doctrine of fiscal equity covering all classes of externality
EU CBAM (European Union, 2023)	Carbon embodied in imports, a single jurisdiction	A single externality, a single border, no redistribution of the proceeds	Border adjustment generalised to measured human externalities, proceeds earmarked for solidarity
Loss and damage fund (UNFCCC, 2022)	Ex post climate compensation	Voluntary pledges; no causal pricing; no adjudication mechanism	Financing tied to harm that is measured, rated and justiciable
Bridgetown Initiative / MDB reform	Volume and terms of development financing	More funds at lower cost; the production of harm remains unchanged	Corrects the flow and prices the source

Instrument	What it covers	Where it stops	What the 7+3 adds
United Nations framework convention on tax (UNGA resolution 78/230)	Binding tax cooperation	Tax only; negotiations 2025-2027	A model — and a future vehicle of incorporation — for the wider architecture
Climate clubs (Nordhaus, 2015)	Incentive-compatible coalitions	Carbon only; club design, no institution	The coalition logic, generalised and institutionalised
ESG ratings and credit ratings	Private assessment of impact	Conflicts of the issuer-pays model; investor risk, not harm to humanity; unregulated	A public and transparent authority rating harm, never paid by the rated entity

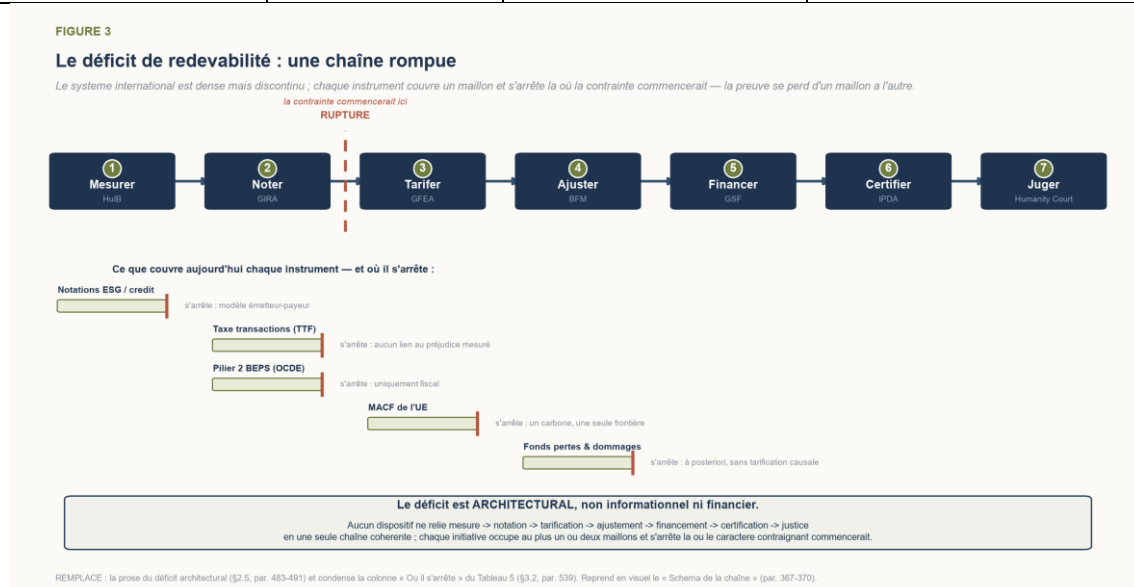


Figure 2. The three completenesses of complete accountability

Each row constitutes a success — several have directly inspired components of Section 5 — and each row stops short of bindingness, of generality or of redistribution. The finding of Section 3.1 repeats itself at the level of instruments.

3.3 The financing level: Sevilla, mapped

The fourth International Conference on Financing for Development (Sevilla, June-July 2025) produced the Compromiso de Sevilla and a Platform for Action — the largest gathering of the decade on financing for development (United Nations, 2025a). Mapped one by one onto the functional chain of Section 2.5, its 130 initiatives trace a striking distribution: seventy-one — more than half — bear on financing, but only three on rating, none on adjudication, and none creates a binding instrument. This is a count of initiatives — of institutional attention — not of funds mobilised, which remain far below needs: the system masses its initiatives on financing without managing to close the deficit; in this voluntary corpus, rating remains rare, no initiative is principally jurisdictional and none by itself creates a binding obligation — the genuinely binding instruments belong to the United Nations corpus examined separately (Annex / EP2), not to the Sevilla Platform, voluntary by construction. This distribution is not a failure of the conference: it is a revealed preference of the current system — and the precise specification of the functional and interface deficit that the 7+3 architecture is designed to fill.

Sevilla did not lack for advice. The conference was prepared by an International Commission of Experts on Financing for Development, constituted for it, whose report — Financing a Sustainable Future — was delivered on 11 February 2025, in the margins of the third preparatory committee, in order to inform the negotiation of the outcome document. It

was chaired by José Antonio Ocampo, a member, sixteen years earlier, of the 2009 Commission of Experts (Box 7); and it counted, among its fourteen members, Joseph Stiglitz, who had chaired that one (United Nations, 2025b). The authors of the 2009 proposal thus advised the 2025 conference.

And the 2025 conference produced seventy-one financing initiatives, three rating initiatives, none on adjudication, and no binding instrument.

The immediate temptation is to set the magnitude of spillovers against the amount of official development assistance — 214.6 billion dollars in 2024 according to the OECD, in decline, and a contraction of 23% in 2025, against displacements of an altogether different order. The juxtaposition is striking, but it is misdirected, and for two reasons. The two magnitudes are not of the same nature: aid is a voluntary, annual and revocable transfer, decided downstream; the spillover is a structural, continuous and automatic effect, produced upstream by the architecture itself. One does not correct a permanent slope by a discretionary gift. And above all, the shortcut leads to the wrong conclusion: it invites a demand for more aid, when the problem is not the volume of the ex post correction but the absence of a mechanism that measures, prices and adjusts at source. The mapping has already shown it — the bulk of the effort bears on financing, very little on rating, nothing on adjudication. The contrast with aid therefore does not plead for more aid: it pleads for a displacement of the correction, from the discretionary downstream towards the structural upstream. It is precisely the function of the chain proposed here — measure, price, adjust — to make that correction systematic where today it is merely solicited.

Financing is the fifth link of the chain. It comes after measurement, rating, pricing and adjustment; it precedes certification and adjudication. Sevilla thus concentrated its institutional attention on the fifth link of a chain whose first four do not exist, and whose seventh has no duty-holder. This is not a failure of generosity: it is a failure of architecture. One does not finance the reparation of a harm that nothing has measured, that nothing has rated, that nothing has priced, and for which no one answers.

The imbalance noted above is therefore not a statistical curiosity. The best-endowed link of the chain is precisely the one that can produce nothing so long as the others are missing — and the corpus says so bluntly: seventy-one financing initiatives, zero obligations.

Box 9 — VERIFIABLE FACT · What becomes of a remedy when no one is charged with carrying it

The Commission of Experts that prepared Sevilla (§3.3) delivered its report in February 2025. It recommends there, among other things, to “Create a United Nations Global Economic Coordination Council: In line with the proposal made in 2009 by the Commission of Experts on Reforms of the International Financial and Monetary System (Stiglitz Commission), create a Global Economic Coordination Council as part of the United Nations system to help coordinate different organizations and identify existing gaps in the current cooperation system” (United Nations, 2025b). The same institution, the same mandate, the same verbs of coordination — sixteen years later. Sevilla did not take it up.

The same report devotes an entire section — “Managing the international impacts of the macroeconomic policies of the major economies” — to spillover. The diagnosis it makes is that of the present document, and it is formulated in terms that the latter could not surpass. The monetary, fiscal and trade policies of the developed countries, one reads there, “have important spillover effects on developing countries. These effects are not sufficiently taken into account when these policies are adopted, the economic authorities of those countries considering only their domestic impact.” The source jurisdiction is named: “a clear example is that of the spillover effects of United States monetary policy”.

And the insufficiency of the recipient country's instruments is noted: its capacity to lower its rates "is constrained" by the differential with US rates.

There remain the remedies. The section proposes three of them. The first asks the International Monetary Fund to "deepen its surveillance" of the policies of the major economies "in order to analyse their spillover effects", these assessments potentially constituting "an important element of Article IV consultations". The second recommends "a broader use of capital account management techniques by developing countries". The third calls for a re-examination of the effects of Basel III on poor countries.

The section is entitled "Managing the international impacts of the policies of the major economies". None of its three remedies reaches the major economies. The first entrusts an analysis to a third party; the second refers the adjustment back to the country that suffers it; the third bears on another object. The harm is recognised, attributed, named — and the consequence is still addressed to the one who suffers it.

Two texts must then be brought together. In 2009, this body, chaired by Joseph Stiglitz and counting José Antonio Ocampo among its members, called for "compensatory payments" in favour of developing countries (Box 7). In 2025, the same body, chaired by José Antonio Ocampo and counting Joseph Stiglitz among its members, calls for an analysis. The 2025 report does not contain a single occurrence of the word compensation. In sixteen years, the demand has moved from a payment to an assessment — and the assessment is entrusted to the apparatus that its own chair describes elsewhere as "weak", "unbalanced" and devoid of "traction" over the major economies (Ocampo, 2017, pp. 79 and 93).

There is here neither inconstancy nor renunciation. The authors of 2025 are those of 2009; they have not changed their minds, and their diagnosis is more precise than ever. What has changed is that they now know that there is nowhere to lodge the remedy. No institution measures the spillover with authority, rates it, prices it, designates its debtor, or hears the challenge to it. Confronted with this void, they write the only thing that an order without a link can receive: a request for surveillance.

Deprived of a duty-holder, a remedy does not keep: it degrades. From a claim it becomes a wish; from a wish, a request for analysis. The rupture of the chain therefore impoverishes not only those who suffer it: it impoverishes even the idea of the remedy. This is the most complete demonstration of the functional accountability deficit defined in §2.5 — and it is supplied, with no polemical intent whatsoever, by those very people who have best diagnosed it.

3.4 Mapping protocol, time-stamping and rules of legal status

The counts relating to Sevilla refer to the initial coding of the 130 initiatives of the official register (version 0.2 of the dataset, as at 12 July 2026). An earlier snapshot, frozen at 16 April 2026, covered 129 items; the recoding has since incorporated the 130th initiative, and the functional profile has remained unchanged (§3.5). Each publication of the dataset states its cut-off date. Each initiative is assigned a principal function according to its operational mechanism, the secondary functions being recorded separately. Ambiguous cases are referred to an adjudication log rather than being silently forced into a category. This count is a programme result: the independent double coding and the inter-coder agreement coefficient remain to be produced.

3.5 Reconciliation of the 129 profile and the coding of the 130

The mapping of Section 3.3, broken down by institutional function, assigns 115 initiatives to the seven institutions (presented in §5) — HuIB 18, GIRA 3, GFEA 7, BFM 11, GSF 71, IPDA 5,

Court o — and 15 to the three instruments: Global Accountability Framework 14, Call of Carthage 1, Charter o. Thus $115 + 15 = 130$. The initial coding of the 130 reproduces exactly the profile of the earlier 129-item snapshot: the seven institutions and the two other instruments are unchanged, and the only variation lies in the 130th initiative, of GAF type (13 → 14). The argument of §3.3 is therefore independent of it: the breakdown — seventy-one financing initiatives, three rating initiatives, none on adjudication, no binding instrument — is identical across the two corpora. The workbook contains one row per initiative and preserves the secondary links. This reconciliation is an accounting one and not a substantive one: the confirmation of each row's function against its official description, the independent double coding and the agreement coefficient remain to be produced.

LIMIT OF INTERPRETATION A count of initiatives measures institutional attention, not the volume of financing, disbursement, quality or effectiveness. “Financing-dominant” replaces “the world is not short of money” as the defensible inference.

Bindingness is not binary. The coding protocol should distinguish a treaty obligation for the parties; a binding act falling within the competence of an organisation; a contractual obligation; national law; a conditional financing commitment; a political commitment; a technical standard; and advisory output. “Zero binding instrument” in the mapped snapshot means that no initiative by itself creates a legal obligation generally applicable across the proposed accountability chain; it does not mean that the initiatives are devoid of operational, financial or political consequence.

LEGAL CODING RULE Binding force, justiciability and enforceability are not to be confused. An instrument is coded as binding only where an identifiable legal basis imposes conduct on a determined subject within a defined scope. Bindingness is coded provision by provision where the instrument combines obligations, permissions, recommendations and programmatic clauses.

Justiciability is the object of a distinct code: it exists where a tribunal, a supervisory body, an arbitrator or an internal procedure has the competence necessary to examine the conformity of the conduct. The absence of an automatic judge does not turn an obligation into a recommendation.

Enforceability is coded separately: it describes the avenues by which a decision or an obligation may be recognised, implemented, suspended, annulled or enforced. It depends on national rules, on immunities, on institutional mechanisms and, where applicable, on conventions on the recognition of judgments or awards.

For each instrument classified as binding, the register publishes at a minimum: the source provision; the subject bound; the scope *ratione personae*, *materiae*, *temporis* and *loci*; the date of entry into force; the relevant reservations or exclusions; the competent forum; the remedies; and the enforcement mechanism. Failing that, the qualification remains provisional.

LEGAL CLARIFICATION ON THE ICJ The 2025 advisory opinion on climate is authoritative but is not binding *qua* advisory opinion; article 94 of the Charter of the United Nations concerns compliance with judgments in contentious cases. The institutional argument of the present work withstands this distinction: authoritative interpretation, compulsory jurisdiction, access and enforcement are distinct functions. The exact reach of the opinion, its conditions of application and its consequences for class S6 are dealt with in §5.8.1.

3.6 Robustness of the diagnosis to the coding grid

Risk of framework dependence. The functional mapping is constructed from the categories of the Global Accountability Chain. This coherence is necessary in order to test the hypothesis, but it creates a risk of descriptive endogeneity: a grid designed to detect breaks in the chain may accentuate the breaks it seeks. The counts presented therefore support a

provisional diagnosis; they do not demonstrate, on their own, that the nomenclature adopted is the only or the best representation of the international system.

Independent validation. The diagnosis must be submitted to four checks. First, an independent double coding on a pre-registered sample, then on the most sensitive categories, with publication of the inter-coder agreement and of the disagreements. Second, a blind coding: the coders receive the codebook and the documentary units, but not the expected conclusion. Third, the application of at least two competing nomenclatures — for example a legal grid and a project-cycle grid — in order to verify whether the functional asymmetry persists. Fourth, an analysis of negative cases: instruments that already link several functions and might contradict the discontinuity hypothesis.

Publication rule. The principal result must be reported in the form of ranges and of confusion matrices where the classifications diverge. The document publishes the coding decisions, the ambiguous cases, the merging rules and the versions of the corpus. A high agreement statistic does not validate the theory; it establishes only that the grid is sufficiently reproducible for the discussion to bear thereafter on its relevance.

Revision criterion. If a competing nomenclature strongly reduces the observed asymmetry, or if independent coders classify the central functions in a systematically different manner, the diagnosis must be reformulated as a property of the grid and not as a general property of the international system.

“When effects cross borders, responsibility cannot remain confined within the scope of the decision.”

PART II — THE GLOBAL ACCOUNTABILITY CHAIN

This part sets out the central contribution of the present work: the theory of the accountability chain and its design principles, the seven functions that compose it, the three instruments that bind it, and the circumscribed role that artificial intelligence plays within it.

4. The theory of chain-based accountability: origins and design principles

4.1 Origins of the framework

The first three chapters established a fact and a gap: decisions cross borders, but accountability stops at their threshold, and the international system, dense though it is, does not connect its functions. This chapter draws from them the central contribution of the present work — the Global Accountability Chain: a theory of accountability as functional, relational and procedural completeness, ordered by functions rather than by organisations, and grounded in rights. Its design principles are not deduced from an axiom; their origin must first be stated.

These principles were not born of a theory but of a conviction forged in practice: a solution holds only if it places the human being and human values at the heart of the decision — and it keeps them there only by inscribing them in the very structure of that decision, rather than by entrusting them to the conscience of the decision-maker. The six convictions that follow are its expressions; each anchors this requirement to a precise function.

The framework presented here generalises a sequence of narrower proposals, developed and publicly tested between 2022 and 2025. At a joint ERF-IMF panel, in December 2022, I put forward four instruments — a facility for immediate support to populations in extreme poverty, a non-profit instrument for sharing sovereign risk, a mechanism for steering private investment towards high-potential, high-risk regions, and a research programme on the hidden costs and the failures of the global financial system — while calling, in parallel, for the research capacity of the IMF to undertake a systematic study of the hidden cross-border costs of monetary tightening in the advanced economies (Yaiche, 2022). The quantification of these spillover effects followed in 2023 (Yaiche, 2023). At IEEE TSYP13, in December 2025, these proposals had matured into two complementary objects. First a diagnostic — the Humanity Test — in five questions: who benefits from it? who bears the cost of it? is that cost visible, measurable and priced? is there an accountability mechanism? what becomes of the next generation? Then four mechanisms: an international court for cross-border human impact, a border adjustment extending the logic of the CBAM beyond carbon, a stability fund of the order of one to two trillion dollars financed by levies on destabilising activities, and a family of impact-based financial instruments (Yaiche, 2025). The genealogy of the framework explains the selection of the problem; it constitutes neither a validation of the functional decomposition nor a proof of institutional superiority.

The architecture presented here takes up these four mechanisms and goes beyond them. Work on their interfaces brought to light the functions they lacked — who measures, who rates, who certifies the algorithms now present at each of these links, and by what right the whole binds — and answering that required three further institutions, a strict doctrine of separation and three instruments of legitimation. The four mechanisms of 2025 become, respectively, the Humanity Court, the Border Fairness Mechanism, the Global Solidarity Fund and the Global Financial Equity Authority described below; the Humanity Test, for its part, remains — the diagnostic that every candidate externality must pass in order to enter the system.

A conviction underpins each of the institutions that follow. Every decision — taken by a person or by an entity — should bear the weight of its effect on others. Today this is rarely the case, not because those who decide are indifferent, but because the accounting stops where their interest stops. Voluntary correction is therefore not merely insufficient; it is structurally unreliable, since it asks the actor to act against their own short-term advantage. This observation is that of public choice: elected officials, regulators and firms being self-interested actors, not benevolent planners, accountability cannot be founded on virtue (Buchanan et Tullock, 1962). The response proposed here is not to demand more virtue, but to complete a chain — so that a harm, once measured, is rated, priced and, where the law allows, made

justiciable, the consequence no longer depending on conscience. The objective is the exhaustiveness of that chain, never the totality of the correction: the architecture refuses to stop halfway between measurement and consequence, but it binds no one beyond consent and imposes no outcome that the Humanity Court could not review. This stance is that of a comparative rather than a transcendental justice: it seeks to reduce manifest and measurable injustice, not to define the perfectly just order — the distinction that Amartya Sen (2009) places at the heart of justice, privileging realised outcomes over ideal institutions.

4.1.1 From convictions to principles.

These principles do not descend from a theory; they crystallise six normative convictions that practice has forged over the years — not empirical results, but the commitments that dictated the specification, and that fall within the fourth category of Table 1, avowed normative commitments.

To leave the invisible invisible is to condone injustice: hence a measurement layer. The one who is rated or certified must never be the one who pays their assessor: hence the separation of rating and certification, a memory of the issuer-pays conflict of 2008. A market economy cannot concede a competitive advantage to those who do not comply with the standards: hence a border fairness mechanism. There must exist no space where speculating pays more than producing for humanity: hence a pricing layer. The development of peoples cannot depend on the discretionary generosity of the richest; it must be architectural and systemic: hence a solidarity fund. No algorithm, no platform, no mechanism must stand above the will and the interest of peoples: hence the democratic certification of digital systems and a court. These convictions call for as many distinct functions — measure, rate, price, adjust at the border, finance, certify and adjudicate — as are embodied, one by one, by the seven institutions of Section 5.

What the architecture designs are institutions in the precise sense that economics gives them: the rules of the game that structure interaction, reduce uncertainty and shape incentives — to be distinguished from the organisations that play by them (North, 1990). This distinction illuminates the adoption strategy: one does not first create powerful organisations, one lays down incorporable rules; and because institutional change is gradual and path-dependent, the architecture advances by incorporation and by pilots rather than by decree, building the path it treads.

This architecture rests on no single moral tradition. Several traditions — Islamic moral economy, the African philosophy of interdependence, human rights, capability theory, ecological economics — can support the same institutional guarantees for different reasons, without a common metaphysics. Universal legitimacy rests on this convergence, not on the imposition of a doctrine.

4.1.2 Positioning within the neighbouring literatures and the contribution proper

Positioning. The Global Accountability Chain does not start from empty theoretical ground. The literature on accountability has defined the relationship by which an actor must explain and justify their conduct before a forum able to question, to assess and, where appropriate, to attach consequences (Bovens, 2007; Grant et Keohane, 2005). Global administrative law has, for its part, brought to the fore transparency, reason-giving, participation, review and the control of decisions taken in transnational regulatory spaces (Kingsbury, Krisch et Stewart, 2005). The present framework takes up these achievements; it does not claim to have created them.

Institutions and plurality. The rational design of international institutions analyses the way in which actors adjust membership, centralisation, control, flexibility and decision rules to the cooperation problems they face (Koremenos, Lipson et Snidal, 2001). Work on regime complexes and polycentric governance shows, conversely, that fragmentation can offer

adaptability, experimentation and several centres of decision, while creating overlap, forum shopping and inconsistencies (Ostrom, 2010; Keohane et Victor, 2011; Alter et Meunier, 2009). The proposed chain therefore does not set a single centre against a fragmented system: it seeks the conditions under which distinct centres can remain autonomous while making their interfaces explicit. The design of mandates and of structural prohibitions belongs to the theory of institutional design (Goodin, 1996).

Orchestration and experimentation. Orchestration and global experimentalist governance have likewise shown that an organisation can pursue collective objectives through autonomous actors, revisable standards, comparisons, peer reviews and learning loops, without holding general hierarchical power (Abbott et al., 2015; de Búrca, Keohane et Sabel, 2014). The Humanity Compact belongs to this non-coercive family when it begins with protocols, comparable measurements, pilots and revision mechanisms. This priority of functions over organisations continues the functionalist tradition (Mitrany, 1943; Haas, 1964).

The contribution proper. The contribution claimed is narrower than the invention of a new general theory of global power, but more precise than a call for more coordination. It consists in treating cross-border accountability as a chain of distinct transformations and in laying down three cumulative requirements: the functional completeness of the necessary operations; the relational completeness of the links between duty-holders and oversight forums; and the procedural completeness of the interfaces, which must preserve the provenance of the evidence, the uncertainty, the reasons, the objections and the avenues of correction.

Four specific additions. To these three completenesses are added four design proposals: negative mandates that prohibit one and the same actor from combining the most conflicting roles; a doctrine of the interface as an autonomous object of audit; stopping rules that allow the architecture not to conclude or not to price; and a mandatory comparison with lighter architectures. The novelty of the framework must therefore be assessed on this combination and on its capacity to produce testable consequences, not on the vocabulary of the “chain” alone.

Limit of the claim. This contribution remains a theoretical hypothesis for as long as it has not been confronted with a systematic review of the neighbouring literatures, with competing functional decompositions and with comparative pilots. A contribution may be original through the ordered assembly of known mechanisms; it becomes scientifically established only after showing that this assembly explains or resolves a problem that earlier frameworks leave insufficiently addressed.

Map of the foundations drawn upon. None of the theories drawn upon covers the whole of the chain on its own. Their complementarity reads as a division of intellectual labour: the external foundations supply criteria and mechanisms; the contribution proper consists in linking them, in identifying their interfaces and in submitting the whole to rules of non-confusion and of refutability. The right-hand column carries the limit that each foundation retains — it does not disappear because that foundation is drawn upon.

6. TWO LOOPS	Respond to observed effects / prevent reasonably foreseeable cascades Articulate correction, preparedness and learning
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4.2 Nine design principles

P1 — Complete the chain, a minima. One accountable institutional capacity per missing function, no more: measurement (HuIB), rating (GIRA), pricing (GFEA), border adjustment (the Border Fairness Mechanism), financing (GSF), democratic certification of digital systems (IPDA), adjudication (Humanity Court). Seven is not numerology; it is the number of distinct

functions of the chain (measure, rate, price, adjust, finance, certify, adjudicate). Nor is it a number deduced from first principles: it derives from the functional decomposition of the chain — one function, one duty-holder, one negative mandate — and must satisfy the eight design requirements (§4.3). The derivation is conducted function by function in §4.7. This “a minima” is a rule of subsidiarity: the architecture duplicates no existing regime that works — World Trade Organization, International Monetary Fund and Financial Stability Board, Financial Action Task Force, World Health Organization — it completes them and links them through the measurement layer and through the border, where they stop (§3). This decomposition remains a refutable hypothesis, subject to the test of exhaustiveness, inclusion and fusion of functions (§4.3.1).

P2 — Single mandates, negative mandates. Each institution does one thing only, and its charter expressly states what it does not do. The measurement board does not rate; the rating authority sets no price; the pricing authority itself levies no tax; the fund neither measures nor taxes; the court “guards the guardians, it does not command them” — it reviews legality, never expediency, and never substitutes its own judgment for an institution’s discretion in matters of policy. The negative mandates constitute the architecture’s first line of defence, against mission drift as much as against the “world government” objection. To this separation of functions corresponds a separation of the modes of accountability: no institution can be held to account under a conception of accountability incompatible with its function (Koppell, 2005). The independence of the Court from state instructions, like the fidelity of the measurement board to scientific standards alone, are not accountability deficits but its appropriate forms.

P3 — Jurisdiction by consent. No component binds anyone by its own force alone. A rating is “a public and contestable impact opinion”; it acquires legal effect only when a statute, a contract, an authority or a court incorporates it — exactly as credit ratings, accounting standards and technical standards acquire their effect today. The contentious jurisdiction of the Court is acquired by consent (accession to a treaty, contractual arbitration clauses, or derivation through national law for private actors). This is not a weakness for which apology is owed: consent and incorporation are the principal mechanisms through which international arrangements acquire durable legal effect across jurisdictions, and they define the adoption pathways of Section 11.

P4 — Non-substitution. The architecture fills the blind spots of the multilateral system — enforceable measurement, consequence, participation — and replaces nothing. It does not amend the Charter of the United Nations, does not place itself above constitutions or treaties, and expressly recognises existing mandates (independence of monetary policy, WTO law, human rights treaty bodies). Its posture towards the United Nations is one of continuity: from “We the peoples” through to Monterrey, Addis Ababa and Sevilla, each generation has added the layer that its predecessors could not lay.

P5 — A single measurement layer; rating is not pricing. Every quantitative claim comes from a single scientific institution (HuIB), endowed with a public methodology, uncertainty ranges and declared gaps; each downstream institution consumes these measurements and none re-measures. Downstream, the functions remain separated: the rating authority converts the measurements into a severity coefficient (per externality) and a class (per entity), but never into a monetary amount; the pricing authority converts the coefficient and the class into a price; the border mechanism applies that price to market access. A single figure, measured once, transformed at each link by a single institution — that is what makes the chain auditable and what prevents, by construction, double counting and double penalty.

P6 — Non-circular budgets. No institution’s operating budget may depend on the flows that it generates or on which it rules. The initial endowment of the fund is independent of the

revenues of the border mechanism; the court is financed by an autonomous fiduciary arrangement that no single party can modify; the rating authority is never paid by the entities that it rates.

P7 — Sequence: the pilot before the regime. Each component is specified in phases — a pilot scope with volunteer jurisdictions and sectors, then an extension, then a regime — and the court itself is staged (advisory chamber; binding internal review for members; treaty-based jurisdiction). Nothing in the design presupposes wholesale adoption, and each phase is useful even if the next never sees the light of day.

P8 — Some things are not for sale. Where an externality arises from gravely unlawful conduct — forced labour, or activity carried out in contexts internationally recognised as illegal — the response is non-compensable exclusion, never pricing: to put a price on exploitation would amount to authorising it in exchange for payment. The severity coefficient includes, for such cases, a non-compensable ceiling, and the qualification of the illegality itself is a matter for the law and the courts, never for rating bodies. In all cases, these situations are treated generically, by category of conduct, without ever naming jurisdictions. The pricing of a harm constitutes neither a moral authorisation, nor a presumption of lawfulness, nor a right to buy the possibility of causing harm: it imputes its cost without releasing it from legal liability, and certain flows remain non-compensable.

P9 — Do no harm: the architecture holds itself to its own standard. An architecture designed to correct injustice must first guard against reproducing it; these safeguards are not wishes but tests, the failure of which entails simplification or withdrawal (§4.4). It must not add complexity that it does not offset: failing a demonstration that the separation of functions yields more than it costs, a simpler design would be preferable — a demonstration that this document establishes function by function (§4.7). It must not cost exorbitantly: its budgets are modest, non-circular and published (P6, §5.10), and a function that cannot be financed at the minimum viable scale is abandoned. It must not create new harm or aggravate the existing harm: each instrument is tested by pilot before any regime (P7), and the risk of government failure is there treated as real, not denied (§13). It must not produce injustice: special and differential treatment protects low capacities (§5.5), and the burden can never exclude those whom it means to defend (§12.6). It must offer no purchase to the predators who would divert it: parity of governance, prohibition of issuer-pays, glass-box methods and non-solidarity between institutions respond structurally to capture (§13, §5.1). And it must never substitute itself for the sovereignty of peoples: nothing binds without consent (P3), primacy remains strictly internal (§5), and no algorithm stands above the will of peoples (§5.7, §5.8). Should a single one of these safeguards give way without remedy, it is not the rule that bends but the body at fault — or the entire architecture — that must give way. That is all that an honest design can promise itself.

4.3 Design requirements and alternative architectures

The division into seven institutions is not a number deduced from first principles: it derives from the functions of the chain — one function, one duty-holder (§4.7) — and must satisfy eight design requirements: functional completeness; separation between the evidence and the consequence; jurisdiction by consent; contestability; the possibility of implementation through existing channels; resistance to capture; affordable data and operation; and containment of failure. A candidate architecture must satisfy these eight requirements, at the level of the institutions as much as at that of their interfaces.

These requirements extend a recognised framework. Where the rational design of institutions (Koremenos, Lipson et Snidal, 2001) compares an isolated institution along five dimensions — membership, scope, centralisation, control and flexibility — The Humanity Compact extends the analysis to a multi-body chain and adds to it four dimensions of its own: contestability,

interface integrity, containment of failures and reflexive assurance. To claim the extension of an established framework, rather than an independent theory, is the more solid position.

The number of bodies does not, moreover, measure fragmentation. An architecture of seven institutions sharing common standards, interfaces and conflict-resolution procedures may be less fragmented than an architecture of three bodies with competing mandates and incompatible coalitions (Biermann et al., 2009).

Table 6 — Candidate institutional architectures and decision tests

Candidate	Potential advantage	Principal risk	Decision test
Three integrated bodies	Lower cost and fewer interfaces	Concentration of epistemic, fiscal and judicial power	Can internal firewalls provide equivalent contestability?
Five-body architecture	Merges rating and pricing and treats certification transversally	Role conflicts and weakened democratic oversight	Do the merged functions alter outcomes or avenues of redress?
Seven institutions + three instruments	Specialisation, negative mandates and mutual oversight	Coordination delays and institutional burden	Do the interface guarantees outweigh the added transaction costs?
Orchestration by incumbents alone	No new organisation and faster political entry	Fragmentation, mandate gaps and weak oversight	Can the incumbents jointly deliver the full chain and the avenues of redress?

4.3.1 Test of exhaustiveness, inclusion and fusion of functions

Status of the number seven. The chain cannot claim functional completeness by simple enumeration. It must show that every necessary transformation is covered, that no decisive activity is left without a duty-holder and that no separation is maintained for merely nominal reasons. The following test applies to any proposed function.

A test in five questions. A distinct function is justified when five conditions converge: first, it transforms the case file according to a logic different from that of the preceding function; second, it applies a standard of proof or of decision of its own; third, its combination with another function creates a conflict of interests or an asymmetric error cost; fourth, its decision must be reasoned and separately contestable; fifth, its output constitutes an identifiable interface for the following function. The absence of several of these conditions creates a presumption of fusion.

Candidate functions. Investigation, the representation of affected persons, mediation, continuous monitoring, enforcement, norm-making and the review of appointments may appear as missing functions. The framework treats them provisionally as cross-cutting or subordinate capacities: investigation falls within measurement and within the procedural powers of the jurisdiction; representation and counter-assessment fall within the rights base; mediation constitutes a procedural avenue before adjudication; continuous monitoring falls within measurement; enforcement depends on the applicable legal vehicle; norm-making belongs to the three instruments and to the competent authorities; appointment falls within the common constitutional base. This allocation must be tested, and not presumed.

Refutation criterion. The decomposition into seven functions is refuted if a candidate function finds no effective duty-holder, if two separated functions produce inseparable decisions with no benefit in terms of oversight, or if a competing architecture covers the same risks at lower cost, in shorter timeframes and with at least equivalent contestability. The theory of the chain can survive such a refutation; the 7+3 instantiation, for its part, must be revised.

4.4 Selection rule and refutability

Functional separation is retained where it improves accuracy, legitimacy or redress; where an interface can be specified and audited; and where each phase creates autonomous value. The derivation of §4.7 establishes that the seven functions of the chain satisfy these three conditions; the burden of proof therefore falls on whoever proposes a fusion — it is for them to name the separation that the fusion sacrifices and to establish that the chain does not suffer from it. A future comparison should test the four candidates against common scenarios — a monetary spillover effect, a harm linked to embedded labour, an AI system failure and a contested border adjustment. It is this test, and not a design preference, that could establish that a narrower configuration or a different sequencing suffices.

Refutation of the whole (rare). Two demonstrations only — more demanding than the revision of a single body — would call the entire architecture into question, and the programme holds them to be genuine tests rather than objections of principle: (i) that a narrower architecture covers the same functional chain with at least equivalent contestability and a lower coordination cost — which presupposes establishing, for each proposed fusion, which of the separations derived in §4.7 is sacrificed and why the chain does not suffer from it (comparison presented in §4.5); or (ii) that the institutions in place could internalise the missing functions without reproducing the accountability deficit measured in §4. Should either of the two come to be established on the published data, the 7+3 architecture would give way to the solution thus demonstrated.

Revision or simplification of a body (the ordinary case). A body — not the architecture — must be redesigned, or abolished, if it is established that: its data burden in practice excludes low-capacity jurisdictions (redesign through thresholds and gradualism); a border or fiscal instrument cannot be implemented in conformity with the applicable law (revision or abandonment of that instrument, the chain being maintained by the others); or capture and strategic exit prevail over its safeguards (reinforcement or abolition).

What does not constitute a refutation. The fact of being bounded by consent is a design choice (Table 1, “proposal” category), not a flaw: it would amount to a refutation only if, in the very places where States have consented, no substantial consequence ensued. These are research tests accompanied by their burden of proof, not rhetorical concessions.

4.5 Qualitative comparison of the candidate architectures

This document sets the 7+3 architecture against three alternatives — three integrated bodies, a five-body architecture, and orchestration by the institutions in place alone — along eight criteria: functional completeness, separation of functions, compatibility with consent, contestability, feasibility of implementation, resistance to capture, economy of operation and containment of failures. The comparison is qualitative and by the designer’s own hand: it is not an independent evaluation, and only an external examination on common scenarios would be decisive. On these criteria, the 7+3 is preferred where separation, completeness, contestability and containment of failures take priority — at the price of a lesser economy of coordination. The most serious alternative is the five-body architecture: it gains in coordination cost and in ease of political entry, and loses the separation derived in §4.7 between the judge of severity and the judge of price — that is, the very firewall that prevents severity from being adjusted to the desired tariff; orchestration by the incumbents alone is the simplest to launch but the weakest in separation and in contestability; the three integrated bodies economise on coordination but sacrifice separation. The detail appears in Annex E. In the body, no numerical score or weighting is claimed — Annex E presents a purely illustrative author’s pre-test, without probative value: the table orders relative strengths and weaknesses, not a ranking.

A provisional multi-criteria comparison of the four candidate architectures — its criteria, its qualitative assessments and its stated reservations — is presented in Annex E (Table E1). Drafted by the designer's own hand, it is placed outside the body of the text and treated as contestable rather than probative.

It emerges from this that the five-body architecture is the only competitor that remains to be seriously tested — not because the question of the number would remain open (§4.7 settles it function by function), but because the trade-off between the separation that it sacrifices and the economy of coordination that it affords is empirical, and has not yet been submitted to an external test. The next external simulation will have to compare them directly on common scenarios.

4.6 The governance choice criterion: transaction costs, human costs and the counterfactual

Transaction cost theory explains the choice of a governance structure — market, hierarchy or hybrid form — by its capacity to economise on the costs of negotiating, of monitoring and of enforcing exchange (Williamson, 1985). This tradition goes back to Coase (1937), who explained the very existence of the firm by the cost of resorting to the market. This criterion is powerful, but it remains, by construction, silent on another category of costs: those that a transaction shifts onto third parties who are not party to it — the tradition of the social costs of private enterprise (Kapp, 1950). Where these external costs were once largely local and not measurable, they are today cross-border, systemic and quantifiable; the criterion of institutional choice must therefore internalise them. The architecture adopts an extended criterion: one chooses the governance structure that economises not only on private transaction costs, but also on externalised human costs — and it is this double economy, not the first alone, that justifies a chain of specialised institutions where the market and Coasean bargaining (Coase, 1960) leave the harm without an owner.

There remains the baseline of comparison. The common objection — that new institutions add interface and bureaucracy costs — bites only if they are compared with a costless status quo. Yet that baseline does not exist: the right term of comparison is not zero, but the counterfactual — the cost of inaction (§13) and the exposure to future crises (§11), kept separate and never added together, in conformity with the aggregation discipline of the document. Measured against this real baseline, the costs of a governance chain cease to be a decisive objection: the question is no longer “do they cost something?” but “do they cost less than what they avert?” It is an empirical question, not a rhetorical one: it belongs to the option value of an infrastructure of measurement and of correction (§5.6, §14) and, in the last resort, to demonstration by the pilot (§12.5) — not to an assertion of design.

This logic belongs to an empirical tradition. The conditions of durability that Ostrom (1990) drew from successfully governed commons — clear boundaries, participation of affected persons in the rule, monitoring, graduated sanctions, conflict resolution, and polycentric nesting of authorities — are found again, one by one, in the architecture: single-purpose mandates for the boundaries, a citizen instrument for participation, the Human Impacts Board for monitoring, severity coefficients for gradation, the Court for conflicts, and the chain itself for nesting. Polycentric governance (Ostrom, 2010a) names the theoretical family of the arrangement: several centres of partial authority that check one another, none sovereign over the whole. The transposition is not automatic, however — Ostrom's cases are local and communal, whereas the architecture is global and among actors with neither neighbourhood nor shared norms: an objection addressed in §12.

Put otherwise, the whole belongs to mechanism design: starting from a social objective — internalising the harm, providing redress — and working back to the rules that attain it given the private information and the incentives of the actors (Hurwicz, 1973), while requiring that

no one has an interest in lying or in sabotage (incentive compatibility; Myerson, 1979) and that the outcome holds in equilibrium despite strategic behaviour (Maskin, 1999). The safeguards of the architecture — a rating never paid for by the rated (P6), negative mandates, non-circularity — are so many incentive-compatibility constraints. Two honesties are called for. First, the complete formalisation — the objective/information/constraint matrix, the implementation proof — remains work to be done, acknowledged as such (§14). Second, and this is the decisive difference: classical mechanism design presupposes a designer endowed with the power to compel and to enforce, whereas the architecture must align incentives without a central enforcer — through incorporation, contestability and reputational force rather than through a world government. It is a mechanism design without a sovereign: harder, and that is the wager of the document.

Three reference configurations. The selection rule must compare at least three architectures: a configuration M, limited to a common protocol of data, of evidence and of remedy; a configuration F, federated, in which existing bodies are accredited to cover the functions; and a configuration I, integrated, corresponding to the complete 7+3. The documented status quo constitutes the baseline comparator, not a costless option.

Full cost. Cost is not limited to the administrative budget. It comprises fixed and variable costs, data-collection costs, delays, interface costs, false-positive and false-negative errors, the burden imposed on affected parties, the probability of capture, the cost of remedy and the cost of the harm left untreated. The assumptions and the weightings are published; where the weights are contested, the results are presented by dominance and sensitivity analyses rather than by a single score.

Choice rule. A heavier architecture is retained only if it improves in a measurable manner the quality of the evidence, the correction of errors, access to remedy or the prevention of conflicts of interests, and if this improvement remains robust across several weightings. At equivalent guarantees, the lighter architecture prevails.

These three configurations extend the qualitative comparison of § 4.5 and the annexes devoted to the comparison of architectures, which already name configurations M and F; they do not introduce a new grid but require their full costing and an explicit choice rule.

4.7 From the chain to the institutions: the design requirements and their institutional response

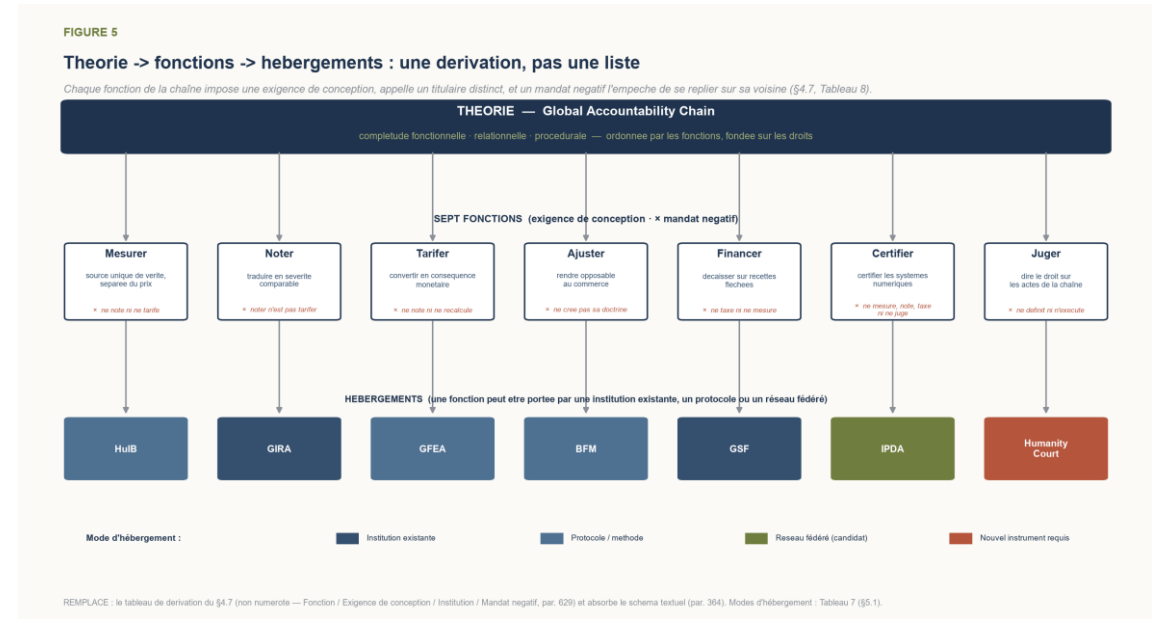


Figure 3. Theory → functions → hosting: a derivation, not a list

The seven institutions are not posited first and justified afterwards: they are deduced from the functions of the chain according to an explicit method. Each necessary function — measure, rate, price, adjust at the border, finance, certify, adjudicate — imposes a design requirement; each requirement calls for a distinct duty-holder; and the negative mandate of each, the list of the functions that are forbidden to it, prevents two functions from folding into one another. The derivation extends the rational design of institutions (Koremenos, Lipson et Snidal, 2001), where institutional features respond to identified cooperation problems rather than to preferences. The requirements were settled on the basis of the deficit stated in §2.5 and of the eight criteria of §4.3, before the allocation of bodies — a condition for the derivation to be auditable and not retro-fitted to the 7+3.

Chain function	Design requirement it imposes	Institution that meets it	Why it does not merge (negative mandate)
Measure	A single source of quantitative truth, separate from any value judgement and any price	Human Impacts Board (HuIB)	Does not rate, does not price, does not adjudicate — otherwise measurement bends to the desired outcome
Rate	Translate measurement into comparable severity, separately from the facts and from price	Global Impact Rating Authority (GIRA)	Does not measure (consumes HuIB), sets no price — to rate is not to price
Price	Convert severity into a monetary consequence, separately from rating	Global Financial Equity Authority (GFEA)	Does not rate, never recomputes a rating, does not collect
Adjust at borders	Make the consequence enforceable against trade, with no tax doctrine or science of its own	Border Fairness Mechanism	Sets no fiscal doctrine, produces no science (consumes HuIB and GIRA)
Finance	Disburse solidarity from earmarked revenues, without levying tax or producing the measurement	Global Solidarity Fund (GSF)	Neither taxes nor collects, neither measures nor rates — whoever spends does not set what it receives
Certify democratically	Subject digital systems — including those of the architecture — to a certification legitimated by parliaments	Inter-Parliamentary Digital Authority (IPDA)	Does not measure, rate, tax or adjudicate, and regulates no trade
Adjudicate	State the law on the acts of the chain, without defining policy or executing	Humanity Court	Defines no policy, executes nothing — “the Court guards the guardians, it does not command them”

The last column carries the argument: merging two functions removes a separation on which the chain depends. To conflate measurement and rating bends the facts to the desired result; to conflate rating and pricing lets the judge of severity set the price; to conflate adjudication and enforcement deprives the Court of its independence. The number seven is therefore not aesthetic: it is the number of distinct functions that the chain must cover, each separated from its neighbour by a boundary specified in §6. The subsidiarity of principle P1 (§4.2) reserves the single case where a separation improves neither accuracy, nor legitimacy, nor redress; the

burden then falls on whoever proposes the fusion to demonstrate that none of the three suffers from it — an assessment conducted in §4.5 and in §4.6.

The burden of proof, and why it is asymmetric. This rule of burden calls for a justification, and not a simple declaration: it is the most assailable normative choice of the arrangement, and it must be grounded in an analysis of error costs. Two errors are possible, and they do not cost the same thing. A false positive — separating two functions that could have been merged without damage — costs one institution more, one interface more, and the coordination cost that accompanies them; the cost is real, it is bounded, and it is reversible: one can merge after the fact. A false negative — merging two functions that should have remained separate — costs something else entirely. The body that combines measurement and rating no longer chooses its disclosure policy as a function of accuracy, but of its own objective (Laffont et Tirole, 1991); the chain becomes capturable at a single point; and the capture of one link neutralises the whole, since the downstream links consume without being able to contest. That cost is not bounded, and it is not reversible: once the authority has been delegated to a single body, it is not taken back — this is the lesson of the rating agencies (§5.3), and it is what became of the Palais-Royal chain, entrusted to the International Monetary Fund, an institution governed by the very countries that it ought to have penalised (Box 9, §3.3). Asymmetric error costs justify an asymmetric burden of proof: this is the precautionary principle applied to institutional design, and not a preference for the multiplication of bodies. The burden therefore shifts because the functional decomposition has been carried out, and not because the number seven had been chosen in advance; it would shift back as soon as that decomposition were refuted. The conditions of that refutation are stated in §1, and the cost analysis that would allow it to be settled — a bottom-up budget per institution, compared with the total cost of the rival architectures — remains to be produced: it is an avowed gap, and it is recorded in §14.

5. Seven functions, not necessarily seven new institutions

This section specifies each institution according to a common template: mandate; operation (the operational pipeline); precedents already at work on a smaller scale; negative mandate; key interfaces; safeguards; sequencing. Table 12 (below) offers the synoptic view. The names are given in full, the acronyms being used only sparingly thereafter. Two framing remarks apply throughout. First, none of these institutions is invented from nothing: each generalises functions already at work somewhere — sectorally, regionally, or voluntarily — and links them together; the precedents cited below constitute a proof of feasibility, not a claim of equivalence, and the architecture builds upon them without replacing, competing with or rating any of them. Second, honesty as to status: each pipeline described here is specified down to workflow level and implemented in a working software prototype — specified and prototyped, not yet operated. The methodologies are versioned and publicly revised on published cycles; and wherever artificial intelligence intervenes in a pipeline, it signals — an accountable human decides (Section 7). Figure 4 presents the seven institutions along that chain, within the three framing instruments.

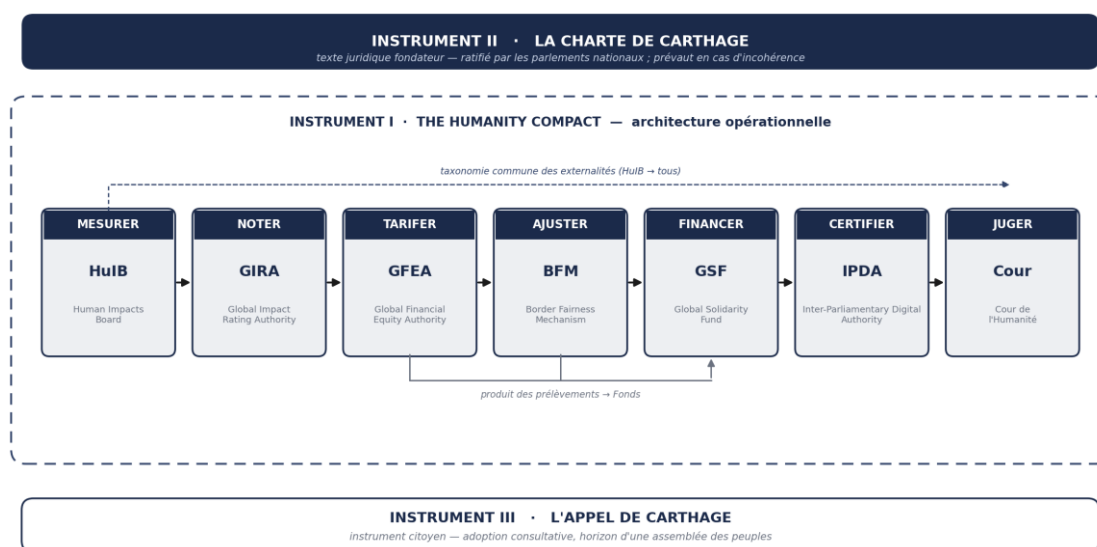


Figure 4. The 7+3 architecture: seven single-mandate institutions along a single accountability chain — measure, rate, price, adjust, finance, certify, adjudicate — framed by three instruments (the GAF, the Charter, the Call). Source: author's elaboration.

5.1 Common constitutional and governance foundation

Legal status of the architecture. The present document does not assert that a general principle of international law today requires the compensation of every lawful cross-border externality. It proposes an architecture by which participants may, within the limits of their existing competences and obligations, measure those effects, agree on consequences and render those consequences contestable. No measurement, rating or decision of the architecture creates, by itself, a pecuniary obligation or an international responsibility: a binding consequence presupposes an expressly identified treaty provision, incorporating statute or contractual undertaking. Where the damage results

from an internationally wrongful act, the applicable rules of responsibility and reparation remain distinct and prevail.

Each institution must specify the same constitutional minimum before any entry into operation — a foundation that follows it from its legal existence to its end of life: its existence and mandate (legal personality and seat; composition, appointment and representation formula; fixed and staggered terms; incompatibilities and removal; quorum and voting); its independence (source of budget and independent audit; declaration of interests); its transparency (rules of access to information; data controller and retention obligations; duty to give reasons); its checks (complaint and redress; emergency powers and their expiry; periodic external evaluation); and its revisability (amendment; sunset clause, merger or dissolution). Parity between impact-source and impact-recipient jurisdictions is a starting assumption, not a complete governance formula: States in a mixed position, small States, affected communities, workers, the interests of future generations and scientific independence must also be represented there, without thereby turning every governing body into a miniature general assembly. This foundation belongs to constitutional economics: legitimacy is decided at the level of rules, not of particular decisions, and proceeds from consent to those rules rather than from their imposition (Buchanan and Tullock, 1962) — the distinction between the constitutional level and the operational level embodied in the separation of this foundation from the mandates that follow it.

Beyond this ordinary-time foundation, each institution also has a rule-based accelerated mode for acute shocks — pre-authorised in the instruments, bounded by its single mandate, and automatically time-limited — set out in §11.15-11.17.

Table 7 — Legal status of the seven functions: *lex lata*, *lex ferenda* and required vehicle

Function	Can begin under existing law	Requires incorporation	Requires a new international instrument
HulB measurement	Research body, public methodology and voluntary data	Data access, official evidential use	Only for privileges, mandatory cooperation or treaty status
GIRA rating	Publicly issued, contestable opinion	Regulatory, public-procurement or contractual effect	Only for a common public authority or immunities
GFEA pricing	Indicative reference prices	Taxation, levy, contribution and budgetary power	For coordinated obligations between States
BFM adjustment	National pilot within existing customs powers, subject to the law	National collection, certificates and redress	For mutual recognition or common disciplines
GSF financing	Voluntary/endowed fund	Allocation and beneficiary rules	For mandatory contributions or treaty privileges
IPDA certification	Model law, voluntary accreditation and standards	Enforceability, market surveillance and penalties	For an inter-parliamentary authority with common effect
Court adjudication	Internal review and consented arbitration	National legal action and enforcement	For treaty jurisdiction over States and common avenues of redress

Table 8 — Common governance risks, safeguards and supporting evidence

Risk	Minimum safeguard	Proof of effectiveness
Political capture	Staggered appointment channels, removal for cause, minority opinions	Diversity of appointments, dissent and circumvention statistics
Financial capture	Multi-source budget, funding caps, protected core endowment	Donor concentration and budget continuity tests

Risk	Minimum safeguard	Proof of effectiveness
Epistemic capture	Open methods, replication grants, adversarial challenge	Replication results and methodology change log
Data capture	Purpose limitation, access controls, deletion and independent security audit	Reporting on breaches, access and retention
Strategic exit	Severability, portability of standards and wind-down rules	Continuity under withdrawal scenarios

Seven pathologies threaten any control architecture; naming them together with their early signal makes it possible to detect them before the consequence. Each finds here a structural remedy, not an exhortation to virtue.

Pathology	Mechanism	Early signal	Remedy in the architecture
Capture	An assessed entity steers the body that assesses it	Abnormal convergence of ratings towards a dominant actor; appeals in decline	Governance parity; negative mandates; non-circular budgets (P6); rating not paid for by the rated
Mandate drift	A body extends its functions beyond its mandate	Out-of-scope decisions, overlap with a neighbour	Explicit negative mandate (§5.2-5.8); legality review by the Court
Inter-body collusion	Two bodies coordinate to circumvent a control	Ratings and prices moving together without a common factual basis	Separation of rating and pricing; single measurement source (HuIB); auditable interface case files
Turf war	Two bodies claim the same function	Duplicate referrals, conflicts of competence	One function = one duty-holder (derivation §4.7); jurisdictional arbitration by the Court
Revolving door	Movement of staff between the body and assessed entities	Recruitments/departures to rated entities	Incompatibilities and cooling-off; named operational signature (§5.3)
Venue shopping	A party chooses the most favourable body	Referrals directed to the least strict body	Jurisdiction by consent; internal primacy of the Charter (Art. 22 §2); closed interfaces
Under-enforcement	A body refrains from acting against powerful actors	Gap between cases detected and cases handled, widening with the size of the actor	Publication of handling rates; redress for the affected party; review by the Court

5.2 Human Impacts Board (HuIB) — the measurement layer

Mandate. An independent scientific body that makes human impacts measurable: it maintains the shared taxonomy of externalities (twenty families — from climate and air quality to digital harms and financial instability), sets the methods, and publishes measurements in the form of ranges attached to confidence grades, never in the form of point estimates with false precision. Its data contract specifies, for each published measurement, the

metric, the range, the evidence grade and the quality level, under persistent identifiers. Its founding axiom: one can only correct what one can measure.

Its mission has a corollary: to narrow the gap between what GDP counts and what actually counts — to measure the cross-border share of the harm that national accounting records the wrong way round (defensive expenditures counted as positive) or leaves off its books (the costs shifted onto others or onto future generations). What the Board measures — health, mortality, access, degradation suffered — belongs to what Amartya Sen called capabilities: the real freedoms to be and to do that income does not capture (Sen, 1999); the human impacts ledger is their institutional inscription.

In naming and pursuing a *‘ilm al-‘umrān* — a science of human social organisation — Ibn Khaldūn proposed, six centuries ago, to render society intelligible through the systematic observation of its regularities (Ibn Khaldūn, 1377). The Human Impacts Board constitutes an attempt to give that ambition a permanent institutional anchorage, and to extend it to a connected world where harms travel across borders and generations.

The closest institutional precedent is the Intergovernmental Panel on Climate Change. The IPCC did not produce climate science; it assessed, synthesised and made it public (IPCC, 2023), carrying authority without coercive power — a model whose 2007 Nobel Peace Prize recognised that it lays the foundations of action. The Human Impacts Board generalises its logic, from climate to the whole range of human impacts: to produce robust, contestable and politically usable knowledge about global externalities. But the IPCC also marks its limit. Six assessment cycles have not sufficed to bend the trajectory of emissions: a science that informs without anything downstream rating, pricing or adjudicating leaves the accountability loop open. It is precisely that void which the chain fills — measurement is not the end, but its first link. Two design lessons follow: independence from political validation of the summary, and publication of minority opinions, so that scientific authority is not paid for by consensual dilution.

Operation. The Board’s process runs through the following steps:

1. Frame (taxonomy, affected population, scope).
2. Measure (each method — life-cycle, input-output, quasi-experimental, expert elicitation — capped at the highest causal level it can defend).
3. Qualify (evidence grade A–D, quality level Q1–Q5, uncertainty propagated in the form of bounded bands, never by quadrature, which would manufacture false precision).
4. Adversarial notification (the measured entity is notified and may file evidence before publication).
5. Certify (vote of the scientific committee, minority opinions preserved).
6. Publish traceably, the result constituting the exact input of the rating authority.

Each published measurement carries a nineteen-field data contract under a persistent identifier; declared gaps are never filled by invention; the whole methodological stack is revised on a multi-year public cycle. The human impacts ledger kept by an entity enters there as an item for examination, not as a verdict: placed on the case file, tested against independent sources and submitted to adversarial notification before any certification — the Board retains from it only what it can verify, never the raw declaration.

Precedents. The IPCC has shown since 1988 that a global scientific body endowed with public methods and governmental oversight can establish facts with political consequences without governing anyone — confined, however, to a single domain and to an assessment rhythm too slow for continuous measurement. The United Nations Secretary-General’s Beyond-GDP expert group and its compass of some thirty indicators, Action 53 of the Pact for the Future, and the 2025 revision of the System of National Accounts establish that the political mandate to measure beyond product has already been granted — in the form of

dashboards and standards, not of a permanent measurement body. UNDP's inequality-adjusted and planetary-pressures-adjusted indices and the United Nations ecosystem accounting attest to the technical feasibility of metrics including well-being and nature — aggregated by country, not attributable to actors and flows. The Board generalises what these pioneers demonstrated, and adds the two properties that all of them lack: continuous attribution, at the level of entities and flows, and an institutional consumer for every figure.

A second lineage illuminates its function: the genuine progress indicators (ISEW, GPI; Daly and Cobb, 1989), the Measure of Economic Welfare (Nordhaus and Tobin, 1972) and the theory of social costs (Kapp, 1950) have each, in their own way, measured the “bad” share of GDP — occasionally and without an institution. The HuIB makes this the charge of a permanent, contestable and public body, without replacing GDP.

Two boundaries. The Board measures only the cross-border and intergenerational share of that gap — purely domestic defensive expenditures remain outside its mandate. And its object is not to reduce output but to improve its composition: to reduce illth, to preserve wealth — a requirement of quality of growth, not of degrowth.

Negative mandate. The Board does not rate, does not price, does not adjudicate, recommends no policy, and never manufactures a missing figure — gaps are declared as such.

The power to measure is also a power of knowledge. In delimiting the families of externalities, in deciding which harms are measurable and which causalities are recognised, the Board — and, downstream, GIRA when it fixes their severity — does not merely record a pre-existing reality: it takes part in defining what counts as an externality, who is recognised as author, victim or beneficiary, and which populations become visible (Barnett and Finnemore, 1999). To classify is already to exercise power. This is why the classification itself — the boundaries of the families, the severity thresholds, the assumed exclusions — is published, versioned and contestable on the same footing as the measurements it organises, and not treated as a neutral datum.

Interfaces. HuIB is the architecture's single source of quantitative truth (P5): the rating authority consumes its measurements as structured inputs; the pricing authority uses them doctrinally through the rating channel; the border mechanism derives footprint factors from them; the fund commissions HuIB — never itself — to re-measure results after disbursement; the court seeks scientific opinions in contentious cases; the digital authority co-defines with it the thresholds qualifying high-human-impact AI systems.

Safeguards. Independence from downstream users (none of them can commission a measurement); full methodological publicity; adversarial challenge procedures; and judicial review — the Board's acts are themselves contestable before the Court.

Sequencing. HuIB is the natural first mover: a measurement institution requires no treaty in order to begin producing value, and its outputs are the precondition of everything that follows downstream. Its intellectual filiation runs from Stiglitz, Sen and Fitoussi (2009) to the Dasgupta Review (2021), through to the United Nations beyond-GDP workstream of which it constitutes the institutional culmination.

Accelerated mode. Under a certified shock, HuIB switches to accelerated nowcasting — provisional measurements published more rapidly and attached to wider, clearly flagged bands — and maintains a standing polycrisis watch; it still does nothing but measure (see Section 11).

Data governance. Continuous measurement at the level of entities and flows requires lawful access, provenance traceability, purpose limitation, confidentiality levels, secure computation, rights of rectification and deletion schedules. A measurement gap caused by data that are unavailable or unlawfully obtained must remain a declared gap; technological feasibility never confers legal authority.

5.3 Global Impact Rating Authority (GIRA) — the translation layer

Mandate. GIRA condenses HuIB's measurements into signals usable for decision, and rates exactly two objects. Per externality, it issues a dimensionless severity coefficient — bounded, with neutrality at one — used downstream to modulate fiscal and customs consequences. Per entity, it issues a class (A+ to E) together with an outlook, produced by transparent aggregation according to a published and versioned methodology, in which certain red-line findings cap the class in a non-offsettable manner. It inverts the perspective of conventional ESG: it rates the harm that an actor imposes on humanity (impact materiality), not the risk that the world places on the actor's portfolio.

Operation. The process runs through the following steps:

1. Ingestion of certified measurements (with provenance and version).
2. Normalisation and weighting according to published doctrinal weights.
3. Aggregation, then capping (the per-externality severity coefficient is bounded and dimensionless; red-line findings cap an entity's class in a non-offsettable manner).
4. The AI linter flags anomalies, inconsistencies and class jumps.
5. A named human analyst signs — never the machine.
6. Publication of the class, of the outlook, of a separate confidence index, and of an "unrated" status where data are absent (absence is never an automatic penalty).
7. Challenge and revision before a committee distinct from the authors of the rating.

The capping matrix is versioned so that every historical rating can be faithfully recomputed according to the method that produced it.

Precedents. The credit rating agencies constitute the decisive precedent — not as a model to admire, but as proof of the channel: an unregulated private opinion, incorporated by reference into regulation and contracts, disciplines even sovereign States. And the mechanism is established: this authority was not wrested from States — it was delegated to the agencies. Governments wrote ratings into their own regulation, to the point that in the United States the sovereign ratings of Moody's and Standard & Poor's have the force of law (Abdelal, 2007, pp. 162-165; Abdelal and Blyth, 2015). Their documented defects — conflicts of interest in the issuer-pays model, post-2008 failures, and a structural bias quantified by UNCTAD (sixty-eight developing countries below investment grade, against twenty-four above, while a separate UNDP study estimated up to 74.5 billion US dollars of excess interest cost and lost financing for African sovereigns) — are not reasons to abandon the instrument; they constitute the specification for its inversion. The ESG rating agencies prove the market demand for an extra-financial assessment — and, through their massive methodological divergence, the cost of proprietary opacity. The rating authority retains the proven mechanism and inverts its defects point by point: impact materiality instead of portfolio risk, transparent box instead of black box, and never paid by the rated entity.

SOURCE CLARIFICATION UNCTAD's 2024 review confirms the distribution of 68 countries below investment grade against 24 at investment grade, and examines the extent of the bias. The estimate of up to 74.5 billion US dollars of excess interest cost and lost financing comes from the 2023 UNDP study and must be assessed according to its own model assumptions.

Regulatory licence. The issuer-pays conflict is only the first leg of the agencies' failure; the second is the regulatory licence. Once a rating is incorporated into a consequence — prudential risk weighting, collateral eligibility, and here pricing and adjustment — it creates a mandatory demand: the rater's authority then proceeds from delegation, not from accuracy, and the delegator, having forgotten that it delegated, no longer knows how to take it back. That is the question Abdelal and Blyth (2015) put to the agencies — who put you in charge? — and whose answer, we did, is an admission of design. The rating authority is exposed to the

same mechanism, and the document does not deny it: its rating feeds a consequence, therefore it creates a demand. It responds to this by what no rating regime has ever brought together — accreditation of a plurality of raters rather than a monopoly (§13), a versioned transparent-box method, challenge of every rating before the Court by the rated entity as well as by affected parties, and external certification of the algorithmic pipeline by the digital authority (§5.7) — the detail of which appears below. The licence is therefore not avoided: it is assumed, and attached to the forum that was missing.

Negative mandate. GIRA does not measure (it consumes HuIB); it sets no monetary price (that is GFEA's function — the coefficient is a pure number, never an amount); it never rates individual persons (no social scoring); it never rates acts as such; and it never attributes legal responsibility — fault falls within the exclusive competence of the Court. The three rungs of the rating ladder are strictly ordered: measured (HuIB), rated (GIRA), adjudicated (Court); a rated entity is not thereby a liable entity. Corollary: an entity's human impacts ledger feeds HuIB's measurement upstream — where it is verified adversarially (§5.2) — not the rating; GIRA never rates self-declared data, but only certified measurements, and it is the interposition of an independent measurer that separates it from ESG self-declaration.

Interfaces. Inbound: HuIB's normalised indicators (the most critical data contract of the architecture). Outbound: the class and the coefficient to the pricing authority (the “heart of the chain”); the coefficient to the border mechanism under a firm contract; eligibility signals to the fund; published ratings to the markets as an informational public good; complete case files to the Court where a rating is challenged.

Safeguards. Transparent-box methodology (published weights, versioned modifications); strict separation of any commercial activity from analysis; absolute prohibition of the issuer-pays model (the rated entity never pays; its positive source of financing — a mutualised levy and an independent endowment — falls under §5.10); human validation of every rating, AI systems being confined to flagging; contestability by the rated entity and by affected parties; and certification of its algorithmic pipeline by the digital authority.

Sequencing. A proto-GIRA can operate on pilot sectors from published data well before any treaty — the least costly and fastest proof of concept of the architecture.

Accelerated mode. During a systemic episode, GIRA issues an accelerated contagion and severity signal and may re-rate fast-moving harm, according to published criteria open to challenge (see Section 11).

The rationale for this layer is a problem of asymmetric information. The entity knows its footprint; third parties do not — and without credible certification, adverse selection sets in: “impact-lemons” drive out real impact, exactly as lemons drive good cars out of a market where quality cannot be verified (Akerlof, 1970). A rating corrects that defect only if it is costly to falsify and credible: hence the contestable signal (Spence, 1973), the independent measurement upstream (HuIB) and, above all, the rule that the rating is never paid for by the rated (P6) — for a rater remunerated by the entity it rates reproduces the conflict that discredited the credit rating agencies. GIRA's informational solvency rests on that separation, not on its method alone. Market regulators have, moreover, found as much for existing extra-financial ratings: opacity of methods, conflicts of interest and divergence of ratings led them to recommend transparency, management of conflicts and dedicated governance (IOSCO, 2021) — precisely the properties that the separation of measurement from rating and the non-payment by the rated write into the design, rather than leaving them to goodwill.

5.4 Global Financial Equity Authority (GFEA) — the pricing layer

Mandate. The Global Financial Equity Authority never presumes that an impact must receive a price. It determines first whether a financial consequence is legally and economically admissible in the light of the class of the case file, the quality of the identification, the net loss,

the offsetting benefits, the domestic vulnerabilities and proportionality. It may conclude that there is no consequence, recommend a non-financial measure, route the case file towards solidarity, establish a reference price for an efficiency correction, or find that a question falls under the applicable law rather than under pricing. It does not measure, does not requalify the facts and never turns an equity decision into proof of responsibility.

The legal nature of this equity contribution is specified rather than left open, for the qualification fixes its legal basis, the competence required to levy it, and the standard of review it must satisfy. It is designed as a regulatory charge tied to a measured base and to a published methodology — not as a general tax on income or wealth, nor as a charge having equivalent effect to a customs duty — so that it can be incorporated through the ordinary fiscal and regulatory competences of an adopting jurisdiction rather than requiring a new taxing power. Where a jurisdiction's own law would qualify it otherwise, it is that qualification, and not the label used here, that prevails.

Operation. The sequence is as follows:

1. Frame the referral (which externality, which entity, who decides, who pays).
2. Collect the base from the measurement and rating layers.
3. Compute the equity contribution (measured base $\times$ published reference price $\times$ severity coefficient; severity counted exactly once; the result carries an “indicative” status until its adoption by a competent authority).
4. Adversarial second look (independent recomputation and examination of legal risk, the assessed entity being notified).
5. Validation by a methodological committee which publishes ranges and minority opinions.
6. Publication, and entry of the assessment in a shared anti-double-penalty register with the border mechanism, so that no measured externality is ever billed twice.
7. Monitoring of remediation, credits being strictly bounded by the evidence and by the contribution itself.

The authority's own budget is independent of the amounts it computes.

Precedents. The OECD's Pillar Two (OECD, 2021) shows that a global minimum taxation standard can be designed and adopted across jurisdictions without a universal treaty — within a restricted circle, and resting on profit rather than on impact. The United Nations framework convention on international tax cooperation — carried by the Africa Group and launched by a General Assembly resolution adopted by 125 votes — attests that the political mandate for universal tax cooperation now exists; it remains a negotiation, not an authority. International solidarity levies on air transport illustrate earmarked micro-taxation at international scale. The FACTI Panel quantified the cost of non-enforcement. The financial equity authority assembles this evidence into a single function: a published price per unit of measured impact, executable by any tax administration that chooses to incorporate it.

Negative mandate. GFEA neither measures nor rates — and never recomputes a rating. It does not collect: there exists no global tax administration in this architecture; collection remains the province of the national systems that incorporate the scale (fiscal subsidiarity, P3). It does not redistribute (the fund's function) and does not adjust at the border (the mechanism's function).

Interfaces. Inbound: the ratings (GIRA), the doctrinal foundations (HuIB, through the rating channel), and the scope of the border mechanism so as to avoid double correction. Outbound: executable allocation rules and earmarked revenues to the fund; the reference price per unit of impact to the border mechanism (firm contract, mirroring the contract on the coefficient); usage feedback to GIRA, expressly non-binding.

Safeguards. Parity between impact-source and impact-recipient jurisdictions in its governance (anti-capture); prohibition of automatic verdicts (a rating triggers an assessment, never a sanction, and appeal remains open); full traceability of every scale; judicial review of proportionality. An avenue of redress with suspensive effect is open in the event of a substantial error in the computation; and the allocation of the proceeds is separated — victim reparation, preventive financing and general revenue are not conflated, the collecting authority not enriching itself from what it levies.

Sequencing. First the doctrinal work and the shadow pricing pilots; the scales incorporated only where legislators adopt them.

Accelerated mode. Its contributions are designed to be contingent on the state of the economy — easing automatically during a certified downturn and tightening in expansion — through a pre-established formula rather than discretionary derogations (see Section 11).

The reference price that this layer publishes belongs to the lineage of climate economics: it was Nordhaus (1991), with the DICE model, who founded the idea that an externality is priced at its social cost, of which the social cost of carbon is the archetype — held here in explicit ranges (Rennert et al., 2022), never in a single figure, so sensitive does the value remain to the discount rate. But the architecture does not take from that tradition an objective of efficiency in the static sense: it embraces a more demanding one. Sustainable efficiency is not separable from justice. An order that lets uncompensated harm accumulate is not efficient — it merely defers its bill, in instability, in lost trust and in crises (§13, §11); the static trade-off between efficiency and equity dissolves as soon as the dynamic cost of untreated injustice is written into the price. That is the lesson that the sustainable governance of the commons established empirically — inequitable rules are not complied with and collapse (Ostrom, 1990) — and that the epigraph of this document sums up: injustice ruins civilisation. Pricing harm is not a supplement of soul added to efficiency: it is its condition.

A symmetry must be maintained. If negative externalities are over-produced for want of being priced, positive externalities — foremost among them knowledge and innovation — are under-produced because their producer does not capture their full value (Romer, 1990). The architecture prices the former; it must never penalise the latter. An activity with net positive knowledge spillovers — open research, digital commons — falls under support, not under charge; the rating layer (§5.3) separates the harmful footprint from the contribution, and the negative list (§7) bounds what may be priced. To correct harm is not to discourage progress: it is to remove from it the share that is paid for by others.

5.4.1 Debtor, enforcement and immunity

The obstacle, stated at its full strength. The debtor designated in §9.7 — the source central bank, on assets held for its own account — falls, in the principal jurisdictions, within the best-protected category of property in international law. In the United States, the Foreign Sovereign Immunities Act renders the property of a foreign central bank held for its own account immune from attachment and execution, save for explicit waiver by the bank or by its State; that immunity does not depend on the institution's independence, and central banking activity that might have the appearance of commerce does not defeat it (*NML Capital v. Banco Central de la República Argentina*, 2011). In the United Kingdom, the State Immunity Act 1978 provides that the property of a central bank is not to be regarded as in use for commercial purposes, which places the balances of its accounts beyond the reach of execution. In France, Article L. 153-1 of the Monetary and Financial Code renders the assets of foreign central banks immune from attachment, subject to a narrow exception conditional upon judicial authorisation. The United Nations Convention on Jurisdictional Immunities of States and Their Property (2004) reserves to them a quasi-absolute immunity from measures of constraint (Articles 19 and 21); it has not entered into force, but reflects the practice of the principal fora. Two clarifications complete the picture: immunity from execution is distinct

from immunity from jurisdiction and survives it; and waiver, where admitted, must be express and specific. A judgment rendered against a central bank is therefore, as a general rule, unenforceable against its reserves.

Why this obstacle does not reach the arrangement. It would be fatal if the architecture sought to attach assets. It does not seek to, and it could not: GFEA's negative mandate forbids it to collect (§4.7). The remedy is not a measure of constraint bearing on property; it is an accounting obligation. The impact is measured by HuIB, rated by GIRA, priced by GFEA — and recorded by the central bank itself, as a deduction from the profits it remits to its treasury. Immunity from execution is engaged by measures of constraint; a self-assessed and published deduction is not one. This is not a circumvention: it is the only form of the remedy compatible with its purpose (§9.7). A seizure would move money; a recorded and published charge changes a decision. The corollary deserves to be stated: the efficiency ground survives immunity, where a purely reparative ground would succumb to it — if the object were to obtain a payment, execution would be indispensable and immunity would prevail.

Three layers, in order of availability. The first calls for no consent: measurement and rating. No State is immune from being measured, and Box 6 shows that the measurement already exists. That layer alone activates the second monitor described in §9.7. The second is incorporation through the existing fora — Article IV surveillance, Basel standards, Bank for International Settlements committees: incorporating a spillover rating there requires no waiver, since no constraint bears on property. The third is express and specific waiver, at treaty level (rungs L3 and L4 of §12.1), for the central banks that adhere. The instrument of accession must stipulate it: drafted, not presumed.

What the architecture cannot do, and does not claim to do. It cannot compel a source jurisdiction that has not consented to pay. The lever that works elsewhere in the chain — market access, on the model of border adjustment (§5.5) or of the undertaxed profits rule — does not reach a central bank: it sells nothing in the recipient jurisdiction that could be adjusted at its border. The monetary case is therefore the one where the corrective bite is reputational and political before it is pecuniary. This is not an oversight but a limit, and it is no exception to principle P3: nothing binds without consent. The architecture nonetheless has here a lever that the other free-rider problems lack — the treasury of the source State itself (§9.7) — and that lever is not operated by constraint, but by publication.

A necessary distinction. Recent practice might lend itself to confusion. Restrictive measures targeting central bank assets have shown themselves to be materially possible where the custodial jurisdictions act in concert. They remain legally contested, and they proceed from a logic of sanction: unilateral, asymmetric, without a judge. That is the exact opposite of what is proposed here — a general rule, symmetrical, consented to, measured by a scientific third party and subject to review by the Court. The architecture does not rest on that precedent; it separates itself from it.

Table 9 — Immunity from execution of central bank assets: applicable regimes and scope for the GFEA

Jurisdiction or instrument	Rule applicable to central bank assets	Waiver	Scope for the GFEA
United States — Foreign Sovereign Immunities Act, § 1611 (b) (1); NML Capital v. BCRA (2011)	Property held for its own account: immune from attachment and execution. The independence of the institution is immaterial; commercial appearance does not defeat immunity.	Explicit, by the bank or its State	Attachment excluded. A self-liquidating accounting entry is not a measure of constraint.

Jurisdiction or instrument	Rule applicable to central bank assets	Waiver	Scope for the GFEA
United Kingdom — State Immunity Act 1978, art. 14 (4)	The property of a central bank is not deemed to be in use for commercial purposes: account balances escape execution.	Express	Idem.
France — code monétaire et financier, art. L. 153-1	Assets of foreign central banks, in particular reserves: not subject to attachment. Narrow exception, upon authorisation of the enforcement judge.	Express and specific	Idem.
United Nations — 2004 Convention, art. 19 and 21 (1) c)	Near-absolute immunity from constraint. Not in force; reflects practice.	Express	Idem.

5.5 Border Fairness Mechanism — the adjustment layer

Mandate. The Border Fairness Mechanism makes the border a point of fairness: where a cross-border flow embodies a human externality that has been measured, rated and not priced, the Mechanism applies a correction to market access — always founded on the measured gap, never on nationality. Its response is calibrated by category of case, not uniform: a price adjustment for measurable environmental externalities (the logic of the CBAM, generalised); a non-offsettable exclusion for gravely unlawful conduct (P8); a levy on destabilising financial flows, in the lineage of the Tobin tax (the pricing doctrine belongs to GFEA; the Mechanism merely applies in passage the scale already set, §5.4); mandatory disclosure for financial services and products. The revenues are earmarked for the solidarity fund.

Operation. The process unfolds in six steps:

1. Declaration (an importer files the product passport; exporters attach certificates).
2. Measurement of the fairness gap (the measured footprint and the severity coefficient compared with the sectoral benchmark).
3. Computation of the adjustment, crediting any equivalent charge already paid on national territory — the anti-double-charge logic of national treatment law — and pricing the process, never the country (nationality neutrality is hard-wired).
4. Adversarial review, with appeal before the Court.
5. Collection at the customs point through the existing infrastructure.
6. Publication of every computation on a public fairness register and transfer of the revenues to the solidarity fund — not to the budget of the jurisdiction applying the adjustment: the structural difference with the CBAM, whose proceeds feed the Union budget.

Precedents. The CBAM, in its definitive regime since January 2026, shows that border adjustment on a measured externality is operational at the scale of a major customs union — operational, but — as at the date of writing, July 2026 — not yet settled in law: its compatibility with trade law remains contested and untested before any panel (a dispute was indeed brought before the WTO in 2025 — DS639 — consultations having been declined and no panel established to date) — for a single externality, the revenues being retained at national level. The WTO customs valuation system and the some 5,600 headings of the Harmonized System establish that a universal customs language exists and works daily; its base is market value, not impact. Anti-dumping and countervailing practice attests that a surcharge computed on a measured gap is legally commonplace — within a logic of competition. And the

forced-labour import bans that several jurisdictions already apply illustrate the most demanding window of all in positive law: non-offsettable exclusion. The Mechanism generalises the logic of the measured gap to the whole set of externality classes and, unlike all the precedents, sends the proceeds to the victims rather than to the collector's treasury.

The process and the product. Step 3 of the Mechanism prices the process, never the country, and that formula covers the most difficult legal question the architecture has to face. Trade law indeed distinguishes externalities incorporated into the product — the carbon in a steel, the pollutant in an input, measurable on the merchandise itself — from process externalities not incorporated into the product: the working conditions under which it was manufactured, the data governance that served it, the algorithm that designed it. Two physically identical goods may arise from processes one of which causes harm and the other not. A border measure that treats them differently claims to discipline what the law long held to be indiscernible at the point of entry. That is the knot of the Mechanism, and this document names it rather than skirting it.

The precedent, and what it settles. The product/process distinction is written nowhere in the text of the GATT; it was built by practice, and its disciplinary reach has been forcefully contested (Howse and Regan, 2000). In *United States — Shrimp*, the Appellate Body examined an import prohibition founded not on a characteristic of the merchandise, but on the method of fishing — the use of a turtle excluder device. It held the measure provisionally justified under Article XX(g) — in other words, a border measure resting on a process may fall within an exception — and it faulted it only under the chapeau: arbitrary and unjustifiable discrimination, for want of flexible application, fair procedure and serious efforts at prior negotiation (WT/DS58/AB/R, adopted on 6 November 1998). Once the United States had corrected those three defects, the revised measure — still founded on the process — was held to conform to Article XX (WT/DS58/RW, 15 June 2001, upheld on appeal).

The lesson, and why it favours the Mechanism. It is not the grounding in the process that was condemned: it is the manner of applying it. What the Appellate Body required is exactly the three disciplines that the Mechanism carries by construction. Flexibility: recognising a comparable effectiveness rather than imposing an identical measure — that is the function of the equivalence credit at step 3. Fair procedure: publication of every computation on a public register, adversarial review, appeal before the Court — steps 4 and 6. And the effort at prior cooperation: the single-sector pilot with volunteer jurisdictions, the upgrading credits, and the special and differential treatment anchored in the Enabling Clause. Nationality neutrality, hard-wired, answers the second limb of the chapeau. The precedent therefore dispenses with none of these disciplines: it makes them the condition of legality, and the Mechanism holds them as such.

Three tiers, and the document says where the law stops. Tier 1 — externalities incorporated into the product (carbon, measurable pollutants): price adjustment in the strict sense, in the outline of the CBAM, defensible under subparagraphs (b) and (g) of Article XX, on the conditions of the chapeau. Tier 2 — processes not incorporated into the product (labour, data, algorithmic governance): the litigation risk there is high, and it is assumed (Howse and Regan, 2000; Pauwelyn, 2013). The Mechanism therefore employs there not the generalised levy, but the only two instruments of which positive law already bears the trace — non-offsettable exclusion for gravely unlawful conduct, on the precedent of the forced-labour import bans (P8), and the L2-level instruments of the ladder in §12.1: public procurement clauses, contractual access conditionalities, notified preferences, which bind only consenting parties and are the strict application of P3. Tier 3 — a generalised border levy on non-incorporated processes: it is subordinated to a favourable external legal memorandum and to the evolution of case law; until then, it is an object of research, not an operational link. This gradation confers on the Mechanism no status of settled link: the chain remains closed at tiers 1 and 2; its generalisation is conditional, and said to be such.

Negative mandate. The Mechanism sets no general fiscal doctrine (GFEA’s function), produces no science of its own (it consumes HuIB and GIRA), decides no use of the funds, is not a tribunal (first-instance disputes fall to its contentious chamber, appeals to the Court), and is never an instrument of geopolitical retaliation — nationality neutrality is absolute.

Interfaces. Inbound: HuIB’s physical bases; GIRA’s severity coefficient (firm contract); GFEA’s reference price (firm contract); the digital authority’s algorithmic certification. Outbound: revenues earmarked for the fund according to a published distribution key (provisional pending deliberation); field feedback to HuIB and GIRA, non-binding; reasoned case files to the Court where adjustments are challenged.

Safeguards. An explicit anti-protectionist clause; special and differential treatment for low-capacity countries — anchored in the tradition of development-based differentiation of the Enabling Clause, with objective and published eligibility criteria, so that it composes with nationality neutrality rather than contradicting it (the process is priced identically for all; the accompaniment differs according to capacity, never according to origin as such) — including upgrading credits rather than exclusion from trade; publication of the computation of every adjustment; a discipline of WTO compatibility (the Mechanism prices measured harm — it does not discriminate according to origin, which constitutes at once its ethic and its best legal defence, on the precedent of the CBAM).

QUALIFICATION UNDER TRADE LAW An origin-neutral design is necessary but not sufficient for WTO compatibility. A pilot must test the effects on product likeness, the most-favoured-nation clause and national treatment; the availability and application of the Article XX justifications; necessity and proportionality; the credit granted to equivalent measures; due process; special and differential treatment; and the prohibition, laid down by the chapeau, of any arbitrary or unjustifiable discrimination. WTO compatibility is a legal undertaking, not a property created by mere assertion of design.

Table 10 — Border Fairness Mechanism: legal qualification by window

Window	Possible legal form	Principal disciplines	Publication condition
Environmental price adjustment	Internal tax adjustment or import charge	GATT I, II, III and XX; likeness; equivalent internal charge	Measure-specific WTO opinion and domestic symmetry
Exclusion of gravely unlawful flows	Import prohibition / quantitative restriction	GATT XI and available exceptions; procedural safeguards; evidence	Defined legal basis, necessity and appeal
Levy on financial flows	Taxation or financial regulation	GATS, Annex on Financial Services, tax and capital rules	Nexus, non-discrimination, prudential and tax analysis
Services/products disclosure	Technical regulation or conformity assessment	TBT, GATS VI/XIV, privacy protection and trade secrets	Necessity, interoperability, assistance and review
GSF-linked disbursement	Subsidy or benefit to recipients	SCM Agreement where a benefit specific to an enterprise/industry exists	Subsidy qualification and safeguards

Sequencing. Three circles: a single-sector pilot basket with volunteer jurisdictions; a multi-sector extension; a multi-impact regime.

Accelerated mode. Under a certified supply or price shock, it may grant pre-authorised and time-limited derogations, and accelerate the equivalence credit, so that the adjustment absorbs the shock instead of amplifying it (see Section 11).

Two specialised bodies of work support the feasibility of this layer. On the technical side, the design of unilateral measures against carbon leakage — when and how to adjust at the border without penalising wrongly — has been the object of a dedicated literature that illuminates its efficiency and equity effects (Böhringer, Carbone and Rutherford, 2012). On the legal side, the

compatibility of such adjustments with WTO law — non-discrimination, national treatment, Article XX exceptions — has been analysed in detail and conditions the form the mechanism can take (Pauwelyn, 2013). The mechanism situates itself within that double constraint: pricing the process and not the country, crediting any charge already paid, and submitting to judicial review — all choices that answer the requirements those works identified.

5.6 Global Solidarity Fund (GSF) — the financing layer

Mandate. The fund turns the architecture's revenues into protection: a Stability window for rapid disbursement in the event of a shock, and a Solidarity window for the programmed financing of a durable recovery — grants as a priority, and never debt imposed on the most vulnerable. Allocation follows the equity measurements produced upstream — exposure measured by HuIB, priority set by GIRA — according to rules laid down by the pricing authority, with full traceability from revenue through to result. The measurement of exposure distinguishes the suffered, structural and eligible share from the reasonably avoidable share arising from a policy choice: the fund repairs and protects, it does not subsidise improvidence — the mirror of the idiosyncratic premium held at zero (§9.2).

Operation. The circuit unfolds as follows: identify the need (a signal from the measurement body, a shock threshold or a community referral) → assess eligibility against non-offsettable blocking criteria (fit with the mandate, established need, admissible operator, additionality) → decide within an allocation committee with declared conflicts of interest and reasoned decisions, kept separate from the analysis → disburse in conditional tranches with dual sign-off and a clawback clause → verify impact through a re-measurement commissioned from the measurement body at twelve months, published. Emergencies take a distinct and capped fast track, with ex post audit. The two windows — stability and solidarity — are sealed from one another: no transfer between them without a reasoned and recorded decision; and targeting follows measured need, never the rating class.

Precedents. The Global Fund has kept a global thematic fund alive for a quarter of a century through periodic replenishments — proof of a durable multilateral pooling, sectoral and dependent on pledges. The Loss and Damage Fund moved from decision to operationalisation in two years — attesting that speed is possible — and remains underfunded and disconnected from any measurement layer. Sovereign stabilisation funds and parametric sovereign insurance demonstrate disbursement on an objective trigger and counter-cyclical smoothing — at national level, and capped. Each precedent falls short on the same two properties: a permanent source tied to the externality-correcting flows themselves, and the absence of austerity conditionality. Those two properties constitute the very definition of the fund.

Negative mandate. The fund neither taxes nor collects (the GFEA and the Mechanism feed it); it neither measures nor rates (it commissions HuIB to measure results — a deliberate inversion of the usual pathology of self-evaluation); it is not a development bank in search of return; and it imposes no austerity conditionality — its conditionality is traceability, not the surrender of sovereignty in matters of policy. That discipline applies differently by window: the Stability window disburses unconditionally on parametric triggers (§11), for one does not attach conditions to emergency relief; the Solidarity window directs its financing towards a recovery that reduces future exposure, so that support extinguishes itself as measured exposure falls — it is success, not failure, that ends it (§12.6). In both cases, the sole requirement remains traceability from revenue to the result measured by HuIB, never a policy prescription. This separation — the fund finances but does not rate — is precisely what distinguishes its financing from that of a lender who is also its own judge: the condition is set by a neutral measurement (HuIB/GIRA), not by the creditor.

Interfaces. Upstream: earmarked revenues (Mechanism, GFEA); exposure measurements (HuIB); priorities (GIRA); legitimisation of its allocation algorithm (digital authority) and

judicial review (Court) — two interfaces that a single-mandate design must take care not to omit (section 13). Downstream: disbursements to beneficiaries; effectiveness feedback upstream, non-binding; full audit trails transmitted to the Court.

Safeguards. Additionality (no substitution for existing ODA); the non-circularity rule (P6): a seed endowment independent of border revenues, with a designated guarantor, so that the fund's existence never depends on the flows it is meant to complement; a cap on emergency disbursement; anti-double-financing and beneficiary-integrity controls.

Sequencing. An endowed pilot; consolidation; scaling up towards the full regime — with, as the horizon of that regime and not as an initial stake, the order of magnitude of the 2025 proposal (one to two trillion dollars a year, financed by the mechanisms that destabilise rather than by humanity as a whole).

Accelerated mode. A pre-funded rapid-response window disburses on objective parametric triggers rather than on a slow damage assessment — pre-committed and with automatic sunset, and not a discretionary bailout (see section 11).

CLARIFICATION ON THE COSTING. The figure of 1 to 2 trillion dollars constitutes a regime-horizon scenario, not a starting budget nor a demonstrated revenue forecast. A fund proposal requires a bottom-up administrative costing, revenue scenarios source by source, volatility and leakage tests, additionality rules, a currency and liquidity policy, as well as a fallback scale at which each window remains useful.

The architecture here goes beyond a founding criterion of cost-benefit analysis. The Kaldor-Hicks criterion (Kaldor, 1939; Hicks, 1939) holds a change to be a progress as soon as the winners could compensate the losers — even if they never do. The solidarity fund converts that conditional into an indicative: from a possible compensation to a realised one. Where classical efficiency is satisfied with a hypothetical compensation, the architecture makes it effective — and that is precisely what closes the gap between efficiency and justice.

5.7 Democratic certification of digital systems — IPDA as candidate host

Mandate. The digital authority is the democratic chamber of the architecture. Mandated by national parliaments — the institutions that already hold the legitimacy the digital sphere lacks — it lays down transparency standards for algorithmic systems, made opposable by interparliamentary ratification; it qualifies high-human-impact AI systems against thresholds co-defined with the measurement body; it accredits parliamentary delegations; and it certifies the deliberative infrastructures that the architecture itself uses. Its doctrine on AI holds in one sentence: AI signals; elected humans decide.

Necessary function, open hosting. The function to be protected is the independent certification of digital systems that produce, transform or rank evidence. Its existence does not demonstrate that its best hosting is necessarily an autonomous interparliamentary authority. IPDA is one candidate architecture among several: a network of existing regulators, an independent accreditation body, a mixed parliamentary and technical panel, or a distributed function under a common standard. Such a function of independent certification corresponds to a boundary organisation between expertise and political decision (Guston, 2001).

Distribution of legitimacy and competence. Parliaments are legitimate to define the objectives, the risk thresholds, the non-derogable guarantees and the transparency obligations. They should not themselves carry out the technical audits or certify a particular model. Assessments are conducted by technically competent bodies, accredited, independent of suppliers and subject to appeal. The interparliamentary body sets the framework, oversees accreditation and receives the public reports; it replaces neither the regulator, nor the auditor, nor the judge. This division extends the interparliamentary analyses on artificial intelligence, democracy and the rule of law (Inter-Parliamentary Union, 2024).

Selection test. IPDA should be retained as a distinct institution only if it brings legitimacy, coordination and contestability superior to those of a network of existing authorities, at acceptable cost and delay. Failing that, the certification function remains in the chain, but its hosting is federated or distributed.

What parliaments commit, and why. The legitimacy of the digital authority comes not from an imposed treaty, but from a graduated adherence at three levels (§6.4): accrediting a delegation and co-writing the model laws; transposing, clause by clause and according to their own constitutional procedure, the standards they choose to adopt (by graduated majorities); and, for binding obligations alone — mutual recognition of certification, non-derogable floors (§11) — ratifying the Carthage Convention. None of these commitments cedes sovereignty: a model law binds only where a parliament incorporates it (P3). What motivates adherence is symmetrical to the cost: a collective lever over AI that no parliament holds alone, a common standard that removes regulatory arbitrage, and certification as a public good — democratic legitimacy restored to a sphere that lacks it.

Operation. Two streams. The watch observes: detect and rate digital systems along six separately published dimensions (severity, scale, repeatability, vulnerability of the persons affected, robustness of the evidence, urgency — never merged into a single score) → qualify the systems against the register of high-human-impact systems → examine within a time-stamped evidence vault → adversarial deliberation before an editorial-scientific committee. The workshop legislates: draft the model law → expert review → public consultation on the certified deliberative infrastructure → publish with national options → interparliamentary ratification by graduated majorities → national transposition, clause by clause. A model law binds no one by itself; it binds where a parliament incorporates it — all the coercive power of the authority resides in the quality of its drafting.

Precedents. The Inter-Parliamentary Union (IPU), founded in 1889 and today bringing together some 180 parliaments, shows that a permanent global parliamentary federation is not a utopia but an achievement of the Victorian era — endowed with deliberative soft power alone, and whose first resolution on artificial intelligence was adopted in 2024. The model laws of the United Nations Commission on International Trade Law (UNCITRAL) establish that a uniform law spreads through voluntary transposition. The vTaiwan process and its Pol.is infrastructure illustrate that an algorithmic mapping of preferences can bring tens of thousands of citizens to converge on concrete recommendations without deciding anything in their place. The United Nations scientific panel on AI attests to the mandate — advisory by construction. The digital authority combines the four: the representation base of the IPU, the instrument of UNCITRAL, the infrastructure of vTaiwan and the mandate of the scientific panel — plus the one power that none of them holds: certification.

Negative mandate. It neither measures, nor rates, nor taxes, nor adjudicates; it regulates no trade; it is not a global ministry of truth — it certifies processes and transparency, never content, and censors nothing; and it is not “an AI that governs”. A platform abuse nonetheless escapes no consequence: detected and, where appropriate, decertified by the digital authority, it is downgraded by GIRA, priced by GFEA and the Border Mechanism, adjudicated by the Court and enforced by the national authorities that have incorporated it — the sanction is the loss of certified access to markets, not a verdict of the authority itself, which neither adjudicates nor sanctions.

Interfaces. Upstream: parliamentary mandates; thresholds from HuIB; case law of the Court; certification requests from the four operational institutions. Downstream — and here lies the reflexive gesture of the architecture: the digital authority certifies the GAF’s own algorithms (GIRA’s rating circuit, GFEA’s scales, the fund’s allocation engine, the Mechanism’s adjustment computations) under a three-tier risk regime — a gradation by risk also adopted by the European regulation on artificial intelligence (European Union, 2024) —

from self-declaration to mandatory certification through to external audit under judicial review. An architecture that claims to certify the world's algorithms must first submit its own to democratic certification.

Safeguards. Digital subsidiarity (it acts only where no parliament alone can); equity keys of representation in its governance; full publicity of the standards and of the certification reports.

5.7.1 Algorithmic assurance beyond human sign-off.

The human signature is necessary but remedies neither biased data, nor an invalid metric, nor deference to automation. Every high-impact system should therefore carry a data provenance record, a model and system card, a delimitation of the intended use, a pre-deployment impact assessment, an independent red-team report, performance and subgroup thresholds, drift monitoring, incident reporting, change control, secure logging, rights of challenge and correction, as well as a designated and accountable officer. Certification must assess the sociotechnical system, and not the model alone.

Sequencing. Its natural first product is a model law — the instrument through which interparliamentary bodies have often extended their reach — together with the certification of the architecture's own pilots.

Accelerated mode. It offers accelerated certification of emergency algorithmic measures, coupled with mandatory ex post review and automatic sunset, and monitors threats to information integrity, so that automation in time of crisis remains accountable (see section 11).

The power that this layer sets out to render accountable has a particular economic structure. Digital platforms are two-sided markets: they bring together distinct groups — users, developers, advertisers — and network effects concentrate power in whoever holds the intermediation (Rochet and Tirole, 2003). It is that power, and the externalities it shifts onto third parties, that the digital authority seeks to certify and to render contestable — not to administer. The regulator classically knows less than the regulated, and effective regulation is designed under that asymmetry (Laffont and Tirole, 1993). But the architecture updates that premise. Designed natively for AI, the digital authority can reduce the information gap — and, in certain data-rich domains, reverse it: by cross-checking in near real time multiple sources that no regulated entity holds alone — for it knows only its own operations, whereas the authority sees the aggregate, the cross-border spillovers and the comparisons between actors — it applies the informativeness principle (Holmström, 1979) at a scale hitherto out of reach. That superiority remains bounded: it holds only where the facts are observable and cross-checkable, not on private intent or the tacit; it depends on lawful access to data and on fallible models (§14); and it is legitimate only when governed — hence the reflexive certification of its own algorithms and the cardinal principle “AI signals, the human decides”. The asymmetry is therefore not abolished: it ceases to be a fixed disadvantage and becomes a function of the data architecture. Finally, regulating remains difficult — capture, unintended effects, information costs are real; this is why the authority imposes no single solution but certifies, publishes and renders contestable, leaving sanction to judicial review: regulatory prudence is not an argument against accountability, but for an accountability designed against its own modes of failure (§4.6).

A word on what this authority does not do. It certifies; it does not sanction. Sanction does exist — but distributed: legal before the Court (§5.8), economic through pricing and border adjustment (§5.4-5.5), reputational through public rating (§5.3). It is never concentrated in the certifier. This is a deliberate choice, which distinguishes the architecture from a regulator that investigates, certifies and imposes the fine within one and the same body: bringing judge and policeman together in the certifier would give faster teeth, but at the price of the concentration of power and of the circumvention of due process that the rest of the

architecture works to prevent. The teeth are not lacking; they are distributed so as never to be captive.

5.8 Humanity Court — the adjudicative layer

Mandate. The Court is the keystone of legality: it reviews the legality — never the expediency — of the acts of the six institutions in the light of the Charter (section 6); it rules on actions for breach brought by States, by institutions and, subject to conditions of admissibility, by directly affected persons; it settles conflicts of competence; it delivers preliminary rulings on interface disputes and preventive advisory opinions. Its remedies are graduated: declaration, injunction, suspension, annulment with remand — and, as soon as an application is admissible, suspensive effect on the contested act downstream. Its cardinal principle, and the signature of the architecture: the Court guards the guardians, it does not command them. It may annul an unlawful rating or adjustment; it can never dictate the content of the one that corrects it.

CLARIFICATION ON INTERIM MEASURES. The suspensive effect is confined to the contested acts downstream within the architecture, is limited in time and is subject to immediate review of necessity, urgency, proportionality and harm to third parties. The statute must deter dilatory applications and permit a reasoned continuation where the suspension itself would create serious or irreversible harm.

Operation. The procedure unfolds as follows: referral (a standing filter examines the applications) → qualification of jurisdiction under one of three regimes — advisory, consensual or arbitral, treaty-based — of which only the last two are binding → examination within a time-stamped evidence vault, AI acting as a contestable assistant and never as judge → adversarial hearing → deliberation in chamber, with dissenting opinions recorded, according to standards of review of legality, of procedure and of manifest error → decision and remand: the remedies are graduated, from declaration to injunction, to suspension and to annulment, the contested act returning to its author — the Court never re-decides the merits and never enforces on the economic plane (neither automatic seizure, nor automatic compensation, including by the fund) → publication and follow-up of compliance. Interim measures require four cumulative conditions: necessity, urgency, proportionality and scheduled review.

Precedents. The International Court of Justice (ICJ) — whose 2025 advisory opinion on climate clarified the scope of States' obligations, including in matters of reparation — shows the viability of the form of a world court, with access reserved to States. The International Criminal Court (ICC) establishes that a permanent treaty-based jurisdiction can bring together 125 parties — but in respect of individuals, not institutions. The regional human rights courts attest to citizens' direct access to a supranational jurisdiction. Investment arbitration illustrates, through thousands of consent clauses in force, that private actors submit on a large scale to a binding international jurisdiction once the clause is built into the price of the relationship. The Court of Arbitration for Sport (CAS), in Lausanne, offers the most extensive example of this: its jurisdiction, accepted through a clause incorporated into statutes or into registration, extends to the whole of world sport, and its awards are enforced in more than 170 countries under the New York Convention (United Nations, 1958); the Mutu and Pechstein judgment nonetheless recalls its twofold requirement — real independence from those who finance it and a public hearing — failing which consent becomes a façade (European Court of Human Rights, 2018). As for the WTO Appellate Body — paralysed since 2019 by the blocking of appointments — it is retained here as a lesson in design rather than as an objection: the jurisdiction of the Humanity Court is first and foremost consensual and arbitral, so that no appointment veto can by itself extinguish it.

Subsidiary jurisdiction: the complementarity technique. The Rome Statute (Article 17) provides the model of subsidiarity that the Court’s treaty-based regime lacks: the international jurisdiction is activated only if the normally competent order is unwilling or unable to deal with the case. Transposed, the rule is as follows — the Court hears a case file only where no competent national, regional or sectoral forum has examined it under equivalent guarantees: access for affected parties, adversarial process, reasons, publicity and an avenue of redress. Equivalence is established by a reasoned, published and contestable decision. This clause lowers the political cost of adherence, answers in advance the objection of divesting national jurisdictions, and extends the principle of the lightest architecture (§5.1).

Declarable exclusions by category. The Statute of the International Court of Justice (Article 36, paragraph 2) and the United Nations Convention on the Law of the Sea (Article 298) establish that a large-scale compulsory jurisdiction becomes acceptable when its acceptance remains declaratory and when certain categories of dispute can be excluded by declaration. The Court’s four regimes (Table 11) already apply the choice of forum; the declarable exclusion is what they lack. Each party should be able to exclude, by a declaration that is published and modifiable for the future only, defined categories of dispute — without the exclusion ever being able to bear on the non-derogable floors of the Carthage Charter: dignity, non-discrimination and access to redress (§6.1). A jurisdiction of chosen and declared geometry is worth more than a maximal jurisdiction that no one accepts.

The substantive law that such claims would apply is not invented here. The notion of breach and its consequences — cessation of the wrongful act and full reparation of the harm caused — rest on the International Law Commission’s Articles on the Responsibility of States for Internationally Wrongful Acts (International Law Commission, 2001), the established reference in matters of breach of an international obligation. The Court provides a forum and a standard of review; it does not lay down a new primary rule of responsibility.³

5.8.1 From primary obligation to full reparation: the scope of the 2025 climate advisory opinion

In its advisory opinion of 23 July 2025 on the obligations of States in respect of climate change, the International Court of Justice applied the general framework of international responsibility to the climate context. It recalled that, where conduct attributable to a State constitutes the breach of an applicable international obligation and causes harm, the responsible State is required to make full reparation for that harm. This principle, formulated in Article 31 of the Articles on the Responsibility of States and rooted in the case law of the Chorzów Factory, aims to wipe out so far as possible the consequences of the wrongful act and to re-establish the situation that would in all probability have existed in its absence.

The legal consequence does not, however, arise from the mere observation of damage. The reasoning comprises several operations that must remain separate: identifying a primary obligation in force; determining the subjects to whom it applies; attributing an action or an omission to the State; establishing non-compliance; ruling out, where applicable, the circumstances precluding wrongfulness; establishing the harm; demonstrating a legally sufficient causal link — the Court adopting the standard of a sufficiently direct and certain link, assessed in concreto including in the presence of multiple causes; determining who may invoke responsibility; then choosing a suitable form of reparation.

³See in particular articles 30 and 31 of the International Law Commission’s Articles (2001): cessation of the wrongful act and full reparation for the injury caused.

The Articles on Responsibility distinguish cessation and guarantees of non-repetition, on the one hand, and reparation of the harm, on the other. Reparation may take the form of restitution, compensation and satisfaction, singly or in combination. Compensation covers only established financially assessable damage; the contribution of the injured State or of the beneficiaries to the harm must be taken into consideration. Full reparation is therefore neither an automatic amount, nor a punitive sanction, nor the mechanical conversion of every economic incidence into a debt.

The scope of the opinion must also be correctly qualified. The advisory opinion is not a judgment condemning a particular State and does not possess the inter partes binding force of a contentious judgment. Its importance lies in the authority of the interpretation given by the principal judicial organ of the United Nations — at the close of a procedure that brought together unprecedented State participation — and in the fact that it sets out the primary obligations, including customary obligations and obligations opposable erga omnes in matters of prevention of harm to the climate system, and the secondary rules capable of being applied subsequently by international, regional or national jurisdictions. The non-binding character of the opinion does not render non-binding the rules it interprets.

For the Global Accountability Chain, the contribution is twofold. First, the opinion confirms that an infrastructure linking evidence, causation, harm, legal qualification and redress answers a necessity of the law of responsibility, and not a moral aspiration alone. Second, it imposes a limit: the chain cannot turn an externality, an economic loss or a distributive inequality into legal reparation without a breached obligation, attribution, causation and standing.

Class S6 must, in consequence, remain legally narrow. It covers only those case files in which an applicable obligation can be identified and in which the conditions of responsibility are capable of being established. Case files arising from an un-internalised global loss, from an inequitable incidence or from a need for solidarity may warrant prevention, cooperation, financing or efficiency correction; they must not be presented as reparation claims within the meaning of Article 31 so long as the threshold of the internationally wrongful act has not been crossed (§9.7).

The Humanity Court would therefore create neither a general responsibility for externalities nor a universal right to compensation. It would provide, within the limits of consent and of the applicable law, a forum capable of reviewing the quality of the case file, of distinguishing lawful damage from a wrongful act, of verifying causation and of determining the permitted remedies. It could apply the regime of reparation only from an existing or validly adopted primary rule.

JURISDICTION AND ENFORCEMENT. Advisory authority, treaty-based jurisdiction, contractual arbitration, recognition of awards, State immunity, standing and enforcement are distinct legal questions. Consent to a contract incorporating a product of the architecture does not, by itself, create a universal jurisdiction. The Court’s legal document must specify the applicable convention, the seat, the law, the standard of review and the route of enforcement for each category of defendant and of remedy. The case of central banks is dealt with separately, at §5.4: their assets fall under a quasi-absolute immunity from execution, and the financial consequence that the chain attaches to them does not take the route of constraint, but that of accounting entry.

Table 11 — Humanity Court: four legally distinct regimes

Regime	Respondents	Source of consent	Remedies	Enforcement
Internal legality chamber	The six institutions	Constitutive Charter / Compact	Declaration, suspension, annulment and remittal within the internal order	Institutional law and budgetary/appointment guarantees

Regime	Respondents	Source of consent	Remedies	Enforcement
Consented arbitration	Contracting States, companies or organisations	Written arbitration agreement	Inter partes award within the limits of the mandate	Law of the seat and New York Convention; immunity remains distinct
Treaty court	States parties and entities covered by the treaty	Ratification / accession	Binding judgments defined by the treaty	Treaty, national implementation and applicable immunity rules
Advisory function	Authorised requesting bodies	Constitutive authorisation	Reasoned opinion, non-binding unless the text provides otherwise	Authority through reasoning, publication and incorporation

Negative mandate. The Court defines no impact, fiscal, trade, digital or allocation policy; it enforces nothing (neither collection, nor disbursement); it never places itself above the Charter; it does not try individuals under criminal law; and it cannot take up political questions of its own motion.

Interfaces. Upstream: referrals from the six institutions, from States parties and from admissible individual applications; factual signals from the architecture’s coherence-monitoring systems (which signal, without ever deciding). Downstream: binding interpretation of the Charter; reasoned public decisions; signals addressed to the Charter amendment process where litigation reveals design defects — the Court proposes an amendment to no one and lays down none.

Safeguards. Jurisdiction by consent (P3) — treaty accession for States, arbitration clauses for private actors, and derivation through national law where legislators so provide; a doctrine of judicial self-restraint; an independent fiduciary financing arrangement, not revisable by a single party (P6); a deliberately compact bench (of the order of twelve to twenty-four judges divided into two to four chambers). The enforcement of its decisions, for want of force of its own, rests on the mutual recognition of adhering countries (solidarity clause, §6), on the model of the recognition of arbitral awards.

Sequencing. Three phases, each with its own value: an advisory and compliance chamber; binding internal review for adhering institutions and parties; a jurisdiction instituted by treaty. The closest existing relative — the International Court of Justice (ICJ) — is at once precedent and warning: its access is reserved to States, and the enforcement of its judgments passes through the veto of the Security Council (Charter of the United Nations, Articles 92-94). The Humanity Court is designed to begin where that design stops: access for injured persons, and remedies that operate on the architecture’s own acts, which constitutes the only scope where full effectiveness requires the submission of no State — only the architecture’s own constitution.

Accelerated mode. It examines emergency measures under an accelerated procedure — necessity, proportionality and duration — and enforces their automatic sunset, which is precisely what prevents any other accelerated mode from freezing into permanent power (see section 11).

Table 12 — The seven institutions, in summary

Institution	Function	Rates/decides on	Must never	First-mover value	Closest precedents
Human Impacts Board	Measure	Metrics, ranges, gaps	Rate, price, adjudicate, invent data	Immediate: requires no treaty	IPCC; Beyond-GDP; SNA 2025
Global Impact Rating Authority	Rate	Severity coefficient (externality); class (entity)	Price, rate persons/acts, impute fault	Proto-rating on public data	Credit rating agencies (inverted)
Global Financial Equity Authority	Price	Reference prices; contribution scales; allocation rules	Collect, re-rate, redistribute	Shadow pricing pilots	BEPS Pillar Two; UN tax convention
Border Fairness Mechanism	Adjust	Price adjustment; exclusion; levy; disclosure	Discriminate by nationality; retaliate	Voluntary pilot basket	CBAM; import bans; HS system
Global Solidarity Fund	Finance	Two-window disbursements	Tax, measure, impose austerity	Endowed pilot	Global Fund; L&D Fund; sovereign wealth funds
Inter-Parliamentary Digital Authority	Certify	Algorithmic transparency; high-impact AI thresholds	Censor content; govern by AI	Model law + self-certification	IPU (1889); UNCITRAL; vTaiwan
Humanity Court	Adjudicate	Legality of the six; breaches	Dictate content; judge expediency	Advisory chamber	ICJ; ICC; investment arbitration

5.9 The architecture as a chain: the interfaces between the seven

The seven institutions are worth something only when linked. A single measurement layer (HuIB) feeds the whole chain through a public interface — standardised identifiers (LEI, ISO 17442) and footprint factors by category — so that each downstream body reads the same exposure datum. The cardinal rule of the seams is anti-double-counting: gross exposure is established once by HuIB; its severity is rated once by GIRA; its unit price is set once by GFEA or the Border Mechanism; the Solidarity Fund finances only on those magnitudes, without recreating them. The functional thread is therefore: measurement (HuIB) → rating (GIRA) → pricing (GFEA and Border Mechanism) → financing (GSF), while IPDA certifies the algorithms of the sister pillars and the Court settles authentic interpretation and conflicts of competence — it interfaces the seven without governing any of them.

Three design features deserve to be named. First, the Border Mechanism is not a single window but a constellation of regimes (carbon, standards, taxation, illicit flows) sharing the same measurement layer. Next, the interfaces do not run downstream only: downstream→upstream feedback loops carry detected asymmetries back to the audit — a gap between what GIRA rates and what the GSF finances is a signal of rigour, not a defect to be masked; these asymmetries, noted during a nine-point coherence audit, are henceforth propagated to the interface canon. Finally, three legal gaps remain open and declared as such — the status of the Border Mechanism under trade law, the articulation of the Court with existing jurisdictions, and the jurisdictional basis of IPDA — because an honest chain names its weak seams rather than concealing them.

Onto the technical interfaces described above is superimposed a layer of accountability relations: each function is complete only when attached to a responsible actor, to a forum capable of questioning and judging it, and — a reflexive principle — to an avenue of redress against the forum itself, so that no reviewing body escapes review.

Table 13 — Accountability relations attached to the seven functions

Institution	Accountable actor	Principal forum	Object of the account	Possible consequence	Redress against the forum
HuIB	Scientific direction and authors	Peers, affected parties, methodology committee	Data, methods, uncertainties	Correction, withdrawal, new measurement	Review by a separate methodology committee
GIRA	Rating panel	Appeals committee, rated actors	Coefficient, method, consistency	Revision or annulment of the rating	Appeal before a separate panel
GFEA	Pricing authority	Audit, contributing parties, Court	Conversion function and incidence	Recalculation, suspension, reparation	Suspensive appeal; review by the Court
BFM	Adjustment administration	National authorities, operators, courts	Base and non-discrimination	Refund, annulment, modification	WTO/national litigation
GSF	Allocation board	Contributors, beneficiaries, audit	Allocation decisions and results	Suspension, reallocation, restitution	Beneficiary complaint
IPDA	Assembly and secretariat	Member parliaments, the public	Standards, votes, algorithmic systems	Revision, withdrawal, non-transposition	Parliamentary scrutiny
Humanity Court	Judges and Court administration	Appeal/review mechanisms, rules	Jurisdiction, reasoning, impartiality	Recusal, review, statutory reform	Recusal; internal review; in the last resort, before the peoples

To the accountability relation of each interface is added a procedural requirement. Each output transmitted to the next link carries not a mere figure, but a minimum case file: the decision, its legal basis, the data and the methodology employed, the uncertainties, the observations received, the responses to the principal objections, the identity of the human officers responsible, the versions of the AI systems, as well as the avenues of redress and the time limits for exercising them.

Principle. — No consequence may be computed on an output that does not carry its justification case file. The administrative integrity of an interface denotes the preservation, in passing from one function to the next, of the legal basis, the methodological limits, the uncertainties, the rights of participation, the reasons and the avenues of redress attached to the original decision. Where global administrative law frames the procedure of an isolated body, the Humanity Compact extends it to the inter-institutional transformation of a decision.

A category error is therefore not a mere scientific error. Unless it is stopped, it propagates along the chain: an erroneous classification becomes an erroneous rating, then an erroneous price, then an erroneous allocation, and finally a legally sanctioned injustice (Barnett and Finnemore, 1999). This is why interface integrity and the containment of failures are not technical refinements but first-order requirements: the justification case file that accompanies each output must make it possible to go back to the original category and to contest it before it hardens into a consequence.

5.10 Who pays: the rated never pays the rater

An architecture that renders a harm measurable at once raises the question of its cost — and the answer is a doctrine, not a mere budget line. Three distinct costs, which are ordinarily conflated, must be separated. Keeping the record — the human impacts ledger that an entity maintains on its own footprint (conclusion) — is a compliance cost that falls to it, like the keeping of its accounts, its tax returns or its safety registers: the one who produces the harm bears the disclosure. Verifying and rating that record — the “audit” function — can, for its part, never be paid for by the verified entity. That verification is not qualitative: it applies to impact the tested assertions of financial audit — completeness (no affected party omitted), occurrence, accuracy of magnitudes, correctness of attribution, cut-off to the right period, classification, presentation of uncertainties and the correspondence of remedies to approved obligations — so that an impacts record is audited with the discipline of a financial statement. And the attributed harm itself is priced downstream (GFEA, Border Mechanism) and feeds the Fund: that is the consequence, not the cost of the measurement, and the two are never conflated.

It is precisely here that the analogy with financial statements breaks down, and this must be said without evasion. A company prepares its accounts and itself remunerates its auditor — and that issuer-pays arrangement is the documented source of the Enron failures, of the capture of the credit rating agencies and of the limits of ESG (§13): whoever pays the assessor steers the verdict. The architecture keeps the sound half of the analogy — the record is kept by the entity — and cuts away the vitiated half: measurement and rating are authoritative from a third party that the entity neither chooses nor remunerates (P6; §5.2, §5.3). The entity never pays for its own rating. The architecture goes further, moreover, than the reform born of Enron: that reform confined itself to supervising, through the PCAOB, the auditor that the entity continues to choose and to pay (Sarbanes-Oxley Act, 2002), and the attempt to assign raters so as to break the same conflict remained a dead letter (Dodd-Frank Act, 2010); here, the measurer is public and the entity never commissions its measurement — there is no auditor to hire, hence no conflict to police.

There remains the financing of independent verification without reintroducing the conflict — and the model exists, tried and tested: to mutualise a mandatory levy, resting on a neutral

formula, towards an independent body that governs it. Three precedents establish this. The American Public Company Accounting Oversight Board is financed by a mandatory fee levied on listed companies in proportion to their market capitalisation, and supervises auditors without any company choosing or paying its own inspector (Sarbanes-Oxley Act, 2002). The Federal Deposit Insurance Corporation, an independent agency receiving no budgetary appropriation, finances itself through risk-based assessments levied on all banks (Federal Deposit Insurance Corporation, 2024). And the European Securities and Markets Authority supervises the rating agencies through a fee levied on the sector it oversees (European Union, 2009). The common point — and the condition that preserves non-circularity (P6) — is that the levy is a function of size or of exposure, never of the outcome of the rating: one contributes as a class, not for one's own verdict. To this are added a seed fiduciary endowment, public or multilateral, not revisable by a single party (on the model of the Court's financing, §5.8), and a marginal cost held low by two properties already established: artificial intelligence makes continuous measurement possible “in millions, not in billions” (§7), and the measurement layer is a public good — measured once, consumed by all, never re-measured entity by entity (P5). The revenues that the architecture generates downstream remain, for their part, walled off from that budget: they finance reparation through the Fund, never the operation of the bodies that measure and rate (P6).

A requirement of equity closes the arrangement. The cost of keeping the record would exclude low-capacity actors — small States, modest firms — that the architecture precisely intends to protect; the Fund's transition window (§12.6) therefore finances the upgrading of those weak capacities alone, never that of the actors that have the means to adopt by themselves, on pain of subsidising the status quo, and the non-circularity firewall (§5.1) forbids that this support come from the entities that will subsequently have to be measured. Two limits, finally, are assumed: this financing — a mutualised levy and a public endowment — presupposes sustained political commitment, and the levy model is not exempt from capture, the subject industry being able to seek to weigh on the body it finances; parity of governance, transparency of the formula and its establishment by an independent authority are the safeguards against this. Set against the harm they render visible — counted in trillions (§2.4) — these budgets are counted in millions: the argument is not that they are costless, but that their cost is derisory in the light of what they make it possible to internalise.

6. The legal, normative and civic system

The seven functions determine what the chain must accomplish; the three instruments determine according to which norms, through which obligations and with what legitimacy it does so: the Charter lays down the norms, the GAF the operational obligations, the Call the participatory legitimacy. Three principal instruments, distinct in their addressees and in their effects — not a single text with superimposed functions.

6.1 Carthage Charter — the normative foundation

The Carthage Charter constitutes the legal foundation of the architecture: the text that parliaments ratify. Its fifteen operational commitments define the institutions, their negative mandates, the rights of affected persons and the amendment procedure. Two clauses do the essential part of the constitutional work. First, a primacy strictly confined to the internal order: as between adherents and over the architecture's own organs, the Charter prevails; over the Charter of the United Nations, national constitutions or existing treaties, it claims nothing. Second, jurisdiction by consent (P3). The Charter may take three legal forms as adoption progresses — a founding charter for the institutions themselves, a model law for unilateral parliamentary incorporation, and, in time, a multilateral instrument; nothing in the design requires the third form to exist for the first two to work. The naming follows a deliberate tradition: development financing has marked its eras by cities — Monterrey, Doha, Addis Ababa, Sevilla — and this architecture claims that lineage: from Sevilla, which financed, to Carthage, which — if the design holds — counts, prices and adjudicates. Its full text is reproduced in Annex N.

6.1.1 The Charter's fifteen operational commitments

The Charter sets out not wishes but verifiable commitments. Fifteen make it up; each is anchored so far as possible in an existing instrument of international law and translates into an obligation opposable within the architecture.

1. The human being at the centre. A system is judged by what it does to the human being, not by what it produces or yields (an echo of the Charter of the United Nations).

2. Opposable measurement. What is not measured is not governed: human impacts — health, climate, labour, dignity, digital life — are measured, published and made opposable (Human Impacts Board).

3. Dignity and non-discrimination. No person or population is treated as a means; no distinction based on origin, status or capacity governs the protection owed (International Covenant on Civil and Political Rights).

4. Participation. Affected persons have an effective voice — information, independent counter-assessment, agenda-setting — before the decision, and not after.

5. Proportionality. Every consequence — rating, price, adjustment, exclusion — is proportionate to the established harm, and never to the result sought.

6. Sustainability and future generations. The interests of the generations yet unborn, with neither seat nor vote, are represented in the measurement and in the decision.

7. Data protection. All data relating to persons is processed under identifiable responsibility, minimisation and a right to erasure (data protection by design).

8. Reasons. No consequence is produced without a statement of the reasons, the data, the assumptions, the uncertainty and the avenues of correction.

9. Redress. For every harm, a forum: any affected person or entity may contest the path that led to the outcome, before an independent body (Humanity Court).

- 10. Non-derogable floors.** In times of crisis, a core of guarantees — dignity, non-discrimination, redress — may not be suspended, whatever the emergency.
- 11. Reciprocity.** No one is exempt, beginning with the founders and the institutions of the architecture, which accept being measured by the same yardstick.
- 12. Countervailing power.** No power without a countervailing power: no institution is above the Charter, none is judge in its own cause, and the Court guards the guardians.
- 13. Competence by consent.** The architecture binds only those who consent to it; its binding effect arises from incorporation or accession, not from a claim to universality (principle P3; Vienna Convention on the Law of Treaties).
- 14. Non-substitution and continuity.** The Charter replaces neither the Charter of the United Nations, nor national constitutions, nor existing treaties: it continues and deepens them, without claiming any external primacy.
- 15. Revision and living text.** The Charter is revised under a published amendment procedure; every modification is traced, reasoned and subject to the same guarantees.

6.2 Global Accountability Framework — the operational framework

The Global Accountability Framework is the operational framework agreement of the Global Accountability Chain: it binds only its parties and organises the mandates, interfaces, data, financing, controls and common procedures of the seven institutions (sections 5 to 7). It contains or annexes the interface contracts, the data and provenance protocol, the budgetary rules, the audit mechanisms, the crisis protocol, the suspension and correction procedures, the accession and withdrawal rules, the obligations that survive withdrawal, and the mutual recognition procedures. It is deliberately not an eighth institution: it exercises no power of its own, holds no budget, and remains legally subordinate to the Charter. Its constitutional doctrine is that of non-solidarity among institutions — the failure or capture of one must never contaminate the others — and it lives by a published revision cycle, through which interface defects (Section 13) are corrected in the open. Its full text is reproduced in Annex O.

6.2.1 The solidarity clause

A cross-cutting commitment gives the whole its collective weight: the solidarity clause. It does not contradict the non-solidarity among institutions laid down above — which forbids one organ from bailing out or contaminating another — for it binds countries, not organs. The adhering countries undertake to recognise and to enforce jointly the consequential acts of the architecture — GIRA ratings, GFEA scales, Border Fairness Mechanism adjustments, judgments of the Court and certifications of the digital authority — and to condition access to their markets on certification. The effect is twofold. Faced with the most powerful actors, mutual recognition leaves arbitrage between jurisdictions no purchase: a platform or an issuer can no longer play countries off against one another, nor absorb the loss of the entire coalition's market — the very logic of the 2021 coordinated global minimum (§13). Faced with the smallest States, it pools a bargaining strength that none holds alone: the small country borrows the weight of the collective. The clause operates by consent (P3) and takes its binding form in the Carthage Convention (§6.4); it adds no coercive power to any organ taken in isolation — it merely coordinates the enforcement of what each produces within its mandate. Conditioning access is, however, lawful only within limits: mutual recognition and access conditions are exercised on public, objective, proportionate and non-discriminatory criteria — failing which access control degenerates into abuse of a dominant position, as the Court of Justice of the European Union held in 2023 of the power of authorisation of FIFA and UEFA (Court of Justice of the European Union, 2023) —, the same anti-abuse discipline that the Border Fairness Mechanism already applies to trade law (§5.5).

The scope of the clause is delimited so as to remain lawful and predictable. The acts covered are exhaustively enumerated — GIRA ratings, GFEA scales, Border Fairness Mechanism adjustments, judgments of the Court, certifications of the digital authority — to the exclusion of all others. Each act is recognised according to its status: final once it has become *res judicata*, provisional so long as an avenue of redress remains open. Recognition obeys published conditions: regulatory equivalence — a foreign regime producing an equivalent outcome is recognised without duplicative burden —, a review of proportionality and non-discrimination, and a public policy exception allowing an adherent to refuse, with reasons, the recognition of an act contrary to its fundamental constitutional principles. Any affected person or entity has an avenue of redress against a measure of recognition or of access conditioning. A country's participation may be suspended and withdrawal is orderly, subject to notice, the obligations arising before withdrawal surviving it. In the event of conflict with applicable trade, tax, constitutional or competition law, the clause yields: it prevails neither over World Trade Organization commitments, nor over tax treaties, nor over national constitutions, and is interpreted in conformity with competition law (§5.5).

6.3 Call of Carthage — the civic and participatory mechanism

The Call of Carthage is the citizens' instrument — the architecture's answer to its own most difficult question: institutions of such ambition cannot be legitimated by experts alone. The Call is a public text whose signature constitutes a consultative adoption — expressly not a legal ratification, which is a matter for parliaments — the signatures being collected under a strict data-protection delegation to an institutional data controller, and a living-text mechanism recording proposed amendments alongside adhesions. It is designed to be capable of expanding into a proposed permanent deliberative body — an Assembly of Peoples, of stratified random composition, endowed with a power of deliberation and of agenda-setting but expressly devoid of any executive or veto function: the mirror, on the demos side, of the Court's "guard, do not command".

6.3.1 Four channels and the referral regime

The Call is not reducible to a symbolic signature. It is exercised through four graduated channels, from the most open to the most binding, each with a defined threshold, addressee and effect; and it is articulated with the architecture through a referral regime that clearly distinguishes four acts too often conflated.

The four channels.

Accession. Any person or organisation accedes to the Call by subscribing to its principles. Accession is declaratory: it creates no legal obligation, but constitutes the community from which the other channels proceed and makes publicly traceable who carries the demand.

The qualified petition. A body of adherents reaching a published threshold — of representativeness as much as of number — places a question on the agenda of an institution of the chain. The petition carries no decision; it requires a reasoned response, published, within a set time limit.

Deliberation by stratified sortition. On a question of general interest, a panel of citizens drawn by lot according to a representative stratification deliberates, with access to expertise and to counter-assessment, and then issues an opinion. The opinion does not bind, but the institution addressed must examine it and give reasons for any departure.

Institutional transmission. The outputs of the Call — admissible petitions, panel opinions — are transmitted into the architecture through defined channels, with an obligation of consideration and of traceable response. This is the junction point between participatory legitimacy and operational obligation: the Call feeds the GAF without ever substituting for it.

Four acts not to be conflated.

The report is open to all, with no requirement of standing: anyone who brings a fact or an impact to the knowledge of an institution. It triggers an examination, not an obligation to act, and protects its author.

The petition is a qualified collective act: it places a question on the agenda and requires a reasoned response, but refers the matter to no judge.

The referral is the formal act that brings a case before the competent body — first and foremost the Court — and opens a procedure capable of producing an opposable decision.

Standing is a precondition of referral: recognised for affected persons and entities whose interest is direct and current, it determines admissibility. To report is a right of all; to refer presupposes standing.

This gradation — to report, to petition, to deliberate, to refer — avoids two symmetrical pitfalls: participation without effect, and referral without a filter. The citizen enters through the open door of the report; the case reaches the judge only through the guarded door of standing.

6.4 Hierarchy, adoption and legal effects

Each instrument, too, has a lineage. The constitutive charters of international organisations exhibit organisational pacts binding institutions inter se — the very form of the GAF. The practice of staged consent in framework treaties and the transposition practice of model laws attest that the three legal forms of the Charter are already at work in everyday practice; the Pact for the Future illustrates a founding and multi-thematic text adopted by global consensus as recently as 2024 — executive, however, and ratified by no parliament, which is precisely the gap that the Charter fills. For the citizens’ instrument, the global civil consultation of the Earth Charter (2000) proved the possibility of a durable moral adoption without legal force; Iceland’s open constitutional drafting (2011) established the possibility of a fundamental text drafted by the crowd — and, by failing at the final parliamentary stage, taught this architecture to internalise ratification within the founding event itself; the practice of citizens’ assemblies, now expanding worldwide, up to the global assembly convened for COP30, reveals the citizens’ instrument maturing from consultation towards permanence — the trajectory that the Call proposes to complete.

Table 14 — Hierarchy, adoption and legal effect of the three instruments

Instrument	Adopter	Direct legal effect	Amendment rule	Limit
Humanity Compact	Participating institutions	Internal allocation of mandates and interface obligations	Published institutional review cycle	Subordinate to the Charter and to applicable law
Carthage Charter	Institutions, parliaments or States depending on the legal form	Only within the scope and in the form validly incorporated	Reinforced amendment and consent rules	No primacy over the Charter of the United Nations, over constitutions or over third-party treaties
Call of Carthage	Citizens and advisory bodies	Advisory and agenda-setting, not ratification	Transparent living-text procedure	No executive power and no right of veto

The three legal forms of the Charter must not be conflated. A founding charter binds the organisations constituted under it; a model law has no effect so long as it is not enacted, and thereafter operates through national law; a multilateral instrument binds only in accordance with the law of treaties and with its own provisions — entering into a treaty commitment remains, moreover, an exercise of sovereignty (PCIJ, Wimbledon, 1923), and the binding force of an instrument varies with its degree of legalisation, obligation, precision and delegation (Abbott et al., 2000). “Interparliamentary ratification” is therefore a matter of political

coordination, unless and until each competent parliament acts under its own constitutional procedure.

The present document therefore treats the “Carthage Charter” as a framework programme bringing together three coordinated but legally distinct texts: (i) a Constitutive Pact creating the organisations and the internal order of revision; (ii) a Carthage Model Law for fiscal, border, certification and permanence provisions at the national level; and (iii) a Carthage Convention for treaty obligations, jurisdiction, privileges, entry into force, reservations, amendment and withdrawal. The framework designation and the political lineage are preserved; the legal effects are not conflated.

6.5 Conflict rules and amendment procedure

Around these three principal instruments orbit subordinate instruments, not counted within the “+3” and which are no more than modalities of its implementation: the constitutive statutes of each institution, the Carthage Model Law, the data and interoperability protocol, the mutual recognition and enforcement protocol, the solidarity protocol, the crisis protocol, the Court’s rules of procedure, the pilots protocol and the citizen participation guide. The hierarchy is strict: the Charter prevails over the GAF, which prevails over the subordinate instruments; the Call produces binding effect only to the extent that the GAF incorporates it. Conflicts are resolved accordingly — a demand of the Call contrary to the Charter is inadmissible; a modification of the GAF not transposed into the subordinate instruments remains without effect upon them — and every revision follows the amendment procedure of the Charter.

Separating structure from parameters. An architecture whose revision is as demanding for a scale as for a mandate condemns itself to immobility. The Montreal Protocol resolved this by the adjustment of its Article 2, § 9: the schedules for substances already controlled are tightened by qualified decision, with automatic effect for all parties and without fresh ratification, whereas the addition of a substance requires a ratified amendment. The Charter of the United Nations provides the inverse demonstration: its Chapter XVIII subjects any amendment to ratification by two-thirds of the members, including the five permanent members of the Security Council — its substance has never been revised in eighty years. The rule adopted is therefore twofold. Mandates, competences, negative mandates and guarantees are modified only by amendment, under the procedure of the Carthage Charter. Quantitative parameters — GFEA scales, GIRA thresholds, BFM coefficients, taxonomies and case file formats — are revised by qualified decision with automatic effect, published and reasoned, accompanied by an objection period and by the option, for the party that refuses it, to withdraw from the module concerned without affecting the others.

6.6 Collision rules between rights, principles and interests

Why a collision rule. Dignity, consent, non-discrimination, proportionality, equity, sustainability, participation and redress may converge in the abstract and come into conflict in a concrete decision. The architecture must not conceal these trade-offs in a technical formula or in an aggregated rating. Every substantial collision must be identified, reasoned and submitted to review.

Limited hierarchy. The framework does not posit a universal hierarchy of all values. It nevertheless recognises four levels. First, non-derogable prohibitions and non-compensable exclusions prevail over the pursuit of efficiency. Second, minimum procedural guarantees — information, the opportunity to be heard, reasons, counter-assessment and redress — cannot be set aside by a simple cost-benefit calculation. Third, among the lawful solutions, the least restrictive and most reversible measure is preferred. Fourth, residual distributive trade-offs are made public, accompanied by dissenting opinions, and are revisable.

Four recurrent collisions. The consent of a State does not automatically replace the participation of affected persons; conversely, direct participation does not confer on every group a general veto absent from the applicable law. The sovereign equality of States does not suffice to determine the representation of populations. Historical responsibility is not to be conflated with present contributive capacity. The protection of future generations cannot be invoked without documenting the immediate burdens imposed on present populations.

Decision test. Every decision that arbitrates between principles must specify: the rights and interests in conflict; the persons on whom each option falls; the less restrictive solutions examined; the distribution of costs and benefits; the legal basis; the duration; the review mechanism; and the manner in which affected persons were able to produce a counter-assessment. The absence of such reasons bars passage to the next link.

7. Institutions equipped with AI, governed by humans

Certifying a model attests to its technical compliance, not to the legitimacy of the decision it informs: the latter remains human, reasoned and contestable. This distinction separates assurance of the sociotechnical system from mere algorithmic compliance.

Each of the institutions examined in section 3 was designed before artificial intelligence; each today incorporates it after the fact, cautiously and unevenly. The architecture proposed here is, to my knowledge (subject to the priority-claim caveat stated in §7.4), among the first governance architectures natively designed for the AI era — which does not mean “with more technology”, but with a constitutional doctrine for it. That doctrine fits in a single sentence, and it appears in every pipeline of section 5: AI signals; an accountable human decides.

One constitutional formula, three named expressions — the operational signature (a named analyst signs every rating, Section 5.3), the architectural doctrine (no system in the architecture takes a binding decision, present section), and parliamentary legitimation (elected representatives ratify the standards under which certification operates, Section 5.7). Three altitudes of a single rule, not three rules.

What the architecture uses AI for. Five functions, in increasing order of sensitivity. Large-scale measurement: the continuous, entity-level coverage across the twenty families provided by the measurement body is not feasible manually without automated processing of declarations, of satellite and sensor data, and of text — it is this function that makes a permanent HuIB financially possible, whereas the IPCC’s five- to seven-year assessment rhythm marks the pre-AI frontier. Detection and alert: the rating authority’s linter flags anomalies and class jumps; the border mechanism screens declarations; the fund detects fraud and double financing; the digital authority’s watch observes deployed systems along six separately published dimensions. Systemic coherence: an inter-institutional linter audits the architecture’s own interfaces in search of contradictions — a practice which, applied adversarially from the design phase itself, brought to light the tensions recorded in Section 13. Assisted deliberation: consultations on model laws rely on a certified deliberative infrastructure in the lineage of vTaiwan, where preference-mapping algorithms help mass publics converge without deciding in their stead. Litigation assistance: the Court’s evidence engine — a contestable assistant, never a judge.

What the architecture forbids AI to do. The negative list is constitutional, not technical. No system in the architecture may take a decision that binds a party: every rating carries the named signature of a human being, every allocation a committee decision, every adjustment a computation under human control, every judgment a judicial bench. No social scoring of individuals, anywhere, for any purpose whatsoever. No content censorship: the watch measures effects and issues alerts; it never orders a takedown. No recommendation of a vote or of a position to any deliberative body whatsoever. And no automatic execution of consequences: an alert signal issued by a machine opens a procedure; it never closes one.

And one upstream risk is named rather than presumed: AI-driven measurement under-covers the least digitised populations — precisely the beneficiaries the architecture is aimed at. The representativeness test provided for by the data governance matrix (Section 7.4) is therefore a certification criterion, not a mere courtesy; provenance, legal basis, the cybersecurity of evidence vaults and retention rules apply upstream of every pipeline. A second upstream risk deserves to be named in the same way: trained on the world as it is, these systems lean towards precedent and recognise the novel case poorly — a status quo bias which, in bodies called upon to measure and to rate harms that are still poorly mapped, makes the human lock (“AI signals, the human decides”) decisive rather than formal. We are not in the age of super-intelligence, but in that of powerful and fallible tools; the automation indicators of Section 7.5 — foremost among them human-machine disagreement rates — exist precisely so that this lock remains an auditable fact, not a mere formality.

Who certifies the certifiers. The architecture's distinctive move is reflexive: the algorithms of its own institutions — the rating pipeline, the contribution scales, the allocation engine, the adjustment computations — are themselves subject to the digital authority's three-level certification regime, from self-declaration through to external audit with judicial review at the highest level, where self-certification is quite simply prohibited. Methodologies and capping matrices are versioned, so that any historical result can be faithfully recomputed according to the method that produced it; every pipeline publishes its weightings; and every AI-assisted result is contestable by the party it affects, through the adversarial steps of Section 5 and, in the last resort, before the Court. An architecture that proposes to certify the world's algorithms first submits its own to democratic certification — reflexivity is the proof of seriousness.

The regress closes upon the certifier itself: the digital authority's own pipelines — the watch and the model-law factory — are placed, by construction, in that highest level, certified by external audit and subject to review by the Court, never self-declared; and the authority's budget is ring-fenced under the same non-circularity rule as those of the fund and of the Court (P6), so that the certifier does not self-certify and is not paid by those it certifies.

How this extends beyond the architecture itself. Three consequences follow. First, cost: continuous global measurement, that historic impossibility which explains much of the dashboard landscape described in Section 3, becomes affordable — the budget of the measurement layer is counted in millions, whereas its option value is counted in trillions. Second, symmetry: AI lowers the analytical barrier to entry, so that a small treasury can query the same measurement layer as a large one — the architecture's equity commitment applied to analytical capacity itself. Third, speed: nowcasting replaces retrospection, which allows a stability window to disburse in the face of a shock rather than in the face of its autopsy. Against these gains stands a dependency honestly acknowledged: the architecture's pipelines rely on models built by a concentrated industry. The design responds with plurality (no dependency on a single model), full auditability, and a degraded mode specified at the level of each family (Section 7.5) — the measurement body falls back on annual sampling campaigns in its priority domains; the rating authority, on event-triggered reviews of its highest-impact entities; the operational institutions, on manual handling of declared cases according to published queues; the Court's evidence engine, on a registry-type procedure — each institution continuing to function, more slowly and more narrowly, without its machine layer — but the dependency is real, and itself constitutes an externality of the kind that the taxonomy of Section 2.2 classifies under technology-mediated concentration.

The direction a technology takes is in no way automatic: it depends on who controls it, and it can concentrate power just as readily as it can share it (Acemoglu et Johnson, 2023). Artificial intelligence is no exception — it can deepen the asymmetry between those who deploy it and those who are subjected to it, or it can serve their accountability. That is the point of the digital authority and of democratic certification (§5.7): not to slow technology down, but to make its direction an object of collective choice rather than a *fait accompli* — algorithms submitting to peoples, and not the reverse.

7.1 Assurance, cost and degraded operation

The claim that continuous measurement can be operated for millions rather than billions is a hypothesis to be costed. The cost model must include licences and data access, cloud and secure-computing infrastructure, model development, human review, translation, redress, cybersecurity, archival reproducibility, independent audits and support for low-capacity users. It should publish low, central and high scenarios, and identify which functions survive at minimum viable scale.

7.2 Threat model and non-propagation controls

Table 15 — Cross-cutting algorithmic threat model

Threat	Propagation risk	Control required	Accountable officer
Poisoned or biased HuIB data	Measurement → rating → pricing → border → fund → litigation	Traceability, source validation, quarantine, recall and downstream recalculation	HuIB data officer + each downstream officer
Captured weightings or thresholds	Systematic distributive bias	Published sensitivity analysis, minority opinions, external replication and change control	GIRA/GFEA methodology committees
Fraudulent certificates	Wrongful border blocking or levy	Cryptographic authenticity, random inspection, revocation and rapid redress	BFM operator
Capture of the auditor or of certification	Spurious legitimacy across several systems	Separation of standardisation, accreditation, audit and redress; rotation	IPDA accreditation chamber
Cloud/model provider failure	Simultaneous service or confidentiality failure	Portability, escrow, multi-provider design, local fallback and tested exit	Shared infrastructure trustee
Judicial assistant hallucination/injection	Distorted evidence or reasoning	Sandboxed search, logged citations, version preservation and party access	Registry and judgment panel of the Court
Insider or log compromise	Non-reproducible or manipulated decisions	Least privilege, tamper-proof logs, dual control and incident reporting	Institutional security officer

7.3 Authority matrix: beyond the “human in the loop”

Algorithmic authority is classified by verb: search, summarise, measure, rank, recommend, flag, compute, block and execute. Search and summarisation require traceable citations; measurement requires validation and quantified uncertainty; ranking and recommendation require bias and sensitivity tests; flags may open but never close a procedure; computations require formal verification and reproducibility; blocking and execution are prohibited without an authorised human decision and without an accessible emergency avenue of redress. Every signatory records the time spent, the evidence examined, the override decisions and their reasons. Human oversight is thus a demonstrated capability, not a signature ritual (NIST, 2023; ISO/IEC, 2023).

7.4 Data governance matrix

Table 16 — Minimum data governance contract for each pipeline

Field	Mandatory question	Default rule
Authority	Who is controller, processor, joint controller and redress authority?	Named legal entities; no implicit shared control
Purpose	Why is each field necessary to the mandate?	Purpose limitation and data minimisation
Provenance	Source, licence, collection method, transformations and quality?	Machine-readable traceability and source confidence level
Access	Who may view, modify, export or challenge?	Least privilege, dual control and audit trail
Cross-border transfer	What legal basis and what safeguards permit the movement?	Localisation or safeguarded transfer where required

Field	Mandatory question	Default rule
Retention	How long are raw data, results and evidence retained?	Scheduled deletion, with a strictly defined litigation hold
Correction/recall	How do errors propagate downstream and how are they remedied?	Recall notice, recalculation and notification to the affected party
Security	What threat model, encryption, keys, backups and incident plan?	Independent testing and public incident summary

The degraded mode is not mere manual continuity. For each pipeline, it must specify the trigger for model suspension, the last reliable version, human capacity, the reduced service level, queue prioritisation, the resumption authority and public notice. No result produced in degraded mode should silently inherit the confidence level of normal operation.

PRIORITY-CLAIM DISCIPLINE. “Natively designed for the AI era” describes the architecture’s intention. It is not a claim of world priority unless supported by a systematic review of comparable institutional proposals.

The contrast with the current global response to AI completes the argument. At the universal level, the institutional response to artificial intelligence remains primarily scientific and deliberative — an advisory scientific panel and voluntary principles. The landscape is not, for all that, devoid of binding rules: the European Union has adopted an AI regulation, and the Council of Europe has opened for signature the first legally binding international treaty in this field. But these frameworks, regional and sectoral, do not close the chain: what is missing, at global scale, is an arrangement linking impact measurement, democratic certification, consequence and redress — diagnosis and language, once again, without a chain of consequence. This architecture proposes the reverse: not a new debating chamber on AI, but operational institutions whose every use of AI is certified, versioned, contestable and justiciable. The way to govern a technology, in the light of all the precedents cited in this document, is not to admire the problem; it is to build institutions that use it under discipline. No AI system can produce a moral, legal or religious qualification having binding force: it organises the evidence, detects inconsistencies and simulates consequences; normative authority remains human, pluralist and contestable.

7.5 Building the seven institutions with AI — and the safeguards above the build

The preceding sub-sections state what the architecture’s AI may and may not do. This one states how the seven institutions are actually built — for the claim that they are “AI-native” is not prospective: it describes a build method already in use.

The method has been tested on the architecture itself. Every component of the design in this document has passed through an AI-assisted build under human decision: build-ready specifications for each institution’s platform (modules, workflows, data contracts); an inter-institutional coherence linter which audits mandates and interfaces against the canon and flags contradictions (it brought to light several of the tensions recorded in Section 13); a full-scale adversarial simulation exercise in which independently briefed teams played each institution against realistic cases; a thirteen-angle adversarial audit of the quantitative corpus over two cycles (Box 2); and a multi-perspective expert review covering economics, law, governance, methodology and editorial work. The forthcoming methodological document sets out this process; its outcome is already visible in the register of tensions and in the evidence pack of this text.

The same method is now unfolding, institution by institution, in four stages: specification (a build-ready set of requirements per institution — all seven exist); prototype (an internal reference implementation of the complete measure→rate→price→adjust→finance→certify→adjudicate chain has been developed under

human decision and runs under several hundred internal automated tests, with the doctrinal rules — severity caps, non-compensable exclusions, anti-double-jeopardy register — enforced in the code; these results constitute internal validation, not yet published or independently replicated, and will be documented in a dedicated technical companion); sectoral pilot (the minimum viable pilot of Section 12.4, on volunteer jurisdictions and public data); and hardening with a view to entry into operation. The honest status marker of Section 5 therefore remains valid, with one refinement: specified, internally prototyped and pilot-ready — not yet in operation, nor independently validated.

What each institution’s build actually contains — and where the human lock sits — is summarised below.

Table 17 — The seven builds: AI systems, AI functions and the human lock

Institution	AI systems in the build	What the AI does	What only humans do
HuIB	Multi-source ingestion (declarations, satellite, sensors, text); entity knowledge graph under persistent identifiers; evidence rating engine (A–D, Q1–Q5); gap detector; adversarial notification portal	Extract, normalise, produce real-time estimates, propagate uncertainty, flag gaps	Validate methods; certify measurements; sign publications; rule on challenges
GIRA	HuIB API ingestion with provenance; versioned weighting engine; aggregation with non-offsettable caps; anomaly linter; analyst workstation; transparent-box register; challenge module	Normalise, aggregate, flag anomalies and class changes	Set the doctrinal weightings; sign every rating; rule on appeals
GFEA	Contribution calculator (base × reference price × coefficient); independent recalculation (second look); incidence simulator; anti-double-charging register shared with the Mechanism	Calculate, recalculate independently, simulate incidence	Adopt the scales in committee; validate the ranges; publish with minority opinions
Border Fairness Mechanism	Digital product passport; fairness-gap engine against sectoral benchmarks; customs interface (HS-compatible); declaration anomaly detection; public fairness register	Screen declarations, compute adjustments, detect anomalies	Qualify cases — first and foremost non-offsettable exclusions; settle disputes at first instance
GSF	Eligibility screening with non-offsettable blocks; anti-fraud and anti-double-financing; conditional tranche tracking with evidence identifiers; commissioning of outcome re-measurement (from HuIB)	Screen, track, flag, trace end to end	Allocate in committee with declaration of conflicts; decide disbursements and clawbacks
IPDA	Watchtower (six-dimension observation via authorised protocols and volunteer panels); register of high-impact systems; model-law factory (assisted drafting, mass consultation in the vTaiwan tradition, version management); certification testbeds	Observe effects, map preferences, draft options, operate the testbeds	Qualify high-impact systems; ratify the model laws; grant or refuse certification
Humanity Court	Time-stamped evidence vault; contestable evidence engine (search and synthesis with traceable citations); case file management; public register of decisions	Organise and retrieve evidence, synthesise it with citations	Admissibility, hearings, deliberation, judgment, reparations — everything, without exception
Common layer (SIO)	Common data model; persistent identifiers; inter-institutional APIs; security envelope	Transport data between institutions under contract	Everything substantive: the layer never measures, rates, prices, finances, deliberates or adjudicates

The safeguards sit above the build, not alongside it. Every system in the table operates under the constitutional envelope of the present section: the negative list, upstream as well as downstream; the verb-level authority matrix (Section 7.3); the data governance matrix (Section 7.4); three-tier reflexive certification, closed upon the certifier itself; family-level degraded mode; and a named human signature at every binding lock. And the build adds a

discipline that constitutional text alone cannot provide: published automation indicators — human-machine disagreement rates, minimum review times, false-positive and challenge volumes, by institution and by quarter — so that “a human decides” remains an auditable fact about the system rather than a legal fiction about it. An institution whose analysts never disagree with their machines is not assisted; it is replaced — and the indicators are designed to detect precisely that.

These indicators constitute a standing obligation, not a discretionary courtesy. An institution unable to publish them quite simply fails to meet the condition required to operate an automated lock: in the absence of disagreement rates, review times and challenge volumes, “a human decides” is an assertion rather than a demonstrated fact, and the automation it describes is, by construction, unaudited. Publication is therefore treated as constitutive of the safeguard, and not as a mere report about it.

“An architecture’s worth lies not in the elegance of its design, but in what it preserves, corrects and allows to be contested when a real case passes through it.”

PART III — PUTTING THE CHAIN TO THE TEST

This part puts the chain to the test on four successive terrains — an integrated demonstrator, monetary spillovers, development finance, then preventive peace and crisis resilience — in order to verify that it holds otherwise than in principle.

Differentiated status of the applications. The four applications that follow have neither the same object nor the same level of proof. They do not add up to produce an overall validation of the chain. The data centre tests the internal coherence of the interfaces; the monetary case constitutes the principal empirical and methodological programme, still awaiting full causal estimation; Sevilla is an operational application intended to test the actionability of a portfolio; preventive peace is an exploratory extension grounded in a theory of change. Success in one domain does not automatically validate the others.

Scope rule. The framework must be applied where the effect crosses jurisdictions or generations, where several distinct transformations separate knowledge from response, where responsibilities are dispersed and where a right of challenge can be organised. It is not necessary where an existing mechanism already covers evidence, decision, enforcement and redress at lower cost, nor where uncertainty is such that no contestable attribution can be constructed.

8. The integrated demonstrator: an AI data centre

The preceding chapters have specified the architecture: seven functions, three instruments and a circumscribed role for artificial intelligence. This part puts it to the test, and this first case is an integrated demonstrator. It does not constitute an empirical study: it asks whether, once the seven functions and the three instruments have been specified, a single case file can pass through the whole architecture — without the measurement being redone, without the uncertainty disappearing, without the price preceding the law, without the funder commissioning its own evidence and without redress arriving too late. Chapter 9 will then push the analysis deeper on a case that is more difficult still: a lawful monetary decision, necessary within its own domestic order, whose effects propagate through prices and whose attribution requires separating incidence, transfer, welfare loss, equity and legal breach.

The vehicle chosen is a large-capacity data centre devoted mainly to the training and inference of artificial intelligence systems. The choice is not motivated by the idea that its impacts are unknown. Energy, water, emissions, cooling efficiency and, increasingly, certain dimensions of the life cycle are already the subject of technical work and of reporting obligations. The International Energy Agency estimates that data centres consumed approximately 415 TWh in 2024, that is nearly 1.5% of global electricity, and projects consumption close to 945 TWh in 2030 in its central scenario, artificial intelligence constituting the principal driver of that growth (International Energy Agency, 2025). The European Union already requires certain data centres to report common indicators of energy, water, heat recovery and renewable energy (European Commission, 2024). The International Telecommunication Union observes in parallel that methods remain fragmented, often centred on carbon and inadequate on water, infrastructure, inference and the life cycle (International Telecommunication Union, 2025). The deficit is therefore not a measurement void; it lies in the fragmentation of boundaries, units, impact-holders and consequences.

This case is particularly demanding for an architecture grounded in rights and functions. One and the same facility may display a low carbon intensity and increase the pressure on a water basin; purchase renewable electricity on an annual basis while drawing on the grid at the hours when marginal generation is carbon-intensive; improve its efficiency per unit of computation while increasing its total consumption through a scale effect; reduce its operating emissions while accelerating equipment turnover and embodied impacts. The purpose of the demonstrator is therefore not to produce a single environmental rating. It is to verify whether the architecture prevents a gain in one dimension from erasing a harm transferred to another dimension, another territory, another population or another period.

The point is not to hold back these infrastructures, whose usefulness may be considerable, but to establish the conditions of measurement and of redress without which their development sooner or later runs up against the mistrust of territories. A chain that makes impact verifiable and contestable is not the adversary of deployment: it is the condition of its durability, because it gives the diligent operator a verifiable title and the territory a reason to consent. The case therefore tests an architecture intended to make that development sustainable, not to oppose it.

VALIDATION STATUS. This section is an institutional simulation internal to the programme. The technical parameters are calibrated on published ranges, but the three locations are analytical types and not real projects. The calculations verify the continuity of the interfaces; the GIRA classes, the GFEA responses and the litigation decisions are provisional and illustrative. It applies the same doctrinal rules and the same interface contracts as the reference implementation of §7.5 — severity caps, non-offsettable exclusions, anti-double-charging register — without thereby constituting a validated output; the announced technical companion will document the correspondence. External validation would require audited operator data, pre-registered thresholds, independent scientific and legal review and effective participation of the affected parties.

8.1 Function of the case and status of the evidence

The case answers four questions. First, can HuIB produce a common measurement without conflating units that are not commensurable? Second, can GIRA qualify severity and trajectory without itself creating the facts or anticipating the price? Third, can the consequence institutions — GFEA, BFM and GSF — act in a differentiated manner, including by deciding not to price? Fourth, can IPDA and the Humanity Court make the entire pipeline verifiable and contestable, including where the data are automated, proprietary or protected by trade secrecy?

The evidence is organised into four levels already compatible with the general discipline of the document (§1). “Established” is that which rests on a directly measured quantity, a stabilised unit and a widely accepted method; “probable” is that which rests on a robust methodological chain but retains an uncertainty of attribution or of location; “indicative” is that which depends on a proxy or a transposition; a “gap” is that which cannot be computed without operator or value-chain data. These four levels create no new scale: “established” and “probable” correspond to evidence grades A–B and C of the Human Impacts Board, “indicative” to grade D, and the “gap” to the declared status of §5.2; the whole falls under the second category of Table 1 — results issuing from the programme, until independent replication. The gap is neither replaced by a global average nor translated into a price: it becomes a data obligation, a pilot condition or a downstream lock.

This rule is decisive. Completeness of the chain does not mean that every case file must reach every institution, nor that every measurement calls for a financial consequence. It means that every transformation actually carried out has a duty-holder, a method, a role prohibition and an avenue of challenge. The case may therefore stop after HuIB, return to HuIB from GIRA, produce no pricing at all, or activate capacity financing without recognising a reparation debt. This is the application of principle P1 — complete the chain, at a minimum — and not a presumption of maximal intervention.

8.2 Scenario, counterfactual and boundaries

The demonstrator takes as its unit a data centre with an installed IT capacity of 100 MW, operated at 85% on average over twelve months. Its annual IT consumption is therefore set at 744.6 GWh: $100 \text{ MW} \times 0.85 \times 8,760 \text{ hours}$. Three model locations use the same capacity and the same useful load; they differ only in the characteristics of the site, the cooling, the grid, the electricity mix and the possibilities for heat reuse. The counterfactual is a facility supplying the same volume of computation and the same level of availability in each of the three locations. This symmetry isolates location effects; it does not claim to represent an operator’s real choice, which would also depend on cost, latency, security, skills and regulation.

Four operational indicators are retained because they possess a stabilised definition: Power Usage Effectiveness (PUE), the ratio between the total energy of the centre and IT energy; Water Usage Effectiveness (WUE), the volume of direct water relative to IT energy; the Energy Reuse Factor (ERF), the share of energy reused; and the Renewable Energy Factor (REF), the declared share of renewable energy in total consumption. These indicators appear in the European data centre reporting regime (European Commission, 2024). PUE and WUE are also modelled in the Lawrence Berkeley National Laboratory report, which shows their dependence on facility type, cooling, climate and operating practices (Shehabi et al., 2024).

The assumptions are not observations. They are chosen within plausible ranges in order to test the behaviour of the chain. Location A combines a low-carbon grid, a low pressure on water and significant heat recovery. Location B combines a carbon-intensive grid, a moderate pressure on water and a strong grid constraint. Location C combines a hot climate, high seasonal water

stress and a power constraint at peak hours. The REF is retained as a declared contractual attribute; it is not deducted from the emissions calculated according to the average physical factor of the grid. This separation prevents an annual certificate from being treated, without further evidence, as an absence of hourly impact on the electricity system.

Table 18 — Demonstrator parameters and three model locations

Type-location	PUE	WUE (L/kWh IT)	Grid factor (kgCO ₂ e/MWh)	REF	ERF	Water / grid stress
A — low-carbon grid	1.15	0.20	50	0.90	0.20	Low / low
B — carbon-intensive and constrained grid	1.22	0.60	450	0.30	0.05	Moderate / high
C — hot climate and water stress	1.30	0.80	300	0.55	0.00	High / high

The boundaries are fixed ex ante. The horizon of calculation is annual; operational emissions use a grid factor based on location; direct water covers cooling and site uses; the embodied emissions of construction, servers, accelerators, semiconductors and networking are not attributed, for want of bill-of-materials and supplier data; the indirect water of electricity generation is not added to direct water; the effects on biodiversity, noise, employment, taxation and the value of AI services are described but not monetised. The ITU life-cycle methods provide the framework within which these gaps should progressively be filled (International Telecommunication Union, 2020).

8.3 HuIB: measuring without aggregating prematurely

HuIB opens a single case file bearing a persistent identifier of the facility, the site, the operator and the methodological version. It receives data from the electricity meter, the cooling system, the grid operator, the energy contracts, the equipment suppliers and the territorial authorities. Each entry retains its source, its unit, its frequency, its spatial boundary, its confidentiality status, any algorithmic transformation, the responsible human and the level of evidence. The data contract of §7.4 becomes here an operational item: what is not traceable is not passed downstream as a fact.

Four registers are maintained separately. The register of physical flows contains electricity, water, emissions, materials and heat. The exposure register locates these flows in a grid, a hydrological basin, a territory and a value chain. It also records, as an exposure to be investigated, the effect of the connection on local electricity prices — the share of grid and supply costs liable to be passed on to the other consumers of the territory — today the most debated of the externalities of these facilities and the least standardised in reporting. The harm or risk register documents congestion, scarcity, exposure of populations, ecological loss or end-of-life risk. The valuation and distribution register identifies costs, benefits and their holders. These registers may be linked; they are never added together as though they represented one and the same quantity.

The minimal calculations are as follows. The total energy of the centre is equal to IT energy multiplied by the PUE. Direct water is equal to IT energy, expressed in kWh, multiplied by the WUE. Operational emissions are equal to total energy multiplied by the local emission factor. Declared renewable energy and reused heat are obtained respectively by applying the REF and the ERF to total energy. These equations produce the outputs of Table 19.

Table 19 — Annual HulB results for the reference scenario

Location	IT energy (GWh)	Total energy (GWh)	Direct water (m³)	Operational emissions (ktCO ₂ e)	Reported renewable energy (GWh)	Reused heat (GWh)
A	744.6	856.3	148,920	42.8	770.7	171.3
B	744.6	908.4	446,760	408.8	272.5	45.4
C	744.6	968.0	595,680	290.4	532.4	0.0

The results do not designate a “better” site in absolute terms. Location A strongly reduces operating emissions and direct water, while reusing a share of the energy; it nevertheless remains incomplete so long as the equipment, the embodied emissions and the hourly availability of low-carbon electricity are not documented. Location B is dominated by the physical intensity of the grid and by the power constraint, despite a water consumption that remains lower than that of C. Location C presents emissions lower than B but a direct pressure on water four times higher than in A, in a basin where each unit of water has a different territorial significance. The ranking cannot therefore derive from a single global metric.

HuIB then applies six burden-shifting tests: carbon against water; operation against manufacturing; annual average against hourly constraint; consuming territory against producing territory; present benefit against future cost; beneficiaries of the computation against affected populations. The test does not automatically subtract a benefit from a harm. It asks whether the two quantities have the same holder, the same territory, the same period and a comparable grade of evidence. A useful global service does not mechanically offset a local water restriction; conversely, a local pressure does not establish that the service is devoid of social value.

Table 20 — Probative status, non-additivity and downstream lock

Subject	Status	Decisive limitation	Procedural consequence
Electricity and PUE	Established within the scenario	Meters + settled definition	Transmission to GIRA possible
Direct water and WUE	Established for volume; probable for impact	Meters; dependence on basin and season	Territorial qualification required
Operational emissions	Probable	Local average factor; no hourly marginal factor	Range and dual reporting
REF and contracts	Established as a contractual attribute	Does not on its own demonstrate hourly physical impact	No automatic erasure
Embodied emissions	Gap	Bill of materials, suppliers and service life absent	No price; data obligation
Materials and electronic waste	Gap / indicative	Sectoral proxies only	Guarantee and traceability, no quantified damage
Biodiversity and soils	Indicative	Location known; baseline state absent	Site study before qualification
Effect on local electricity prices	Gap / indicative	Tariff allocation of network and supply costs not established	Territorial tariff study before any qualification
Social and economic benefits	Indicative	Employment, taxation and AI uses unspecified	Separate presentation; no overall offsetting

The HuIB result is therefore neither a class nor a price. It is a multidimensional passport composed of values, uncertainty bands, gaps and exposure relations. It is versioned and contestable in accordance with §5.2. The first institutional conclusion of the case is negative but substantial: the absence of life-cycle data precludes any financial consequence on embodied

emissions and waste. The chain does not fill the gap; it prevents the gap from being masked by a convenient average.

8.4 GIRA: qualifying without pricing

GIRA consumes the HuIB case file without re-measuring the flows. It produces two outputs in accordance with §5.3: a qualification of severity by externality and an actor class accompanied by an outlook. Since the complete thresholds are not yet validated, no definitive numerical coefficient is manufactured in this simulation. Severity is merely situated relative to the neutral level: low for climate, water and grid in A; high for climate and grid in B; high for water and grid, moderate for climate in C. This restraint prevents a veneer of precision from being mistaken for an adopted method.

The provisional class of A is B, stable outlook: the operational impacts are contained, but the class cannot reach A so long as the embodied data, the hourly matching of energy and the expansion trajectory are not established. B receives D, negative outlook: carbon intensity and the grid constraint dominate the limited gains from heat recovery. C receives D, negative outlook, with a non-offsettable ceiling linked to seasonal pressure on water: an improvement in carbon cannot raise the class above D so long as the territorial water threshold is not respected. These classes are simulation results, not enforceable ratings — and they follow mechanically from chosen parameters: it is the passage of the case file that is tested, not the verdict on a type of site.

The qualification brings out a property that measurement alone cannot supply: two sites with identical IT consumption and comparable emissions may receive a different assessment according to territorial exposure and the distribution of the injury. But GIRA still does not turn water scarcity into a charge, nor a class D into a sanction. It transmits a structured output, signed by a named analyst, which preserves HuIB's uncertainties and states the grounds for each ceiling. The entity may challenge the facts before HuIB and the qualification rules before GIRA; the two case files remain distinct.

8.5 GFEA, BFM and GSF: consequence, adjustment and financing

GFEA receives the measurement by way of the qualification, but does not presume that every externality is monetisable. It applies four locks in succession: legal basis for the consequence; link between the activity and the cost; the operator's ability to avoid or reduce the impact; corrective gain exceeding administrative costs and strategic reactions. In case A, it proposes no corrective levy. It may recognise, if national law so permits, a transition credit for heat recovery or verified flexibility, and require an end-of-life guarantee whose amount rests on the cost of decommissioning rather than on an abstract valuation of the harm.

In B, GFEA distinguishes grid cost from climate. The share of reinforcement directly made necessary by the connection may give rise to a connection contribution or to a flexibility contract according to the applicable law; it does not become a global tax on AI. Operational emissions may call for a reduction obligation, a purchase of additional energy or a domestic price where the jurisdiction has incorporated one. The simulation sets no international price: the hourly marginal factor, the counterfactual cost and the taxing authority are not established.

In C, the priority consequence is physical before being monetary: a seasonal ceiling, a minimum reuse of water, a water-curtailment mechanism and community monitoring. A charge becomes admissible only if water law, the local marginal cost, the rights of users and the allocation of the revenue are determined. Where essential human access or the integrity of the basin crosses a non-offsettable threshold, P8 prohibits treating the harm as a mere price line. GFEA may then recommend a condition or an exclusion; it does not turn the prohibition into a right to pay in order to harm.

The Border Fairness Mechanism is not activated as a levy in this pilot. Cross-border digital services do not yet possess a recognised unit of impact, an operational rule of origin or a legal opinion covering trade in services, non-discrimination, data protection and trade secrets. The BFM may nevertheless test three non-pricing functions: an impact passport for imported equipment; the recognition of an equivalent foreign method; a disclosure requirement in public procurement or cloud contracts. This non-activation is a result of the design, not a failure: P3 and Table 7 prohibit a border mechanism from acquiring an effect that no jurisdiction has incorporated.

GSF intervenes only where the object financed falls within a collective good, a public capacity or a protection of affected populations. It does not finance the operator's normal obligations. It may contribute to a public basin measurement system, to a shared water-reuse infrastructure, to a recycling capacity accessible to several actors, or to the legal and technical representation of communities, subject to additionality. In B, it may co-finance a grid reinforcement that benefits the territory beyond the centre alone, once the share attributable to the operator has been separated out. In C, it does not subsidise an excessive water abstraction; it finances the prevention and adaptation capacity that the market does not supply. The re-measurement of results remains commissioned from HuIB, never carried out by the Fund itself (§5.6).

8.6 IPDA: certifying the pipeline that measures AI

The case is reflexive: the architecture uses AI systems to analyse the physical impact of the infrastructure that makes AI possible. IPDA therefore does not certify only an AI model offered to the public; it certifies the sociotechnical system through which the architecture observes the centre. Its scope includes the meters and their interfaces, the breakdown between AI and non-AI loads, the versions of the consumption-allocation models, the grid factors, the PUE, WUE, REF and ERF calculations, the consistency checks, the access rights, the change logs and the final human signature.

Certification imposes a dual presentation of electricity: physical impact based on location, and contractual attribute based on market instruments, without allowing one silently to erase the other. This distinction accords with the logic of the GHG Protocol Scope 2 Guidance, which separates location-based and market-based methods (GHG Protocol, 2015). In the pilot, HuIB's calculations are location-based; the REF remains published alongside, as contractual information. IPDA verifies that this choice is applied identically to the three sites and that any methodological modification triggers a new version of the case file.

Trade secrecy is handled in layers. Raw data on load, IT architecture or suppliers may remain in a secure data room; the units, methods, ranges, assumptions and results necessary for adversarial scrutiny are published. Every automated transformation retains the model, the version, the prompt or the rule, the input, the output, the error rate and the responsible human. The indicators of §7.5 — human-machine disagreement, review time, false positives, corrections and challenges — are mandatory. An institution that cannot produce them may not use automation as a binding lock.

8.7 The case file passing through the seven institutions

Before contentious proceedings begin, the case file can be summarised as a succession of bounded outputs. Table 21 makes visible the interfaces, the negative mandates and the possible returns that prevent an upstream error from automatically becoming a downstream consequence.

Table 21 — The case file passing through the seven institutions

Link	Question addressed	Output	Negative mandate	Redress / feedback
HuIB	Measures flows, exposures, uncertainties and gaps.	Versioned impact passport.	Does not rate or price.	Methodological feedback / Court
GIRA	Qualifies severity, trajectory and equity.	Provisional class and reasons.	Does not re-measure or set the price.	Review / Court
GFEA	Chooses response, base and any consequence.	Absence of price, condition, guarantee or contribution.	No power without a legal basis.	Court / national authority
BFM	Tests passport, equivalence and cross-border application.	Non-tariff pilot; levy not activated.	Does not create its own trade doctrine.	Court / trade mechanisms
GSF	Finances public capacity and additional protection.	Allocation separate from the operator obligation.	Does not tax, measure or rate.	Court / audit
IPDA	Certifies data, models, interfaces and the human lock.	Certificate, log and conditions of use.	Does not legitimise the substantive decision.	Court / certification review
Humanity Court	Reviews competence, procedure, evidence and proportionality.	Decision, suspension, annulment or remittal.	Does not remake policy or expertise.	Review as provided by the instrument

Table 21 shows that continuity does not result from a single decision. Each link receives a bounded output, retains its level of uncertainty and produces a contestable item. The common base layer carries the case file; it does not do the work of any institution. A correction made to water within HuIB triggers a new version of the qualification and of the dependent consequences; it does not silently modify the other dimensions. The non-propagation of error becomes a property of the information system and not a mere intention of governance.

8.8 Humanity Court: three simulated challenges

The Court becomes relevant only at the moment when an act, a procedure or a consequence is challenged. It chooses neither the site, nor the electricity mix, nor the cooling technology. It reviews competence, regularity, access to evidence, the giving of reasons, proportionality and respect for rights. Three challenges are simulated in order to verify that the transmitted case file retains enough information to permit effective review.

Table 22 — Three simulated challenges before the Humanity Court

Case	Claim	Question of law and procedure	Simulated decision
A — Basin community against the decision concerning C	Annual measurement masks the dry season and the impact on essential uses.	Monthly data, basin status, legal thresholds and participation insufficient.	Suspension of the final water-related consequence; an interim cap may be maintained; remittal to HulB and GIRA for re-measurement and fresh reasons.
B — Operator of site B against the climate qualification	Annual renewable contracts should neutralise the grid impact.	Alleged conflation of the physical method and the contractual method.	Obligation to publish both methods; the physical impact may be retained if the rule was prior, general and reasoned; remittal if hourly matching was not examined.
C — Equipment supplier against the Scope 3 data request	The bill of materials and the processes are trade secrets.	Proportionality of collection and the right to be heard.	Secure data room, publication in ranges and independent audit; absolute confidentiality refused; no pricing so long as the embodied evidence remains insufficient.

These decisions illustrate four limits of the jurisdiction. First, referral back is preferred to the replacement of expertise: the Court may annul or suspend an irregular output, not itself produce the measurement. Second, interim measures remain possible where a serious and reversible risk requires immediate protection, subject to expiry and review. Third, transparency does not entail the publication of every raw datum; it requires that the affected party be able to know and challenge the reasons. Fourth, insufficiency of evidence blocks the consequence without making the harm non-existent. The Court guards the guardians, but it does not govern in their place (§5.8).

8.9 The three instruments in the case

The seven functions do not operate in a constitutional vacuum. The Carthage Charter supplies the principles according to which the case is handled: dignity, non-discrimination, participation of affected parties, proportionality, sustainability, the right to reasons, data protection and redress. It authorises no levy by itself; it bounds the choices made under an acquired competence.

The Global Accountability Framework organises the legal effects consented to: the mandate of each institution, interface contracts, rules of access to data, recognition of methods, financing, audit, liability, suspension and withdrawal. In the simulated phase, it takes the form of a pilot protocol accepted by the operator, the jurisdiction and the participating bodies. The outputs are notional except for obligations already grounded in national or European law. Binding force therefore derives from consent, incorporation or contract, never from the existence of the document alone (§6.4).

The Call of Carthage opens referral, participation and agenda-setting. Workers, local residents, water users, researchers and users of digital services may report a gap, challenge the definition of an indicator or request the examination of a burden shift. The Call ratifies no norm and replaces neither parliaments nor contentious procedure. It renders visible the interests that are not necessarily represented in the contractual relation between the operator and the jurisdiction.

8.10 Competing architectures and the selection rule

A case constructed to illustrate seven institutions could circularly conclude that all of them are necessary. The selection rule of §4.4 prohibits that reasoning. The demonstrator therefore compares four configurations: the fragmented status quo; a common data protocol without new institutions; a three-function architecture grouping measurement-qualification, consequence-financing and control; and the complete 7+3 chain. They are assessed on comparability, separation of roles, interface integrity, cost of participation, containment of error and access to redress.

Table 23 — Comparison of the four architectures on the AI data centre case

Architecture	Comparability	Separation of roles	Error containment	Redress	Cost of participation	Test outcome
Fragmented status quo	Low to medium	Low	Low	Low to medium	Low	Low initial cost; incomplete and unconnected results.
Common protocol	High for data	Medium	Medium	Medium	High	Good starting point; insufficient if a consequence is contested.
Three-function architecture	High	Medium	Medium to high	High	Medium	Plausible compromise; risks of conflict between measurement and rating, pricing and financing.
Full 7+3 chain	High	High	High	High	High	Best separation; the highest interface cost and a need to prove added value.

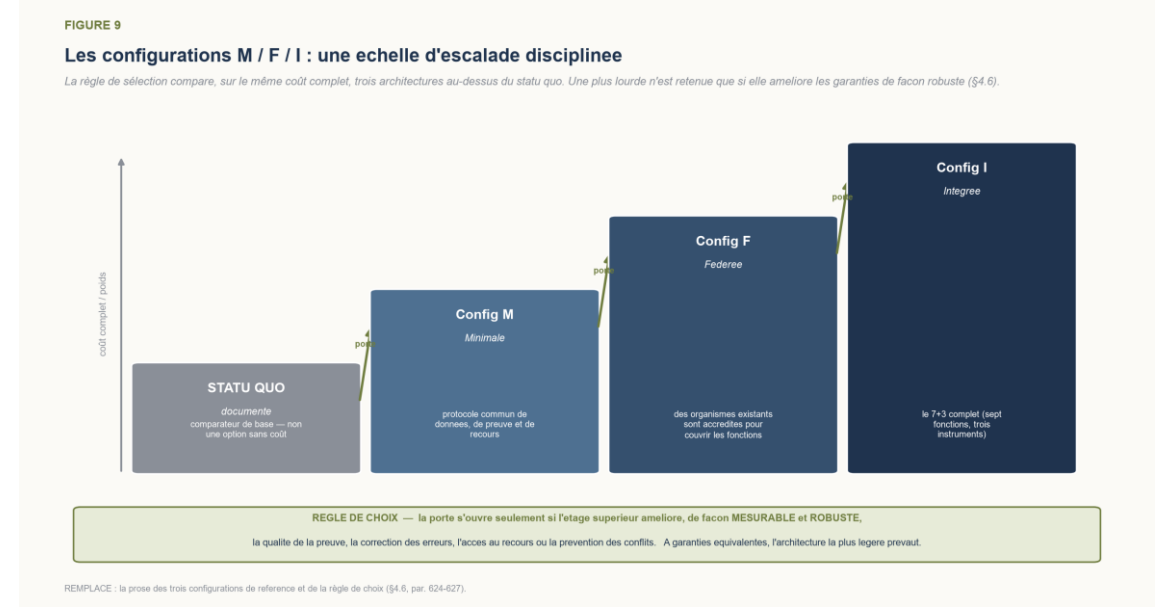


Figure 5. The S0–S6 routing tree: classify before pricing

The result is more nuanced than a validation of the number of bodies. The common protocol suffices to produce a first comparable measurement and to render the gaps visible. The three-function architecture can handle a non-binding pilot provided that separate teams, budgets and decisions are maintained within the host bodies. The complete chain becomes justified when the outputs produce distributive or legal effects, when several jurisdictions must recognise the methods, when the funder depends on the measurement, or when challenges require an independent forum. The necessity of the functions is better established than the immediate necessity of seven new legal persons.

The configuration recommended for the first phase is therefore federated and hybrid. HuIB, GIRA and IPDA begin as functionally separate protocols and panels; GFEA and GSF operate through the existing authorities and funds of the volunteer jurisdiction; the Humanity Court takes the form of an internal review mechanism or of a consented arbitration; the BFM remains in observation and becomes binding only after validation of the measurement and a specific legal opinion. This trajectory applies P4 — non-substitution — and P7 — the pilot before the regime — while preserving the full destination of the chain.

8.11 Results, limits and the move to a pilot

The simulation produces five results. First, HuIB can cover a field remote from monetary spillover effects without abandoning the same discipline: ex ante boundaries, non-additive registers, impact-holders, attribution and uncertainty. Second, multidimensional measurement prevents carbon from serving as a substitute for the environment as a whole: water, the grid, materials and territory remain visible even where operational emissions are low. Third, the separation between HuIB, GIRA and GFEA produces different decisions according to the maturity of the evidence: measuring, qualifying, conditioning or not pricing. Fourth, IPDA and the Court are not ancillary functions; they render contestable the automated process by which the architecture claims to know. Fifth, the case does not demonstrate that a complete global organisation must precede action: a federated instantiation can produce value under existing law, in accordance with Table 7.

Three conditions would nevertheless invalidate the added value of the 7+3. The first would be that a common protocol and a national review obtain the same precision, the same independence and the same access to redress at a significantly lower cost. The second would be that the necessary data remain durably inaccessible or non-auditable, such that the downstream outputs rest on proxies rather than on evidence. The third would be that the separation of bodies increases delays and costs without reducing role conflicts, errors or infringements of rights. In each of these cases, the rule of §4.4 requires merging, simplifying or abandoning the configuration, not defending the 7+3 by construction.

The move to validation therefore requires a pre-registered pilot: a volunteer jurisdiction; a real operator and a real site; twelve months of hourly energy data and monthly water data; a minimum bill of materials for equipment; a territorial baseline; a panel of affected parties; two independent coding teams; a public log of corrections; a comparison between protocol, three-function architecture and complete chain; and consequences kept in notional mode during the first phase. The success indicators are those of Table 48 (infra, §12.5): coverage, error and correction, delay, cost, participation, accessibility of redress, data incidents and operation in degraded mode.

The case thus fulfils its function without over-promising. In Chapter 9, monetary spillover will show why a chain is necessary when an incidence crosses borders without a common forum of attribution; the present demonstrator shows, for its part, how that chain can preserve a multidimensional case file from the physical datum through to redress, including where the correct answer is not to price or not to activate a link. The demonstration does not yet validate the architecture in the field; it renders its interfaces, its stopping points and its conditions of

defeat sufficiently explicit to be tested. The internal tensions that these tests reveal are examined in Chapter 13.

9. Monetary spillovers: from incidence to bounded attribution

The demonstrator of Chapter 8 took a case file through the whole of the chain; this chapter goes deeper into one of the mechanisms that chain must know how to handle. Among the five transmission modes of Table 4, policy spillovers are the least theorised at the institutional level — and the one this research programme has dissected most completely. The present section descends one level into the mechanism, for three reasons. First: it demonstrates, on a worked case, the measurement discipline that the architecture's measurement layer (§5.2) would apply to every family of externality. Second: it establishes that a “spillover” is not a single phenomenon but a bundle of distinct mechanisms, separately attributable — which explains why undisciplined headline figures (“central bank X cost country Y sixteen billion”) are both common and, as they stand, indefensible: not because the order of magnitude would be wrong, but because a single amount, undecomposed and unattributed, cannot be substantiated. Third: it is the mode I have known from the recipient side, and whose transmission chain I can therefore render at first hand. The anatomy that follows is generic: these mechanisms operate on any low- or middle-income country endowed with external debt, an open capital account and energy and food imports; a full country-level companion document is reserved for future work.

The monetary case is a case, not the thesis. It is retained here because it is the least theorised at the institutional level, the most contested, and the one where the break in the chain is most visible — not because it would be the most serious. It is one family out of twenty.

The epistemic consequence must be drawn from this, as §4.4 draws it for an organ. If this case were refuted — if it were established that these spillovers are efficient, or that the recipient jurisdiction has the instruments to protect itself from them —, the chain would not thereby be refuted: it would lose a family. The architecture rests on no particular case. It rests on the proposition that, in each of the twenty families, the same interface is broken.

9.1 Four families, fifteen mechanisms

This decomposition is disciplined but not exhaustive, and conditioned by the recipient-country profile retained (external sovereign debt, open capital account, energy and food imports). It isolates the fifteen material channels for this case; other profiles — heavy external corporate debt, a dollarised banking system — activate others, themselves documented: the cross-border banking and risk-taking channel (Bruno and Shin, 2015a, 2015b), the balance-sheet channel of firms indebted in foreign currency (di Giovanni, Kalemli-Özcan et al., 2022), trade credit (London and Silvestrini, 2025), or the discreet loss of market access (sudden stop; Calvo, 1998). The taxonomy is open and versioned — in the manner of the measurement layer (§5.2) —, and a detailed country-level decomposition (Annex G) would itemise them.

Each family of channels rests on an established literature: the monetary and financial channels on the global financial cycle and monetary policy spillovers (Miranda-Agrippino and Rey, 2020; Kalemli-Özcan, 2019; González-Rozada and Levy-Yeyati, 2008), the real channels on capital flow waves (Forbes and Warnock, 2012), and imported price shocks on commodity markets (World Bank, Commodity Markets Outlook). The attribution ranges remain reasoned estimates, not measurements. To these channels is added a composition effect on credit itself: under asymmetric information, a global tightening translates not only into higher rates but into a rationing of credit — lenders restrict quantities rather than raise prices, for fear of attracting the riskiest borrowers (Stiglitz and Weiss, 1981) —, so that the recipient economy undergoes a sharper contraction of financing than the interest-rate spread alone would suggest. One theoretical result gives this spillover its structural character: under free capital mobility, the global financial cycle — largely governed by the monetary policy of the centre — constrains domestic financial conditions whatever the exchange rate regime, so that the classical trilemma is reduced to a dilemma and floating no longer secures autonomy (Rey,

2015). The recipient economy therefore cannot “float” its way out of the spillover: the exposure is undergone and not chosen, which grounds its examination within the accountability chain. Whether it calls for a financial correction still depends on what §9.7 establishes — a net welfare loss, an imperfection not internalised and an insufficient national remedy.

When the major central banks tighten their policy, the cost reaches the recipient country through at least fifteen cash-flow mechanisms distributed across four families — plus one balance-sheet memo item that must never be added to them. Table 24 presents them. At this stage, only one thing is at issue: establishing that these mechanisms are real and signed — twelve work against the recipient country, three in its favour; what each of them has that is attributable to the source policy is the matter of sections 9.2 to 9.6.

Table 24 — Fifteen transmission mechanisms of a monetary policy spillover effect (plus one memo item)

#	Mechanism	Mode of transmission	Effect for the recipient country
A1	Additional exchange-rate cost on debt service (cash flow)	Tightening → stronger reserve currencies → local depreciation → more local currency required for each unit of foreign-currency debt service actually paid	Negative — cash flow
A2	Additional floating-rate interest cost	Reference rates (SOFR, Euribor) rise → the floating-rate tranche of external debt reprices automatically	Negative — cash flow
A3	Refinancing — risk-free curve	Each new issue or rollover is priced off a higher risk-free curve	Negative — cash flow
A4	Refinancing — global emerging-market spread	Global risk aversion widens emerging-market spreads indiscriminately, irrespective of the country’s fundamentals	Negative — cash flow
A5	Refinancing — idiosyncratic premium	The country-specific premium (programme status, ratings, politics)	Negative — cash flow
A6	Cost of carrying reserves	Reserves yield less than the rising cost of domestic funding — the negative carry widens	Negative — cash flow
A7	Domestic crowding-out	Imported tightening compels the domestic central bank to raise its own policy rate → domestic debt service rises	Negative — cash flow
B1	Imported cereal-price shock	World cereal prices surge under supply shocks	Negative — imported prices
B2	Imported energy-price shock	World energy prices deepen the energy deficit	Negative — imported prices
C1	Drag on export demand	Tightening slows the main trading partner’s economy → export orders fall	Negative — real economy
C2	Drag on FDI and financing	Risk aversion delays or reduces inward investment	Negative — real economy
C3	Tourism (buffer, negative sign)	Tightening at the centre compresses the income of its residents, who travel less, and the recipient country’s tourism receipts fall	Negative (real economy)
O1	Return on reserves (gain)	Reserves invested at the higher policy rates yield more — a genuine offset, deducted once only	Positive — offset
O2	Revaluation of diaspora remittances (gain)	Depreciation raises the local-currency value of remittances	Positive — offset
O3	Ebb in world prices (gain)	End-of-cycle easing in energy and food prices	Positive — offset
—	<i>Memo item: exchange-rate revaluation of the debt stock</i>	<i>Balance-sheet revaluation of the entire external debt stock — presented separately, never added to cash flows</i>	<i>Neutral — balance-sheet item, memo</i>

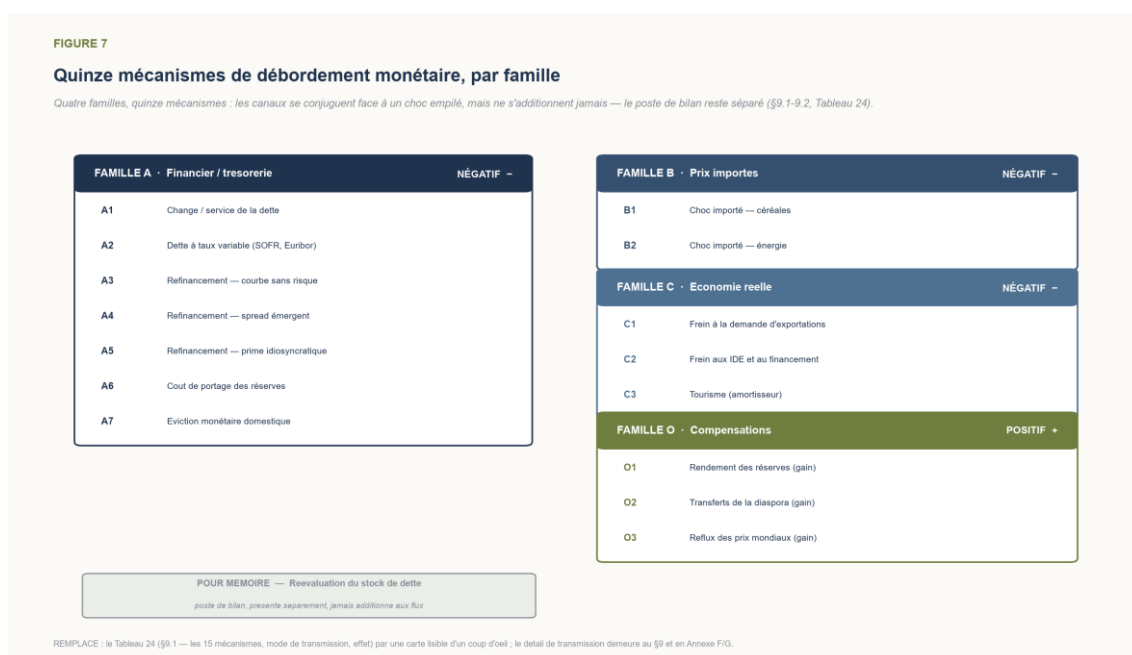


Figure 6. Fifteen monetary spillover mechanisms, by family

Three of the fifteen are gains (the offsets O1 to O3), and three are nil by construction (the idiosyncratic premium and the two supply-driven price shocks): the discipline is visible in the structure itself. A set in which some lines are attributed at 100 per cent, others at zero, and in which the offsets are subtracted, is the exact opposite of an advocacy figure.

9.2 The discipline of attribution

Before the rules of calculation, one distinction governs everything that follows: the epistemic status of a figure — what it entitles one to assert, and what it does not. One and the same amount may belong to three very different levels of proof, and conflating them is the fault this section forbids itself. Box 10 sets the ladder; the seven rules that follow are its guarantees.

Box 10 — STOPPING CRITERION · The epistemic ladder of quantifications (three rungs).

1. Accounting incidence. What an item actually costs the recipient country, once the counterfactual has been declared — a cash-flow fact, measurable and verifiable (for example the excess interest cost on the floating-rate tranche, line A2 of Table 24, near-total through mechanical indexation). Permits: recording a transfer. Does not permit: concluding to a global welfare loss, or to a fault. 2. Plausible attribution. The share of that incidence reasonably imputable to the foreign decision rather than to domestic fundamentals or to common global determinants — a range, never a point (for example “30–60%” on foreign-currency debt service; the idiosyncratic premium remaining nil by construction). Permits: routing the externality to an organ and applying a severity coefficient to it. Does not permit: treating the range as identified causality. 3. Identified causality. The effect established by an explicit econometric identification strategy (local projections, exogenous shocks, robustness tests). Permits: a causal assertion in the peer-review sense. Status here: this document does not claim this rung; the quantifications presented stand at rungs 1 and 2, and formal identification is deferred to Annex G (empirical protocol and diagnostic). Cardinal discipline. Just as a net figure is never added to a gross figure, a figure from one rung is never presented as though it held at the rung above. The Tunisian monetary core (~0.76–1 billion euros net, §9.3) is an accounting incidence with partial attribution — not a causally identified welfare loss. This

ladder answers in advance the objection of the pecuniary externality (§13): a transfer established at rung 1 is not, in itself, a net global loss at rung 3.

Seven rules govern the calculation, and each of them constitutes a general lesson for the measurement of externalities. First, no attribution without a declared counterfactual — here, “policy rates held at their end-2021 level”, denoted c_0 and retained as a polar reference — not as an upper bound by definition: its position within the range is an empirical question (§F.2); a neutral-rate counterfactual would reduce the gross figure by about a third. Second, attribution is carried out mechanism by mechanism, never uniformly: 100 per cent is reserved for the risk-free curve itself; the idiosyncratic premium and supply-determined price shocks are held at zero by construction, however tempting their inclusion may be; and each share is a reasoned range accompanied by its sensitivity, not a point measurement (§9.5). Third, stocks and flows are never mixed: the revaluation of the outstanding debt stock is a balance-sheet memo item, not a budgetary cost. Fourth, offsets are not netted blindly: higher returns on reserves, revalued transfers, the easing of prices at the end of the cycle are reported separately, by beneficiary, and are deducted from a loss only if an effective or legally committed transfer is documented (matrix $T = 0$ by default, §F.7). Fifth, horizons are kept separate: a figure cumulated over the cycle and an annualised structural figure are two different objects, and adding them together — or comparing the figure cumulated over the cycle, or any gross aggregate mixing market costs and welfare valuations, with the GDP of a single year — constitutes a category error. Sixth, no double counting in the total: an effect that passes through two channels — depreciation, for example, present both in foreign-currency debt service and in refinancing — is allocated once only, at the level of primitive economic components, before aggregation (allocation weights summing to one, §F.6); pairwise seam correction (in the manner of the sixty-six pairs documented in the workbook of the twenty families) is retained as a robustness check, not as the principal estimator: each channel’s gross exposure remains visible, and the cumulation remains honest. Seventh, costs and offsets are attributed on the same base and the same counterfactual: one does not take the costs prudently and the gains generously, or the reverse — the net figure is honest only if both its sides are measured by the same yardstick. To attribute is not to incriminate: the chain is causal and accounting, not a finding of fault or of bad faith — the policies at issue are legitimate and mandated (§2.1); this is what separates measurement from accusation. The programme’s own communication rule is blunt: never publish the gross sum without its non-additivity warning, and never say “the central banks cost this country sixteen billion” — that sentence mixes causes that the taxonomy exists precisely to distinguish.

Table 25 — Attributable shares by mechanism: the seven rules applied

Attributable share	Mechanisms (Table 24)	Principle
Full (100%)	A3 — refinancing on the risk-free curve	The curve is the policy instrument itself
Near-full (90–100%)	A2 — additional floating-rate interest cost	Mechanical indexation to reference rates
Partial (reasoned ranges)	A1 exchange rate (30–60%); A4 global spread (30–70%); A6 reserve carry (40–60%); A7 domestic crowding-out (30–50%); C1–C3 real channels (20–45%); O1–O3 offsets (40–70%)	Global and domestic determinants intertwined; each share is a range accompanied by its sensitivity (§9.5); offsets are attributed on the same base and the same counterfactual as the costs
Nil by construction	A5 idiosyncratic premium; B1–B2 supply shocks (cereals, energy)	Never attributable to foreign monetary policy, however tempting inclusion may be

Three features emerge from Table 25: attribution is never uniform — it runs from the whole, when the curve is the very instrument of the policy, to zero, when the shock comes from supply; offsets are judged by the same yardstick as costs; and the exclusions by construction protect the calculation from its commonest temptation — counting everything.

An objection from symmetry, and the rule it imposes. The decomposition that precedes bears on a tightening cycle. An easing cycle may produce effects of the opposite sign — and it must be said again here: the object of this chapter is not to assess the appropriateness of monetary policies, it is to measure what they displace. The objection is no less serious: if tightening is priced without easing being credited, the attributable share becomes an accounting artefact. Ocampo states it himself, and he is not to be suspected of indulgence towards the source jurisdiction: in the aftermath of the failure of Lehman Brothers, he writes, “part of the stimulus of US expansionary policies was exported to the rest of the world” (Ocampo, 2011).

This observation is exact, and it must be entered on the debit side before answering it. A part of the stimulus did indeed cross borders: capital inflows, cross-border credit, demand addressed to the recipient economies. But two features change its nature. The first is distributive: liquidity does not spread uniformly, it benefits first those who receive it first — the centre of the dollar network and the holders of assets —, an effect of proximity to the monetary tap that theory has long identified. The second is that this stimulus is in large part an asset-valuation effect, concentrated and reversible, and not a real and acquired creation of wealth. It is therefore not a transfer of wealth symmetrical with the damage: it is a transfer of risk towards a periphery that chooses neither the cycle nor its timing. The exported gain is real; it is also conditional, temporary and backed by an exposure that it itself builds.

The rule adopted is the following: one does not offset a loss with the gain that caused it. The capital inflow of the easing phase is not an offset to the reflux: it is its condition. Three links, all of them established, connect it to the damage. The recipient cannot refuse the flow: in the presence of a global financial cycle, a floating exchange rate does not insulate (Rey, 2015) — nor, for that matter, does a fixed one, even if it may protect partially. The flow builds the exposure: the depreciation of the dollar widens bank leverage and cross-border credit, and foreign-currency indebtedness accumulates (Bruno and Shin, 2015). The reflux destroys investment, and it does not give it back: emerging market output remains depressed at the tenth quarter (International Monetary Fund, 2023). One does not credit the damage with the flow that made it possible: the capital inflow of the easing phase built the exposure from which the reflux subsequently draws its violence; it is its condition, not its offset. That all agents belong to the same global system does not dissolve the distributive question: it is, on the contrary, what grounds it. An externality exists only because the action of one propagates into the balance sheets of others; the unity of the financial planet is the premise of this chapter, not an objection against it.

A second reason, independent of the first, forbids the cancelling out. Even were a gain causally unconnected with the loss, it could not be credited against it once it accrues to different subjects, at a different moment, and none of them has chosen either the one or the other. To sum algebraically a benefit borne by some and a detriment borne by others in order to display the balance is to treat distinct persons as a single agent; it is the fiction that welfare economics knows under the name of hypothetical compensation — the Kaldor-Hicks criterion (Kaldor, 1939; Hicks, 1939), whose reversibility Scitovsky (1941) moreover demonstrated —, and which holds only if the compensation actually takes place. Without a real transfer, the net balance cancels nothing: it redistributes while concealing that it does so. This requirement does not contradict the deduction of items O1–O3 (return on reserves, revaluation of transfers, reflux of prices), for these are contemporaneous with the shock, proceed from the same cause and strike the same recipient: they measure the net effect of one and the same event on one and the same subject, not the compensation of one group by another across time.

The discipline that follows from this is explicit. The offsets of family O in Table 24 (O1–O3) — return on reserves, revaluation of transfers, reflux of prices — are contemporaneous with the shock: they are entered as deductions, and they remain so. The

capital inflow of the earlier phase is not, and the document states here why. No item may be entered as an offset against a detriment of which it is the cause. The condition of refutation is stated and accepted: if the response functions proved symmetrical — an easing creating as much durable investment as a tightening destroys —, the claim would vanish; the Fund has measured half the cycle (§9.5), no one has yet measured the other, and until then the rule remains a disciplined hypothesis. This disagreement is not one of principle but of measurement, and it is refutable. It reduces to a precise question — are the response functions of an easing cycle the exact mirror of those of a tightening? — which the empirical protocol treats as such, by requiring that gains and costs be estimated with the same horizon and the same counterfactual. The available evidence — investment hysteresis, emerging market output still depressed at the tenth quarter — points towards asymmetry; but the burden of proof is accepted, and the rule will fall if symmetry is established.

Since then, these seven rules no longer remain at the level of principles: they form a model of bounded partial attribution, set out in full in Annex F. There the counterfactual ceases to be a rate path and becomes a coherent vector of trajectories — rates, risk-free curve, exchange rate, global risk appetite, commodity prices —, failing which an endogenous reaction would be counted as an effect. Exposure is fixed before the shock, and not read off after it, so that an adaptation undergone is not treated as predetermined. Each mechanism receives its own measurement function, and not a single “base $\times$ price spread” formula, so that the rationing of credit — a restriction of volume, not of price — can be represented. The attribution coefficients α are not chosen one by one but belong to a joint admissible set: taking each adverse channel at its maximum and each offset at its minimum, when the same shock links them, is not permitted. Double counting is eliminated at the level of primitive economic components, allocated once only before aggregation, rather than by an ex post subtraction. And offsets do not enter blindly: a gain accruing to one agent reduces another’s loss only if an effective or legally committed transfer is documented, so that consolidation preserves the resources without masking a distributive loss. No new figure results from this: the gain is that every input, allocation, exclusion, counterfactual and stopping rule becomes inspectable and refutable, line by line, and that the chain knows how, when the evidence is lacking, to refuse to attribute or to price.

9.3 Orders of magnitude, at three scales

Applied to Tunisia over the 2022-2025 tightening cycle, the decomposition yields gross imported externalities, all causes taken together, of about 15 billion dinars ($\approx$ 4.5 billion euros) — of which a strictly attributable monetary core, net of offsets, of about 0.76-1 billion euros (envelope 0.6-1.9 billion). This core is triangulated internally from three of the programme’s models, not by independent external methods: it is a contestable estimate, not a measurement. The net core represents only about a fifth of the gross, because the bulk of the Tunisian gross figure arises from imported energy and food price shocks — of supply origin, held at zero by construction (§9.2). The early estimate I published in 2023 (Yaiche, 2023), one year after the beginning of the cycle (4.2-4.5 billion dinars), lies within the trajectory that the full-cycle model subsequently confirmed. At the global scale, the anatomy is transposable — and this document does not transpose it. An extrapolation to the whole of the emerging market and developing economies would require what is not yet published: the coverage of the countries retained, the weightings, the treatment of the heterogeneity of exchange rate regimes and capital controls, the treatment of missing observations, and the separation from domestic drivers. As long as the supporting evidence pack does not carry these elements, this document reports no global figure — neither gross, nor net, nor incidence ratio. The rule it applies to itself here is the one it asks of others: a programme result whose deposit has not reached its publication threshold does not enter the body. A worked case, set out with its method and its limits, can be defended; the extrapolation of that case to eighty countries,

without published coverage or weighting, cannot. The global extrapolation, like the continental estimate, belongs to Annex G (protocol specified in §9.5) and to the research agenda (Section 14). The void itself deserves to be interrogated: the Fund publishes the elasticity but aggregates no cost; the Bank for International Settlements documents the cycle without quantifying it as a detriment; UNCTAD quantifies financing costs without relating them to their monetary cause. No institution publishes a global estimate of the cost of monetary policy spillovers — not because the thing is impossible, the ingredients exist (§9.5-9.6): it is that none has the mandate for it. The absence of the figure is not a gap in science; it is a piece of the deficit this document describes — the link charged with producing it does not exist (§5.2). Since revision 2.1 of Annex F, these magnitudes are requalified as disciplined illustrations under the inherited framework — and not as verifiable aggregates (§F.16); their recomputation in Configuration M is the first deliverable of the empirical programme of the present report (Annex I). The reconciliation between this core and the programme's national net figure is henceforth closed with a zero residual (Annex I, §I.5): a pre-Configuration M reclassification of the same channels, under the inherited counterfactual alone, places the strictly monetary core at about 0.9 billion euros — the very order of magnitude of the published core —, the gap to the national net figure being carried entirely by the non-monetary channels (supply-origin price shocks, external demand, private credit, capital flows).

Three registers, never added together. The magnitudes that precede belong to a single register: that of cash-flow incidence. They state what the country disburses. They do not state what it loses. The distinction, laid down in §9.6, has a consequence that §9.7 makes decisive: the efficiency correction is not computed on a disbursement, but on a loss. A second account is therefore needed, and a third — and, in accordance with the discipline of Box 2, they must never be added together.

Register I — cash-flow incidence. It is the one that precedes: fifteen mechanisms, four families, a Tunisian monetary core net of 0.76 to 1 billion euros (inherited illustration, §F.16). It answers the question: how much goes out, and what share of it is imputable to a decision. It is the register of attribution.

Register II — balance-sheet revaluation. Memo item of Table 24, never added to the preceding ones: the revaluation, in local currency, of the outstanding stock of debt denominated in foreign currency. It is not a flow, and the document does not claim it.

Register III — welfare loss. This is the account that was missing, and this document does not produce it: it borrows it. The International Monetary Fund (2023) estimates that a 10% appreciation of the dollar is associated with a 1.9% decline in real output in the emerging markets — against 0.5% in the advanced economies — two quarters after the shock; that the output of the advanced economies is restored after three quarters, while that of the emerging markets remains depressed at the tenth; and that the differential is carried by a collapse of real investment. Applied to Tunisia's 2023 gross domestic product (51.1 billion dollars; World Bank, 2024), this elasticity implies a loss of the order of 0.90 billion euros. §9.6 already named forgone investment among the channels required by the "welfare" object and called for a bridge towards it: this register is that bridge, borrowed from an independent source.

What this register changes. A transfer has a beneficiary; a destroyed investment has none. The excess interest paid to a creditor is, until proof to the contrary, a transfer: it leaves one balance sheet to join another, and the global loss, if there is one, lies in the distortions it triggers, not in its amount. The output that was not produced, the investment that was not made and that still has not been made ten quarters later, are nobody's gain. It is there, and there alone, that inefficiency lodges — that is to say, the foundation of the correction opened in §9.7. The claim under the correction window therefore does not bear on Register I: it bears on the attributable share of Register III. Register I supplies the attribution bands; Register III

supplies the base. To conflate them would amount to claiming a disbursement in respect of a loss, or a loss in respect of a disbursement.

What this scale means for the recipient. A cycle cumulation is not compared with the GDP of a single year (§9.2, fifth rule); annualised, it is. Reduced to the year, the attributable core represents of the order of four to five tenths of a point of Tunisian GDP — each year of the cycle, in cash flow alone and net of offsets; and Register III above recalls what cash flow does not see: a single episode of a 10% appreciation of the dollar is associated with a 1.9% decline in emerging market real output. The same magnitude, related to the output of the source jurisdiction, counts in ten-thousandths of a point: small for the jurisdiction that is its source, structuring for the one that receives it — it is this asymmetry, and not the absolute amount, that makes the spillover an object of governance.

A triangulation, not a validation. The shock retained by the Fund — an appreciation of the dollar — is monetary and financial in origin: it is close to the Tunisian monetary core, not to the all-causes gross figure, the bulk of which arises from supply shocks held at zero by construction. Brought together on a like-for-like basis, the two estimates — one of cash flow, the other of output, obtained by unrelated methods — converge: the value implied by the Fund's elasticity falls inside the range retained here. The objects differ, and this juxtaposition therefore does not amount to confirmation. It assumes a multiplier close to unity, which is plausible for an economy deprived of fiscal space.

What Register III does not establish. It does not establish inefficiency: it indicates it. A contraction of investment could, in principle, reflect an efficient reallocation of capital towards higher returns; that is the objection the normative literature raises (§9.7). Two facts make it unlikely — persistence, and asymmetry with the advanced economies —, but neither of them refutes it. Register III establishes a *prima facie* case, and nothing more. That is exactly the status conferred on it by the presumption rule of §9.7: a presumption of inefficiency, for the source jurisdiction to rebut.

Table 26 — Three registers, never added together

Register	What it measures	Tunisia	World	Function
I — Cash-flow incidence	What the country disburses	€0.76–1 bn net (monetary core); ≈ €4.5 bn gross, all causes	Not reported — filing required (§9.3)	Supplies the attribution bands
II — Balance-sheet revaluation	The revalued foreign-currency stock	Memo item	Memo item	Never claimed
III — Welfare loss	What the country loses	≈ €0.90 bn (output, at the trough)	–1.9% of emerging-market output	Supplies the base for the correction (§9.7)
Aggregation rule	Three distinct ontologies	—	—	The three are never added together

Three distinct validations. An accounting reconciliation verifies that the items of the scenario are defined and that their sum respects the identities retained. It validates neither the counterfactual, nor the shock, nor the attribution coefficients. A causal identification then seeks to isolate the exogenous component of the shock and the trajectory that would otherwise have prevailed; it does not, by itself, determine the justice of a consequence. Normative and legal attribution comes last: it qualifies the loss, the share of domestic vulnerabilities, equity, the applicable obligation and the admissible remedy. None of these three validations can be deduced from the preceding one.

9.4 What the architecture would do in the face of a spillover effect

The object of this anatomy is institutional : it shows, step by step, how a spillover effect, once decomposed, becomes a governable object. The organs invoked here — a measurement board, a rating authority, a solidarity fund, a border mechanism — are designated here by their function as much as by their name; they were introduced and specified in detail in Section 5, and are convened at this point only in order to make visible the passage of a spillover along the chain. A scientific measurement board (§5.2) would publish exactly this decomposition — the declared counterfactual, mechanism-by-mechanism attribution, the offsets subtracted, the two horizons kept separate — not as a verdict, but as a public and contestable measurement. Before any publication, an adversarial notification stage would give the source central banks standing to contest the attribution: they could produce their own data, discuss the counterfactual retained, have a share they consider wrongly imputed revised. It is this upstream contestability — and not the unilateral assertion of a figure — that separates a measurement from an indictment, and that makes the result opposable because it has been tested rather than asserted.

On this basis, a rating authority (§5.3) would assign the externality a severity coefficient — a normalised order of magnitude of the harm, not a finding of fault. The distinction is cardinal: the monetary policies at issue are lawful, mandated and often necessary. It is precisely for this reason that the response to a public policy spillover is neither prohibition nor blame, but the triad measurement → visibility → equity consequence (§2.3, §9.2): the sovereign decision-maker is not forbidden to exercise its mandate; the cost it displaces onto third parties is made visible, and reparative consequences are drawn on the side of those who bear it. The equity consequence then designates a debtor: the attributable share would be claimed from the source central bank itself — on its profits or its seigniorage, and not from the recipient country's treasury or from its taxpayer —, so that the social cost of the spillover returns into its decision function and weighs on its subsequent trade-offs. The independence of the decision remains entire; only immunity to its externalities ceases. Whether the spillover under consideration authorises this correction — whose debtor is the central bank, on an efficiency basis — or opens only an equity sharing — whose debtor is the State — is not settled at this stage: the classification, the burden of proof and the applicable window are established in §9.7, which forbids that a distributive contribution be presented as an efficiency correction that has not been demonstrated.

A reservation must be entered concerning the base and the horizon. When the source central bank no longer generates any remittance — the Federal Reserve has remitted nothing to the Treasury since September 2022, absorbing its losses in a “deferred asset” that the projections do not see resorbed before the end of the decade, and several Eurosystem central banks are in loss —, a charge levied on its profits or its seigniorage is temporarily inoperative, and the indirect control exercised by the fiscal authority fades away along with the remittances. The consequence is not that the mechanism fails, but that its temporality is that of the regime, not of the financial year: the attributed charge is entered in the public register and deferred until monetary income permits it, so that the price remains visible even when it is not immediately exigible.

These consequences then borrow distinct organs according to their nature. The stability window of a solidarity fund (§5.6) treats the shock on the receiving side symmetrically: it absorbs the cash-flow jolt of the country affected as it would absorb any covered shock, without waiting for a culprit to be designated. Where legislatures choose to incorporate it, the border component devoted to capital flows (§5.5) supplies the levy instrument that internalises the attributable share. Above all — and this is the decisive point for adoption — none of this requires the authorisation of the source jurisdictions in order to begin. The chain is graduated: its first links — measure, notify, rate, publish — presuppose no consent from the

source jurisdiction and already produce transparency and reputational pressure; only the binding links, downstream, call for legislative incorporation. Measurement needs no treaty.

What the case teaches the architecture. The gap between Tunisia and the global aggregate — a heavier gross figure but a smaller net attributable share — is not an accounting curiosity: it teaches that the incidence of externalities is a function of the country's profile, not of the shock alone. Three consequences. First, measuring at the aggregate level is not enough: the measurement layer and the rating layer (§5.2–5.3) must capture exposure footprints — energy and food dependence, debt structure, capital account openness —, for it is the profile, not the average, that determines who bears what. Second, one and the same imported detriment is multi-source, and each source calls for a different organ: piloted externalities (monetary, regulatory or fiscal) lend themselves to the chain measurement → rating → pricing → compensation, because a decision-maker can answer for them; supply shocks — a war that raises the price of energy, a harvest that fails — cannot be priced, and the architecture responds to them through compensation and the rapid modes of Section 11, not through price. Third, attribution is the condition of a just compensation: because the bulk of the Tunisian gross figure is not imputable to monetary policy, compensating the gross would address the bill to the wrong debtor; it is the discipline of attribution (§9.2) that allows the financing layer and the Court to claim the right share from the right source.

A guard is required, symmetrical with the idiosyncratic premium held at zero (§9.2): exposure undergone is not exposure chosen. An architecture that compensated vulnerability without distinguishing what is structural from what stems from a policy choice — not diversifying, not building buffers — would reward improvidence and would create moral hazard. Exposure rating must therefore separate the share undergone, eligible for reparation, from the share the country could reasonably have reduced. Hence a principle: compensation follows the attributable damage weighted by structural exposure, never vulnerability as such — being more vulnerable gives a right to more reparation only in so far as the detriment actually suffered, and imputable to a third party, is greater. The vulnerable receive more through another channel: a forward-looking support (transition window, §12.6; rapid modes, §11) that helps them to reduce their exposure, earmarked to that result and extinguishing itself upon success, without policy conditionality — not a transfer that would remunerate the maintenance of vulnerability. Solidarity with vulnerability undergone; responsibility for avoidable vulnerability.

Box 11 — VERIFIABLE FACT · An eighty-year-old idea, and its missing duty-holder

The claim that the present paragraph has just stated is not new. It is as old as the system itself — and it has been formulated, in every generation, by those who ran it.

1944. Keynes's plan proposed an International Clearing Union whose object was “to correct this fundamental asymmetry by automatically obliging surplus countries to finance those which are in deficit”. The mechanism made the creditor pay for the contraction it imposes on the debtor. It “was therefore unacceptable to the host of the Bretton Woods negotiations” — the United States, then a major creditor. In exchange, White conceded the “scarce currency clause” (Article VII, Section 9, of the Fund's Articles of Agreement), which formally authorises countries in chronic deficit to impose trade restrictions against the currency declared scarce, but which remains in force without ever having been applied — a relic of a post-war cooperation that remained a dead letter (Ocampo, 2017, p. 5; IMF Articles of Agreement, Article VII).

2009. The Commission of Experts of the President of the United Nations General Assembly on Reforms of the International Monetary and Financial System, chaired by Joseph Stiglitz and counting José Antonio Ocampo among its members, calls for

“compensatory payments” in favour of developing countries for the distortions created by the policies of the advanced economies (Box 7, *infra*). No duty-holder is designated.

2009. A few days before the London G20 summit, the then governor of the People’s Bank of China calls for a supranational reserve currency, “disconnected from individual nations”, and explicitly invokes Keynes’s *bancor*: the collapse of the Bretton Woods system, founded on White’s approach, shows in his view that “the Keynesian approach may have been more farsighted” (Zhou, 2009). This time the proposal comes from the dominant creditor of the system, not from its debtors. It comes to nothing: reassigning reserve issuance to a multilateral institution would oblige the incumbent issuer to renounce its privilege.

2011. The Palais-Royal Initiative — a group of eighteen former officials convened at the end of 2010 by Michel Camdessus, Alexandre Lamfalussy and Tommaso Padoa-Schioppa (the last of these having died before publication), and bringing together in particular Paul Volcker, former Chairman of the Board of Governors of the Federal Reserve; Michel Camdessus and Horst Köhler, former Managing Directors of the International Monetary Fund; Andrew Crockett and Alexandre Lamfalussy, former General Managers of the Bank for International Settlements; Y. Venugopal Reddy, former Governor of the Reserve Bank of India; Guillermo Ortiz and Arminio Fraga, former governors of the central banks of Mexico and Brazil; and Hu Xiaolian, then Deputy Governor of the People’s Bank of China — proposes a complete chain: policy norms accompanied by quantitative thresholds, an assessment of the deviations, and “consequences, including the possibility of incentives and sanctions”. The Fund could impose “graduated corrective measures if a country has persistently violated one or more obligations”; at the end of the process, these consequences “could include [...] public reports on the country’s policies and its global spillovers; financial penalties; the freezing of all or part of its voting rights; restrictions on capital flows”, as well as recourse to the procedures and trade sanctions of the World Trade Organization. The obligations are common to all, the procedure being more demanding for countries whose policies affect the stability of the system. The political level of the decision is entrusted to a ministerial “Council” already provided for in the Fund’s Articles of Agreement — and never brought into being (Boorman and Icard, eds, 2011).

A distinction is needed here, and it delimits what the present document adds.

The Palais-Royal penalties are not the price of a damage: they sanction the persistent violation of a norm whose effects disrupt the system. It is a regime of discipline, not of responsibility. The group proposes neither to measure the welfare loss borne by each third country, nor to separate the transfer from the inefficiency, nor to establish a marginally attributable share, nor to allocate the amounts to the victims.

The motif is then complete, and it is threefold. Where the detriment possesses a contract, the chain has been built: the 2009 Commission proposes a debt restructuring court, principles, a judge, and decisions that the parties follow (Box 7, *infra*). Where it possesses a rule, the chain has been built: the Palais-Royal proposes a norm, an assessment of the deviation, and a sanction for the violation. Where it possesses only a path — the spillover, which has neither creditor, nor debtor, nor infringement —, the chain has never been built. By anyone.

2015. The then governor of the Reserve Bank of India suggests that the major central banks “reinterpret their domestic mandate to take into account other country reactions over time”, and asserts that “The international rules of the game need to be revisited” (Rajan, 2015). He calls for an impartial assessment — and himself concedes that it is not politically viable.

2025. The Commission of Experts preparing Sevilla, chaired by a member of that of 2009, calls for an analysis within the framework of Article IV consultations. The word compensation does not appear there a single time (Box 9, *infra*).

2012. The decision of the International Monetary Fund on bilateral and multilateral surveillance strengthened the analysis of spillovers and their discussion under Article IV. It created no new obligation, nor any enforceable mechanism allowing a consequence to be attached to the persistence of a spillover. The trajectory running from the Palais-Royal proposals to the reform actually adopted is not a demonstrated filiation: it is an illustration.

This illustration has a name, and this document holds it to be a testable proposition: the attrition of consequences. The functional accountability deficit does not proceed from a shortage of proposals — they abound, and it is the most authoritative figures who carry them. It proceeds from a selection criterion that negotiation applies without ever stating it: what survives is what obliges no one; what disappears is what obliges someone who has not consented to it.

Measurement survives, because it obliges no one; surveillance survives; consultation survives; voluntary financing survives. Pricing, mandatory transfer, sanction and reparation do not survive. Institutions become progressively capable of seeing, and not of following through. The corpus of §3 verifies it: of the one hundred and thirty initiatives of the Sevilla Platform, seventy-one bear on financing — voluntary — and none creates a binding instrument. Keynes's charge, the compensatory payments of 2009 and the penalties of 2011 have in common that they oblige: none has ever existed.

The consequence, for design, is decisive. One does not fight this law: one employs it. That is the *raison d'être* of principle P3 (§4.2) — nothing, in the architecture, binds without incorporation and consent. This is not a weakness conceded reluctantly: it is the only form in which a consequence has ever survived a negotiation.

This sequence must be read as a single curve. It is not a story of declining conviction: the authors of 2011 ran the system, and Paul Volcker was not to be suspected of radicalism. It is a story of duty-holder. Keynes was the only one to demand a new institution to carry the consequence — and he was set aside by the one who would have paid. All those who followed him entrusted the consequence to an existing institution: a Council of the Fund never activated, Article IV, surveillance. And each time, for want of a duty-holder, the consequence retracted — from an automatic charge to a compensatory payment, from a payment to a penalty, from a penalty to a rating, from a rating to an analysis.

The contribution of the present document is therefore neither the diagnosis nor the remedy. It is the duty-holder — the institution which, at each link, is charged with carrying the consequence, and which is forbidden to carry the others. That is what distinguishes a chain from a list of wishes. And it is the only thing that eighty years of proposals have never supplied for the policy spillover.

Table 27 — Eighty years of one and the same consequence, and of its duty-holder

9.4.1 The traversing case file: anatomy of an allocation of special drawing rights

The anatomy that precedes is conducted on a generic spillover. It gains from being tested on a real decision, dated and documented — something the demonstrator of Section 8 could not offer, since it rests on a parameterised simulation. The general allocation of special drawing rights decided in 2021 provides such a case. It presents three rare properties: it is public, its distributive effects are computable from open data, and its rule of distribution is itself the object of the dispute.

The fact. In August 2021, the International Monetary Fund carried out the largest general allocation of special drawing rights in its history, distributed among its members in proportion to their quotas, in accordance with Article XVIII of its Articles of Agreement. The rule of distribution is not contested in law: it is that of the treaty, it was applied, and the decision was taken by the required qualified majority. That is precisely what makes the case instructive. The dispute bears not on the legality of the decision, but on the absence of any forum in which its distributive incidence could be recorded, qualified and contested.

The passage of the case file along the chain then reads as follows — and the essential of what it teaches lies in what the chain refuses to do.

Measure (§5.2). The measurement board does not measure the “injustice” of the distribution: that magnitude does not exist. It measures two distinct quantities and publishes the gap between them. On the one hand, the allocation received by each member, an uncontested administrative datum. On the other, an indicator of liquidity need — reserve adequacy, external financing gap, refinancing exposure — published in ranges with its degree of confidence, never as a point estimate. Neither of these two measurements is contentious taken in isolation; it is their juxtaposition that constitutes the measurable object. An adversarial notification stage precedes publication: the members whose need profile is measured may discuss the method before it becomes public.

Qualify (§5.3). The rating authority assigns the gap a severity coefficient — a normalised order of magnitude, not a finding of fault. The negative mandate is decisive here and must be stated without ambiguity: the quota rule is lawful, conventional and regularly applied. To qualify the gap is not to qualify a violation. A rated entity is not a responsible entity, and the scale measured → rated → adjudicated remains strictly ordered (§5.3).

Route (§9.7). This is the determining step, and it leads to a result one does not expect. The case file falls under neither S3 nor S4: no net global loss is demonstrated — the allocation creates reserve assets, it does not transfer them — and the market power of the source jurisdiction is not at issue, since there is no source jurisdiction in the sense of the monetary classes: the allocation is a collective decision of a treaty-based organ. The case file falls under S5, distributively contested transfer: an incidence judged inequitable, without an established net loss. Nor does it fall under S6: the legal lock cannot be passed, for want of a primary obligation violated — the decision conforms to the Articles of Agreement (§5.8.1).

Price (§5.4) — and refuse to price. The consequence of this routing is that the pricing authority concludes that there is no corrective financial consequence. It sets no price, identifies no debtor, and says so publicly, with its reasons. This is the most useful demonstration in the whole case: a chain that measures and qualifies does not thereby price. It records, and stops where its competence stops.

Adjust (§5.5). The border mechanism has no object here: no cross-border flow embodies a measured and unpriced externality. The link declares its lack of competence rather than seeking a point of application — a negative mandate is also a refusal to be seised.

Finance (§5.6). This is the only link that acts. The equity window — never presented as Pigouvian (§9.7) — is the appropriate channel for a voluntary rechannelling, whose logic already exists in practice in the form of recycling pledges. What the chain adds is not the principle of rechannelling: it is its traceability from the resource to the measured result, and the publication of what has not been rechannelled.

Certify (§5.7). The certification authority does not intervene on the allocation, but on the instrument that measures it: reserve adequacy metrics are themselves methodologically contested, and the certification function bears on the chain of production of the data, not on its result.

Adjudicate (§5.8). No admissible claim of breach. This is not a gap in the case file: it is the S6 lock working. What the Court would take cognisance of, by contrast, is of another order: the legality of the acts of the chain itself — a measurement published without a prior adversarial stage, a rating not complying with its published methodology. The Court guards the guardians; it does not adjudicate the allocation decision.

What the case establishes. Five distinct decisions make up the cycle of an allocation: to create, to allocate, to hold, to convert, to reassign. Each produces distributive effects, each falls to an identifiable duty-holder, and none is today audited from end to end. The case file therefore does not reveal a wrongful decision: it reveals a legitimate decision whose incidence on third parties enters no register, receives no opposable qualification, and opens no avenue of challenge. That is the very definition of the functional accountability deficit (§2.5) — applied to one of the rare truly multilateral acts of monetary governance.

What the case does not demonstrate. It does not demonstrate that the chain would produce a better allocation decision: the chain does not decide the allocation and does not claim to. Nor does it demonstrate that rechannelling would be higher — that question belongs to the will of States, not to an architecture. It demonstrates something narrower and more verifiable: that the first six links can be exercised on a real decision without requiring any amendment of the Articles of Agreement, any consent from the organ that decides, and without any financial consequence following from it automatically.

Bearing on adoption. This case is, on that account, the least costly demonstrator of the architecture. Measuring the gap between allocation and need, qualifying it, publishing it with its reservations, and making rechannelling traceable require only an analytical capacity and a commitment to publish — that is to say, exactly the first arm of the three-arm comparative pilot (§12.5). At no point does it cross the threshold of consent (P3, §4.2).

Year	Who	The consequence sought	The duty-holder assigned	Result
1944	Keynes	Automatic charge on creditor balances	A new institution: the International Clearing Union	Rejected by the United States. Scarce currency clause (Art. VII): never used
2009	Commission of Experts of the President of the General Assembly (Stiglitz, Ocampo, Reddy, Zeti, Yu Yongding)	Compensatory payments to developing countries	None	No follow-up
2011	Palais-Royal Initiative (Volcker, Camdessus, Köhler, Crockett, Lamfalussy, Reddy, Ortiz, Fraga)	Graduated consequences, including financial penalties, in the event of persistent breach of multilateral obligations	A “Council” already provided for by the Fund’s Articles of Agreement — never activated	2012 Surveillance Decision: spillover analysis, with no new obligation and no enforceable mechanism

Year	Who	The consequence sought	The duty-holder assigned	Result
2015	Rajan (sitting Governor of the Reserve Bank of India)	Reinterpretation of the domestic mandate; impartial assessment	The International Monetary Fund	Judged politically unviable by its author
2025	International Commission of Experts on Financing for Development (Ocampo)	An analysis	Article IV consultations	The word “compensation”: no occurrence

The identification of the source shock has been enriched in the same spirit. Representing a tightening cycle by a single figure in basis points assumes that all of a central bank’s impulses are transmitted through the same channel, with the same horizon; the assumption is false. The single shock is replaced by a seven-component vector — level surprise, path revision, information effect, balance-sheet reduction, liquidity withdrawal, operational stance, activation or withdrawal of backstop lines —, the last of these alone working in the opposite direction to the others. The point is not to measure more but to constrain more: applied to the fifteen or so mechanisms already defined, this vector produces far more signed predictions than free parameters, which makes the decomposition refutable. Where the episode does not permit the seven components to be identified — which will often be the case —, the protocol does not relax its thresholds: it descends, along a ladder declared in advance, to four components, then two, then a composite impulse, each descent published with its diagnostics. The information component, the most demanding, is separated by a sign restriction on the co-movement, around the announcement, between rates and risky asset prices (Annex J, § J.5; identification methods in Annex G).

9.5 Reproducibility and limits of interpretation

At the generic level, the model may be written as follows. For mechanism m , the gross imported variation is ΔX_m relative to a declared counterfactual; the attributable component is $\alpha_m \Delta X_m$, where α_m is specific to the mechanism and bounded; the offsets enter only once, with a negative sign; and stock revaluations remain memo items. The declared net monetary policy spillover effect is therefore the sum of the attributed cash-flow mechanisms, less the eligible offsets, and never the sum of all the observed deterioration. This identity disciplines the model but validates neither the counterfactual retained nor the attribution bands, which require data and sensitivity tests. Annex F writes this identity out in full — sets, signs, attribution bounds, treatment of overlap and propagation of bounds —, without adding a single figure.

An incidence ratio — the share of the gross detriment that remains once the non-attributable channels have been removed and the offsets subtracted — would be a useful communication tool, and this document publishes none. Its denominator, namely the specified monetary policy impulse and the population over which the costs to the receiving economy are aggregated, must be defined in Annex G before the ratio is computed, and still more before it is used comparatively. The same holds for any global extrapolation: coverage, weighting, heterogeneity, missing observations and overlap with domestic drivers must be published first.

The supporting evidence pack for this anatomy has been enlarged accordingly. The attribution model is written formally in Annex F; its empirical protocol and its identification diagnostic, executed on a regional panel, appear in Annex G; the reference case — the probative status of each figure, the reconciliation requirement, positional disclosure and the communication rule — is consolidated in Annex I; its extension to a comparative panel and then to the forty-four

least developed countries is specified in Annex J. Full reproducibility — corpus, codebooks, data, scripts and changelogs — remains the condition of external validation, but the method itself is now entirely written out.

9.6 From accounting incidence to attribution in terms of welfare and of law

The fifteen-mechanism framework is an accounting taxonomy, not yet a causal estimate. A higher cash payment for a debtor may constitute a cross-border transfer rather than a global welfare loss. The “welfare” object requires additional channels — distortionary taxation, default risk, credit constraints, unemployment, forgone investment and crisis amplification — net of the gains to counterparties. Causal attribution requires an identified policy shock and an exposure measured before that shock; legal attribution further requires an applicable obligation, a breach, standing, a causal standard and a competent jurisdiction. The document therefore retains the figures relating to Tunisia and to the emerging market and developing economies (EMDE) as exploratory scenario results, without using them to establish a fault or a compensation.

Annex G (empirical protocol and diagnostic) is specified accordingly: high-frequency or narrative monetary shocks; local projections or panel estimation crossed with predetermined exposures to debt, currency, maturity and reserves; three counterfactuals; explicit interaction terms exchange rate $\times$ interest rate $\times$ refinancing; placebo tests; heterogeneity according to exchange rate regime and capital controls; and a bridge towards welfare. As long as this work is not completed, no incidence ratio and no global extrapolation are reported in the body of this document.

What institutional measurement already establishes. A part of this programme has since been executed, and it is not for this document to redo it. Chapter 2 of the External Sector Report of the International Monetary Fund (2023) estimates the spillovers of the global dollar cycle by state-dependent local projections, following Obstfeld and Zhou (2023), with heterogeneity according to exchange rate regime, the anchoring of expectations and commodity exposure. The measurement exists, it is institutional, and it is of the first order: §9.3 uses it as Register III.

What it does not establish, and what remains to be done. It attributes nothing. The shock it retains is a price — an appreciation of the dollar — deliberately treated as exogenous, on the ground that such an index is more plausibly exogenous for the study of spillovers undergone. It therefore measures an impact, without ever designating the decision from which it proceeds. Nor does it decompose the cost into opposable items: output and the current account are aggregates, not claims. And it counts no offsets. Annex G is therefore refocused: it no longer has to re-estimate the magnitude of the spillover, but to supply the three links that institutional measurement does not supply — mechanism-by-mechanism attribution, decomposition into opposable items, and the balance net of offsets.

Table 28 — What the International Monetary Fund measures, what this document measures

	External Sector Report 2023, chapter 2	This document, §9
Shock considered	A dollar appreciation — a price, treated as exogenous	The tightening decision of an issuing central bank
Identification	By exclusion: the residual poorly explained by exchange-rate determinants	Attribution bands, mechanism by mechanism
Granularity	Aggregates: output, investment, current account, trade volumes	Fifteen cash-flow items, in four families
Attribution to a decision-maker	None — impossible by the construction of the shock	From 0% to 100%, bounded and justified item by item

	External Sector Report 2023, chapter 2	This document, §9
Direct financial items	Not decomposed	Family A, seven items (A2: 90–100%; A3: 100%)
Offsets and gains	Not counted	Family O, three items, entered as deductions
Attached consequence	None; the remedy is addressed to the recipient	Measurement → rating → pricing → reparation

9.7 From spillover to consequence: what must be established before pricing

A negative spillover is not, by itself, an inefficient externality calling for a financial correction. §9.6 separated four qualifications — accounting incidence, welfare loss, distributive injustice, legally wrongful act — and recalled that none of them follows automatically from another. The present section draws the institutional consequence from this: it states what the chain must establish before attaching a financial consequence to a spillover, and to whom that consequence is owed.

The reference framework, and the objection it carries. The normative literature on spillovers supplies the most serious objection to this document’s thesis, and it must be stated without weakening it. Korinek (2016) demonstrates that spillovers arising from unilaterally optimal national policies may be Pareto-efficient — so that a further correction would redistribute without creating efficiency — once three conditions are met: the decision-makers exercise no market power; they have sufficient instruments to act on their external transactions; and international markets are free of imperfections. The mere fact that a detriment is undergone and not chosen therefore does not suffice to ground a correction. An architecture that priced every measured spillover without passing this step would be refuted on its most visible case.

What the theorem establishes, and what it is silent on. Korinek’s result bears on the efficiency of an allocation given the objectives pursued. It says nothing about the scope of those objectives. A central bank that pursues a domestic statutory mandate — maximum employment, price stability — decides optimally with regard to an objective function from which a measured cost, borne by identifiable third parties, is excluded by construction. That exclusion is not a market imperfection: it is a property of the mandate. And that is exactly where Pigou (1920) situates the externality — the decision-maker’s private cost diverges from the social cost, so that its decision is optimal only with regard to the wrong magnitude. The thesis defended here is therefore not that the source central bank decides badly. It is that it decides on an incomplete set of books.

This thesis is not new, and it is not mine. Ocampo formulated it a quarter of a century ago, in the exact terms this document takes up: “Through the impact of monetary policy on economic activity and exchange rates, the center economies generate externalities to the rest of the world that are not internalized by policy makers. These externalities are strongly felt in the developing world, which must adjust to them but lack the degrees of freedom that the ability to supply international currencies provides” (Ocampo, 2001, p. 10). The vocabulary is that of Pigou; the diagnosis is that of the present document; and it is twenty-five years old. The same text names the asymmetry that follows from it: the center economies are “business-cycle makers” and “policy making”; the periphery is made of “business-cycle takers” and is “policy taking”.

The present document therefore does not add the diagnosis. It adds the institution that internalises.

The three conditions, applied to the case at hand. For an economy characterised by dominant-currency invoicing, a foreign-currency balance-sheet mismatch, a shallow foreign

exchange market and imperfectly anchored expectations, the second condition — sufficient instruments — does not fail case by case: it fails by construction. Rey (2015) and Miranda-Agrippino and Rey (2020) establish that in the presence of a global financial cycle the trilemma becomes a dilemma: even a floating exchange rate does not insulate. Gopinath et al. (2020) show that when trade is invoiced in a dominant currency, exchange rate flexibility loses most of its expenditure-switching power. The recipient country's insufficiency of instruments is then not a national failing for which it could be reproached: it is a property of the international monetary system. The third condition is no better satisfied — no complete market allows an exposed jurisdiction to insure itself against a foreign monetary decision, and it is the missing negotiating forum that §12 analyses. As for the first, the issuer of a dominant reserve currency is not a price-taker on global financing conditions; this is a question to be established mechanism by mechanism, and this document imputes no strategic intent.

There follows a rule on the burden of proof, and it is the heart of this section. Where the structural characteristics set out above are established, the presumption is one of inefficiency, and it falls to the source jurisdiction to rebut it. To place on the recipient country the burden of demonstrating, mechanism by mechanism, that no instrument was accessible to it would amount to imposing on it the cost of a design defect of which it is not the author. This inversion is not an academic hypothesis: in July 2023, the governance organ of the International Monetary Fund, noting large negative spillovers disproportionately affecting the emerging markets, drew from this the consequence that those markets should float more and better anchor their expectations (Box 6, *infra*).

This presumption is not unconditional, and the literature that contests it must be named. One body of work maintains that the trilemma remains alive — that a flexible exchange rate regime retains a significant insulating power (Klein & Shambaugh, 2015; Obstfeld, Ostry & Qureshi, 2019) — while others qualify the explanatory power of the global financial cycle over capital flows (Cerutti, Claessens & Rose, 2019). This empirical heterogeneity does not dissolve the presumption; it bounds it, and that is why it is conditioned on the country's profile: established where the structural characteristics of §9.4 are met, rebutted where they are not. The burden is not to prove that the recipient is always without resources, but that, for this profile, its instruments do not neutralise the spillover at a reasonable cost.

What the architecture does not claim. Obstfeld and Rogoff (2002) show that the gains from a coordination of international monetary rules are small in comparison with those from domestic stabilisation. This result does not target the proposal made here: the architecture proposes no coordination. It proposes a price. The source central bank retains entire discretion over its decision; it simply bears its measured cost. This is the logic of Pigou, not that of a monetary policy agreement. The Obstfeld and Rogoff result nevertheless imposes a discipline that the architecture retains: a correction is admissible only if the corrective gain remains material after measurement error, administrative cost and strategic reaction.

Likewise, Farhi and Werning (2016) ground a macroprudential intervention in the recipient economy, where private financial decisions do not internalise their future effect on aggregate demand under nominal rigidities. This margin is real, and it is distinct: the recipient's macroprudential policy limits its own exposure; it brings nothing into the source jurisdiction's set of books. The two remedies are not addressed to the same decision-maker and therefore are not substitutes for one another. The integrated policy framework of the International Monetary Fund (Basu et al., 2020) is employed here for what it is — the reference framework of the remedies available to the recipient — and not as a justification for international compensation: where the recipient does have an accessible and proportionate instrument, the correct response is that instrument, and the architecture says so.

Classify before pricing. The chain measures and rates in every case; it prices only in some. This is the operative translation of this document's cardinal safeguard — completeness of the

chain, never totality of the correction. The table below closes the classification: each qualified spillover there receives a class, a burden of proof and a consequence, and only two classes — S3 and S4 — can support a correction grounded in efficiency. Its last column designates the organ that applies that consequence: the pricing authority of the architecture, the Global Financial Equity Authority (GFEA), whose full mandate is presented in §5.4.

Value as an avowed lever. A fifth situation is missing from the typology that precedes, and its absence exposes the reasoning to an objection of naivety. The debate opened since 2024 on a negotiated or coerced realignment of the dollar — conversion of foreign reserves into very long maturity securities, use of trade or security leverage in order to obtain a depreciation — is a reminder that the value of a currency is not only an involuntary spillover to be measured with delicacy. It is also, at times, a lever asserted in a negotiation.

This situation is to be conflated neither with the involuntary spillover of classes S3 and S4, nor with manipulation within the meaning of Article IV of the Fund’s Articles of Agreement, which presupposes the intention of preventing balance of payments adjustment or of gaining an unfair competitive advantage. It differs from them by its avowed and negotiated character: the effect on third parties is neither denied nor concealed — it is instrumentalised.

The consequence for the architecture is twofold. On the one hand, this situation calls for its own burden of proof: what must be established is not a non-internalised externality, but the existence of a negotiation of which a value effect is an instrument, and the identification of the third parties who bear its incidence without being parties to it. On the other hand — and this is the point that matters for §13.2 — the absence of a forum is not a neutral void: it is an advantage for whoever holds the lever. The objection according to which an accountability architecture would be naive turns around: it is the absence of a forum in which the effect on third parties can be recorded and contested that serves power relations, not its presence.

Table 29 — Spillover classes, burden of proof and institutional consequence

Class	Qualification	What must be established	Role of the GFEA (§5.4)	Debtor
S0 — Incidence without net loss	Pecuniary transfer	Gains and losses offset each other; no residual distortion	No financial consequence; measurement and rating maintained	—
S1 — Remediable domestic distortion	Friction in the recipient	An instrument of the integrated framework was available and proportionate	No levy on the source; technical and transitional support	—
S2 — Domestic externality under constrained instruments	Demand or financial externality	Rigidity, policy constraint and non-internalisation	Capacity financing, not correction	—
S3 — Inefficient cross-border externality	Uninternalised global loss	At least one Korinek condition failing, and a material corrective gain	Correction window	The issuing central bank, out of its profits or its seigniorage
S4 — Market power or strategic conduct	Terms-of-trade externality	The source jurisdiction is not a price-taker, or acts strategically	Correction window, after a proportionality test	The source jurisdiction

Class	Qualification	What must be established	Role of the GFEA (§5.4)	Debtor
S4 bis — Value used as negotiating leverage	An acknowledged value effect, instrumentalised in a negotiation	The existence of the negotiation, the instrumental character of the value effect, and the identification of third parties bearing the incidence without being parties to it	Finding and publication; correction only if the conditions of S3 or S4 are otherwise met	The jurisdiction using the leverage
S5 — Distributively contested transfer	No net loss demonstrated; incidence deemed inequitable	A solidarity rule explicitly adopted and ratified	Equity window — never presented as Pigouvian	The State, not the central bank
S6 — Legally wrongful act	Breach of an applicable obligation	Obligation, breach, causation, jurisdiction	The GFEA quantifies; the Court characterises and orders	Depending on the jurisdiction

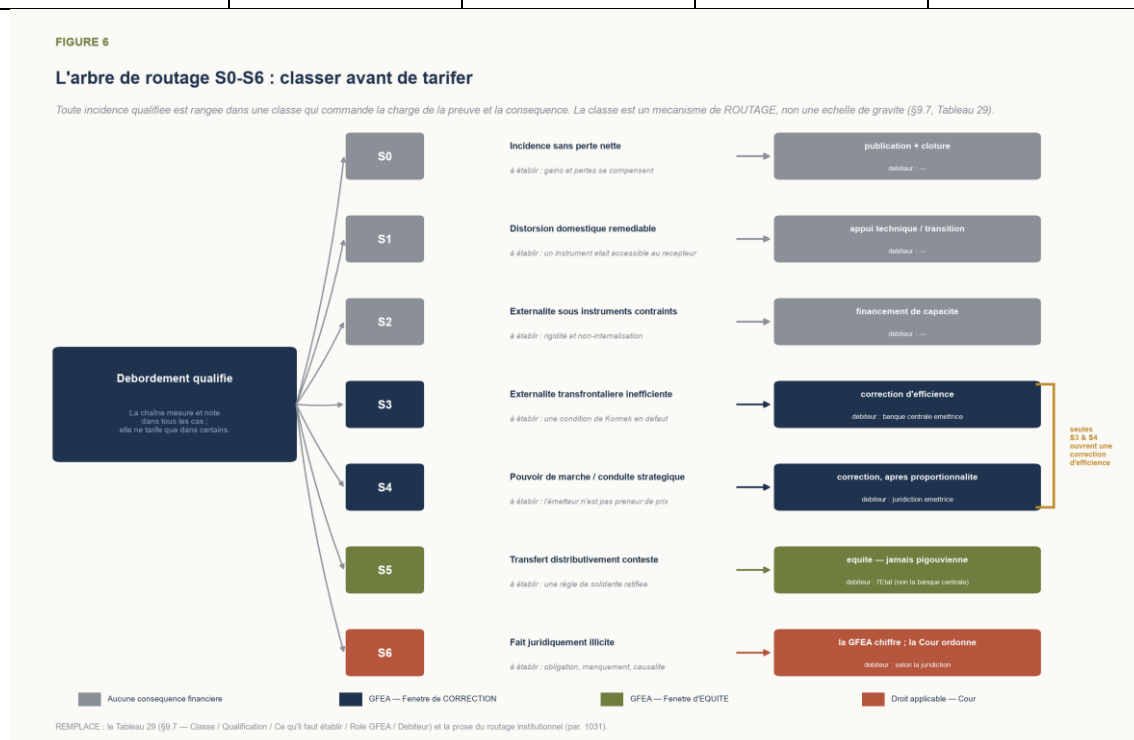


Figure 7. Cumulative impact and exhaustion of fiscal buffers

Legal lock of class S6. The classification of a case file as S6 cannot result from the gravity of the detriment alone, from its cross-border character or from a judgment of inequity. It requires the identification of a primary legal obligation applicable to the defendant, the attribution of a conduct, the finding of a violation, the establishment of a detriment and of a legally sufficient causal link, as well as the existence of a subject entitled to invoke responsibility before a competent forum (§5.8.1). Failing any one of these elements, the case file must be routed towards another class, a preventive measure, a consented solidarity or a reasoned closure.

The two windows of the GFEA. The financial consequence does not fall under a single regime. The GFEA operates two normative windows, endowed with separate legal bases, scales, decisions, budget lines and avenues of redress. The correction window applies to classes S3 and S4: it requires an established causality, a net welfare loss after neutralisation of

the transfers, a cross-border distortion not internalisable by the recipient, and a corrective gain exceeding its costs. The equity window applies to class S5: it presupposes no demonstration of inefficiency, but a risk-sharing rule explicitly adopted. Separating the two windows is not an administrative convenience: it is what prevents a distributive contribution from being presented as an efficiency correction that has not been demonstrated.

The debtor follows from the ground. In the correction window, the debtor is the decision-maker itself — the source central bank, on its profits or its seigniorage — because the object of the remedy is that the cost should enter the decision function and weigh on the subsequent trade-offs. A payment discharged by the treasury would repair the detriment without altering a single future decision: it would indemnify without correcting. In the equity window, by contrast, no decision is corrected — a loss regularly incurred is shared — and the debtor is the State. The choice of debtor is therefore not discretionary: it is entailed by the nature of the claim.

The consolidation objection. It will be objected that the central bank remits its profits to the treasury, so that charging it would amount to charging the taxpayer, and that the distinction would be immaterial. The incidence does indeed consolidate in part. But this consolidation does not weaken the device: it constitutes its second mainspring.

The first mainspring is direct. The charge is entered on the balance sheet of the central bank, is published by it, attaches to its policy choices, and thus enters into its trade-offs. What matters is not where the money lands in the last resort, but on which set of books the cost is recorded, by whom it is published, and to which decisions it is imputed. A transfer discharged by the treasury would not produce this effect: it would indemnify without correcting.

The second mainspring is indirect, and it is political. Because the central bank remits its profits to the treasury, a charge that reduces those profits reduces public revenue by the same amount. The fiscal authority — the very one before which the central bank renders account — thereby acquires in its turn a direct interest in the spillover diminishing. The device thus creates two monitors where there were none: the decision-maker, who sees the price of what it displaces, and its political principal, who sees the bill. Far from circumventing democratic control, the mechanism makes it effective — it inscribes in the budget of the source State the cost that its decisions displace onto third parties.

This residual incidence is moreover entirely avoidable, and that is the ordinary property of a Pigouvian pricing: its yield decreases as it attains its purpose. An architecture whose corrective receipts diminished until they were extinguished would not have failed; it would have succeeded. Rajan (2015) formulates the same requirement from inside the institution when he writes that the major central banks could reinterpret their domestic mandate so as to take into account the reactions of other countries, and that the international rules of the game must be revisited.

The architecture therefore does not ask a central bank to pursue foreign welfare, which would amount to entrusting it with a foreign policy mandate that only a legislature can give. It asks it to see the price of what it displaces, and leaves it the entire trade-off. The independence of the decision remains entire; only immunity to its externalities ceases.

What remains to be demonstrated. Two burdens weigh on this reasoning, and the document holds them to be its own. The first is empirical: Annex G, announced in §9.5, must establish, mechanism by mechanism, the identified shock, the local projections, the counterfactual, the neutralisation of the transfers and the residual welfare loss; as long as it is not published, no correction may be levied on the strength of this section alone. The second is legal, and it is heavy: in designating the central bank as debtor, the architecture deliberately targets the class of assets best protected by international law. This is not an oversight, but an accepted consequence of the ground retained — a remedy that does not reach the decision-

maker corrects nothing. Jurisdiction and consent are dealt with in §5.8, immunity in §5.4, and both fall within the legal memorandum announced in §14.

Institutional routing of the classes. The S0–S6 classification does not constitute a scale of increasing gravity leading mechanically to a price. It constitutes a routing mechanism. S0 in principle calls for publication and closure without efficiency correction; S1 calls first for the examination of the instruments accessible to the recipient; S2 requires the analysis of domestic constraints and may justify assistance or prevention without an automatic charge on the source jurisdiction; S3 and S4 open only the possibility of an efficiency correction if the conditions of identification and proportionality are satisfied; S5 falls under an explicit choice of solidarity or equity, without being presented as the price of a demonstrated global loss; S6 falls under the norms, forums and remedies of the applicable law. One and the same case may comprise several components, but these remain separate and are never added together under a single qualification.

9.8 The stacking of tightenings and the exhaustion of fiscal buffers

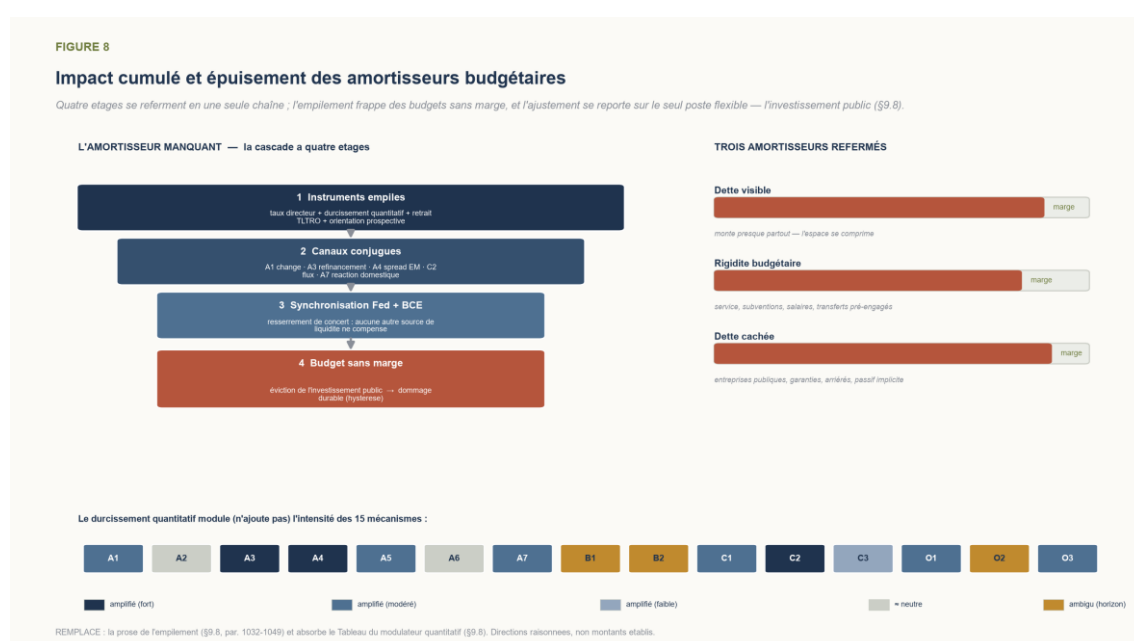


Figure 8. The M / F / I configurations: a disciplined escalation ladder

This subsection brings together three findings in a cumulative demonstration: the tightening instruments add up; the transmission mechanisms combine and weigh in the same direction; the synchronisation of the major central banks amplifies the whole. This stacking strikes budgets whose buffers have disappeared, and the adjustment falls back on the only flexible item — public investment —, so that the damage becomes lasting. The persistence of the damage through under-investment connects with the work on the non-reversibility of output losses (Cerra and Saxena, 2008).

The instruments add up. Over the last two decades, tightening has no longer meant, for the Federal Reserve and the European Central Bank, loosening the balance sheet but contracting it: to the rise in policy rates was added, with a lag, quantitative tightening, then the withdrawal of the unconventional operations. These instruments work in the same restrictive direction but do not act on the same segment: the rate operates on the short end of the curve and on indexed credit (A2, A6, A7); quantitative tightening on the long end — through the term premium — and on global liquidity (A3, A4, C2); forward guidance tightens the whole curve by anticipation; the withdrawal of the targeted operations (TLTRO) reduces privileged bank funding. A tightening in 2022 is therefore not comparable with a tightening in

2005: mainly steered by the policy rate in the past, it today combines, far more visibly, the short end, the long end and expectations.

The magnitude of this proper effect is not merely qualitative. The European Central Bank estimates that a reduction of about 1,000 billion euros in its holdings would raise the term premium on the ten-year rate by about 35 basis points, and more on the lowest-rated sovereigns — of the order of 45 basis points on Italian debt and 50 on Spanish debt (Akkaya et al., 2024). Transposed to the recipient economies, this gradient has a direct consequence: the increased cost of refinancing (A3) is concentrated on the most fragile borrowers, the very ones the present section intends to protect.

One point of method conditions all attribution. The effect of quantitative tightening passes as much through anticipation as through the operation, and three objects must be distinguished: the flow of sales or non-reinvestments under way, the outstanding balance sheet inherited from the earlier easing — often still massive while rates are rising — and the announcement of the programme to come. The 2013 episode, in which the mere announcement of a future slowing of purchases triggered massive outflows from the emerging economies before any effective tightening, shows that the announcement can weigh more than the operation. A protocol that does not isolate the balance-sheet dimension from the rate dimension misattributes mechanically: the multidimensional decomposition of shocks — conventional rate, forward guidance, balance-sheet measures — retained by the protocol of Annex G (specified in §9.5) is the safeguard.

The mechanisms combine, but do not add up. To treat them as a sum would amount to the double counting this document is at pains to proscribe; they combine — faced with a stacked shock, several channels are triggered together and weigh in the same direction, which concentrates the damage without their effect being the mere addition of their amounts; the overlap matrix and the residual exist precisely in order to keep them distinct. A stacked tightening simultaneously activates sovereign refinancing (A3, term premium raised by quantitative tightening), emerging market spreads (A4, tightening of global liquidity), capital flows (C2, amplified outflows), the exchange rate and debt service (A1, appreciation of the dollar) and the domestic monetary reaction (A7). Some offsets are reinforced too — return on reserves (O1), the later reflux of prices (O3) — but they accrue later and to other agents: the net result is not a cancellation, it is a concentration of the cost on the most fragile borrowers, at the moment of the shock.

Quantitative tightening, a cross-cutting modulator. Quantitative tightening is not a sixteenth mechanism: it is a factor that modulates the intensity of the fifteen already set out. Its large-scale episode being recent and its proper effect still poorly identified, the table below proceeds by reasoned directions, not by established amounts; it belongs to the design proposal, not to the verifiable rung of the epistemic ladder (Box 10).

Direction of the effect of quantitative tightening, mechanism by mechanism — reasoned directions, not measured effects.

Mech.	Name	Effect of quantitative tightening	Main channel
A1	Exchange rate and debt service	Amplifies (moderate)	Withdrawal of dollar liquidity → appreciation; exchange-rate effect debated.
A2	Floating-rate debt	≈ neutral	Indexed to the short rate (SOFR, Euribor); driven by the policy rate.

Mech.	Name	Effect of quantitative tightening	Main channel
A3	Refinancing — risk-free curve	Amplifies (strong)	Direct channel: tightening raises the term premium.
A4	Global emerging-market spread	Amplifies (strong)	Tightening of global liquidity → common spread factor.
A5	Idiosyncratic premium	Amplifies (moderate)	The amplification component grows with global tightening.
A6	Sterilisation of reserves	≈ neutral	Operates through the domestic rate; indirect link to the foreign balance sheet.
A7	Domestic monetary reaction	Amplifies (moderate)	Tighter global conditions → increased pressure on the local central bank.
B1	Import prices — cereals	Ambiguous (horizon)	Exchange rate (higher local bill) against demand (lower dollar prices); see the example.
B2	Import prices — energy	Ambiguous (horizon)	The same, modulated by the domestic price regime.
C1	Export demand	Amplifies the damage	Slowed partners → increased export losses.
C2	FDI, portfolio, banking	Amplifies (strong)	Tightening drains liquidity: amplified capital outflows.
C3	Tourism	Amplifies (weak)	Income in the countries of origin compressed; the recipient's tourism receipts falling.
O1	Return on reserves (gain)	Amplifies the gain	Higher returns on reserve assets → increased offset.
O2	Diaspora remittances	Ambiguous	Reduced income in the host countries against a favourable exchange-rate effect.
O3	Price retreat (gain)	Amplifies the gain	Reinforced demand slowdown → subsequent price decline.

An example makes this non-additivity tangible. Under quantitative tightening, a recipient country's cereal or energy bill appears to rise as a single block, whereas three forces of differing sign and horizon are superimposed within it: the appreciation of the dollar increases the local bill immediately (A1), while the slowdown of global demand causes the price in dollars to recede later (O3), and any supply shock remains external to the monetary sphere. In the short term, the exchange rate effect dominates; the net sign therefore depends on the horizon.

Why this is not a “commodities” channel. The increased cost of the cereal bill under quantitative tightening does not open a new mechanism: it is the conjunction of three effects belonging to three distinct registers. The exchange rate effect falls under mechanism A1; the reflux of the price in dollars through global demand falls under offset O3, at an explicit horizon; any supply shock on the world price remains a competing factor, never imputed to the monetary sphere. Adding them together as “tightening raises the price of cereals” would over-attribute and would count twice the exchange rate effect already carried by A1. This is the programme’s rule of non-additivity: one and the same event propagates by several routes belonging to separate registers, and the overlap matrix exists precisely in order to keep them distinct.

Synchronisation amplifies. The two major central banks tighten almost simultaneously on two occasions over the period: in 2005-2008, a transatlantic rate tightening (Federal Reserve +425 basis points, European Central Bank +225) bearing mainly on the exchange rate and the short end (A1, A2); in 2022-2023, a complete stacking — Federal Reserve +525 basis points and more than 2,200 billion dollars of reduction in its securities holdings, European Central Bank +450 points with quantitative tightening and the withdrawal of the targeted refinancing operations —, activating A1, A3, A4 and C2 on both sides, in an unprecedented withdrawal of global liquidity: with the principal central banks issuing reserve currencies tightening in concert, the possibility that another major source of international liquidity might offset the shock is greatly reduced. A fine desynchronisation subsists — the Federal Reserve began its quantitative tightening earlier and halted the contraction of its balance sheet earlier (December 2025), the European Central Bank following one to two years behind — and this lag within a common movement offers variation exploitable for empirical identification, without breaking the underlying concordance.

A disciplined analogy. In an electricity network, a disturbance becomes systemic only if it modifies the flows borne by the other components: the current redistributes itself over the remaining paths, and if some were already close to their limit, the overload may move towards a distant component; propagation is non-local and may become discontinuous when thresholds are crossed (Korkali et al., 2017; Schäfer et al., 2018). The monetary parallel lies in the interaction between local protection and systemic load: a source central bank raises its rates for a legitimate domestic objective; the recipient central banks raise theirs in order to contain depreciation, imported inflation or capital flight. Each protects a legitimate objective; together, they add tightening to tightening. The cascade therefore does not necessarily result from an individual error: it may emerge from the interaction of rational responses taken separately.

Quantitative tightening reduces the margins of absorption. It is not added on like a second rate rise: it returns duration to private portfolios and tightens liquidity, so that the remaining paths operate closer to their capacity. The order of magnitude is real: in the Federal Reserve’s models, a reduction of about 2,500 billion dollars relative to holding the balance sheet at its peak would be equivalent to a little more than 50 basis points of sustained policy rate (Crawley et al., 2022); on the European side, the effect on the term premium is of the same order (supra, §9.8). The analogy bears, however, on the fall in margins and the reallocation of the load, not on a physical identity: central bank reserves are not a “global electrical reserve”, and a gradual and predictable runoff may unfold without major strain.

What the analogy establishes — and what it does not establish. It establishes a possibility of composition: a domestically justified decision may modify the load on the network, local responses may amplify it, and the systemic result may correspond to the mandate of no decision-maker — which justifies measuring the interaction of policies, not

the impulse of the first source jurisdiction alone. It does not establish that every tightening triggers a cascade, nor that the initial decision is at fault: unlike an electricity network, monetary actors anticipate, choose their instruments and have buffers. Qualification therefore requires the counterfactual, the identification of the shock, the instruments accessible to the recipient, the offsets and the classes S0–S6.

The institutional conclusion is narrow. The system has local protections, but no operator charged with keeping the distributive and cross-border account of the cascade. The GAF does not propose a “global network manager” setting national rates: it proposes that the HuIB measure the impulses, exposures and thresholds; that the GIRA (Global Impact Rating Authority, §5.3) distinguish the initial shock from its amplification; and that the GFEA attach a consequence only where the conditions of efficiency or of equity are crossed. The object is not to prevent each relay from protecting its network, but to prevent the load displaced by the whole set of protections from disappearing from the set of books.

Analytical correspondence between electrical cascade and monetary tightening.

Electricity network	Monetary and financial network	Analytical scope
Node or line of high centrality	Central bank issuing a reserve currency; safe-asset market; global banking system	A change at the centre affects many jurisdictions even without a direct bilateral relationship.
Initial disturbance or removal of a component	Policy rate increase, revision of the expected path, halt to asset purchases	The reference price and financing conditions shift before all actors can adjust their balance sheets.
Redistribution of flows over the remaining paths	Portfolio reallocation, appreciation of the dominant currency, capital outflows, rising spreads and refinancing costs	The shock travels through several channels; the next economy affected is not necessarily the geographically closest.
Protective relays and local tripping	Defensive rate increases, foreign-exchange intervention, credit restriction, fiscal or macroprudential adjustment	The response locally protects the currency, reserves or inflation, but may shift the cost onto activity, credit or other countries.
Reserve margin and unused capacity	Foreign-exchange reserves, fiscal space, bank capital, access to refinancing, market depth and monetary credibility	The thinner the margins, the more a moderate shock can push past a liquidity, solvency or sustainability threshold.
Cascade or load shedding	Synchronised tightening, credit rationing, forced deleveraging, defaults, contraction of investment and trade	The aggregate damage may be non-linear and disproportionate relative to the initial decision.

Budgets without a buffer. This synchronous stacking does not strike intact budgets, but States whose margin of absorption has closed up for three cumulative reasons: visible debt has risen almost everywhere, compressing the space available to absorb an increased refinancing cost; budget rigidity makes the adjustment mechanical — when debt service, subsidies, the wage bill and the social transfers due are pre-committed, public investment is not chosen as the adjustment variable, it is the only item left; and hidden debt saturates a margin that the official accounts do not show — liabilities of state-owned enterprises, sovereign guarantees, arrears, the implicit liabilities of the social security funds —, the scale of which more than half of the reporting countries have had to revise upwards over the recent period. A finance minister confronting an external tightening therefore does not make his trade-off in the

abstract between debt and investment: he makes it under a partially invisible constraint, often already saturated.

The missing buffer. The four storeys close into a single chain: stacked instruments → combined channels (A1, A3, A4, C2, A7) → synchronisation of the major central banks → budget without margin → crowding-out of public investment → lasting damage through hysteresis. Investment is cut not by choice, but by elimination, and with it future capital. The attribution precaution remains: the mechanism is not imputed by direct deduction but by differential identification — not the fall in investment as such, but the difference in the fall across countries according to their pre-existing budget rigidity, hidden debt included. This precaution does not dilute the field observation: it makes it measurable, and the space of choice itself becomes a magnitude whose closing is measured. What this subsection establishes — instruments added together, central banks synchronised, margins closed up — is documented; that the stacking concentrates the cost on refinancing and flows, and that the crowding-out of investment is the consequence of it, is a reasoned direction to be confirmed; the differential magnitude of that crowding-out is the object of the induced mechanism of the protocol of Annex G (specified in §9.5) and of its identification plan.

Qualification itself has received an explicit form: every incidence is placed in one of the seven classes S0 to S6, which command the burden of proof and the admissible consequence — only two of them being able to justify an efficiency correction, others falling under solidarity or under law, others calling for no pricing at all. This classification, its definitions and its attribution bounds are established in Annex F.

9.9 Three failures, one and the same cause: what international monetary reform has already attempted

An architecture that claims to organise the accountability of monetary spillovers must say why the earlier attempts failed — and, if it does not say so, a reader will remind it of it. The record is instructive, and it does not run in the direction one supposes: the three best-documented failures of international monetary reform are not failures of financial engineering. They are failures of a link in the chain.

The substitution account. Technically complete as early as the end of the nineteen-seventies, it allowed holders of dollar reserves to convert them into claims denominated in special drawing rights. It has been blocked for forty years on a single question: who bears the loss if the value of the asset deposited diverges from that of the claim issued. That is not a monetary problem. It is a problem of attribution — precisely what an accountability chain is made to settle, by establishing who owes what, on what ground, before which forum.

The rating of monetary policies. In 2016, a G20 central bank governor and an economist of the International Monetary Fund publicly proposed classifying monetary policies according to their spillover effects — green where the effects are domestic or positive, orange in case of uncertainty, red where adverse effects dominate —, on the basis of analyses entrusted to independent panels. The proposal was never instituted, and its causes of failure are documented: the rater would have been judge in its own cause, since the same institution measures, qualifies and advises the same States; no adversarial procedure was provided for before publication; no consequence was attached to the rating, so that there was an incentive neither to comply with it nor to contest it; and no coalition of States carried it. These four causes correspond term for term to four design choices set out in §5.2, §5.3, §9.7 and §6.3.

The spillover reports. Published at the beginning of the 2010s, they constituted an embryo of a dedicated measurement function. They were reabsorbed into ordinary surveillance within a few

years, without any consequence ever having been attached to their findings. This case establishes a proposition that holds beyond the monetary sphere: a measurement function isolated from the rest of the chain is not merely incomplete — it is reversible. It disappears without anyone having to decide to abolish it, because nothing depends on it. This is the strongest argument against a strategy that would consist in obtaining measurement first in the hope that the rest would follow, and it supports the principle of functional completeness (§1.4).

What these precedents establish, and what they do not establish. They do not establish that the architecture proposed here would succeed where others have failed: that demonstration belongs to the three-arm comparative pilot (§12.5). They establish that the breaking point, in all three cases, lies exactly where the chain places its safeguards — the separation of functions, the adversarial stage before publication, the graduated consequence and the political vehicle. A counter-argument must be kept visible: these failures may also be explained by the balance of power, and nothing proves that a better design would have prevailed. The defensible proposition is narrower — each of these failures had an identifiable design cause, and that cause is addressed.

10. From announced financing to actionable development

This chapter shows how to link commitments, measurement, financing, execution, correction and redress without creating a parallel bureaucracy. It shows that the chain does not deal only with harm: applied to development financing, and in particular to the Sevilla Platform, it could make aid more effective by linking announced money to verifiable results — an effectiveness that remains to be established by the pre-registered pilot (§10.15, §10.18).

10.1 Executive summary

The Compromiso de Sevilla renewed the global framework for financing for development in 2025, and the Sevilla Platform for Action brought together voluntary initiatives intended to accelerate its implementation. The 2026 Financing for Development Report describes 130 voluntary initiatives; the online platform evolves and any count must therefore be time-stamped (United Nations, 2025a; United Nations Financing for Sustainable Development Office, 2026a). The internal corpus of the present work, closed on 12 July 2026, codes 130 initiatives: 71 have financing as their principal function, 3 rating, none adjudication, and none principally creates a direct legal constraint. This result is a programme output and remains subject to independent replication.

The asymmetry observed does not mean that Sevilla has failed. It reveals that the international system knows how to announce, finance, coordinate and mobilise, but links commitments less systematically to a common measurement, a qualification of performance, a correction of incentives, transition financing, a certification of data and an avenue of contestation. An initiative may be politically relevant and financially endowed without its additionality, its net beneficiaries, its distributive effects, its debt risks, its disbursement schedule or the procedure applicable in the event of a deviation being established.

The Global Accountability Chain can provide an implementation and accountability layer for Sevilla without replacing the Compromiso, the Platform, States, multilateral banks, donors or initiative sponsors. The proposal is a common protocol: initiative passport, results chain, provenance data, maturity level, traceable financing, independent review, corrective mechanism and proportionate redress. It aims to turn a collection of commitments into a portfolio that can be steered, compared and learned from.

Guiding principle. Making Sevilla actionable does not mean making all its initiatives binding. It means making explicit, for each commitment, the duty-holder, the beneficiary, the resource, the timetable, the expected result, the evidence, the risks, the correction mechanism and the avenue of challenge.

10.2 Purpose, scope and conditions of compatibility

Purpose. This chapter proposes a method for operationalising the Sevilla Platform for Action by means of the Global Accountability Chain. It seeks to fill the interface gaps between announcement, mobilisation, disbursement, result, distribution and redress.

Scope. The method applies to voluntary initiatives, coalitions, country platforms, financial instruments, capacity programmes, debt reforms, tax solutions, data infrastructures and other actions attached to the Sevilla Commitment. It does not alter their legal basis or their governance without consent.

Compatibility. The protocol must remain compatible with the monitoring systems already used by the United Nations, the multilateral banks, States and sponsors. It imposes a new field only where a critical function is not covered. Recognition of equivalence is preferred to duplication.

Temporality. The platform is a living one. Counts, statuses and amounts must be dated, versioned and separated between announcements, commitments, approved financing, disbursed financing and verified results.

10.3 Development: beyond the volume of financing

Development is reducible neither to gross domestic product nor to the volume of resources mobilised. It presupposes a durable transformation of capacities, opportunities, resilience and effective access to rights. Within this framework, the quality of financing matters as much as its amount: currency, maturity, cost, additionality, predictability, risk-sharing, incidence on debt, local content, distributive effects, environmental footprint and institutional capacity created.

The Global Accountability Chain contributes to development through six mechanisms. First, it makes visible the displaced costs and benefits that escape project evaluations. Second, it distinguishes solidarity from the correction of an externality and from a legal obligation. Third, it links financing to a results chain without allowing the funder to control the measurement. Fourth, it finances preparation, transition and capacity, not only the final asset. Fifth, it makes data systems contestable. Sixth, it creates a loop of learning and correction before terminal failure.

The architecture does not guarantee development. It can only improve the probability that resources reach explicit objectives, that the losers are identified, that national constraints are recognised and that commitments are corrected when they drift. A development policy remains a democratic and national choice; the chain organises the quality of the evidence and of the accountability that accompanies it.

10.4 What Sevilla made possible — and what remains to be linked

The Sevilla Commitment constitutes the first global intergovernmental framework for financing for development since the Addis Ababa Agenda of 2015. It covers domestic public resources, private finance, international cooperation, trade, debt, systemic issues, science, technology, data and monitoring. The Platform for Action adds voluntary coalitions and initiatives able to begin without waiting for a new universal negotiation (United Nations, 2025a; United Nations Financing for Sustainable Development Office, 2026a).

The strength of this model is its openness. Its potential weakness is dispersion: initiatives of very different nature, scale, maturity and legal basis are gathered under a single label. The platform may thus be rich in action while remaining difficult to steer as a portfolio. The 2026 updates show a reporting effort and first financing results, but they do not remove the need for a common discipline on additionality, distribution, data, transaction costs and final results (United Nations Financing for Sustainable Development Office, 2026b).

Table 30 — From political commitment to verifiable action: the interface gaps

Question	Common situation	Risk	Proposed response
Who is responsible?	Broad coalition, political lead, multiple operators.	Dilution of responsibility and updates with no duty-holder.	Principal duty-holder, co-responsible parties, oversight forum and public RACI matrix.
What is being financed?	Announced amount or aggregate target.	Double counting, recycling of earlier commitments, confusion between mobilisation and disbursement.	Transactional register, baseline, additionality and standardised financial status.

Question	Common situation	Risk	Proposed response
For whom?	Beneficiaries defined at a general level.	Capture by creditworthy or visible actors; exclusion of LDCs and small entities.	Mapping of beneficiaries, distributive incidence and participation mechanism.
What result?	Activities and deliverables easier to track than outcomes.	Success declared despite little real change.	Results chain, proportionate counterfactual, outcome indicators and independent review.
With what data?	Heterogeneous systems, self-reporting, restricted access.	Incomparability, bias and vendor dependence.	Data contract, provenance, versioning, audit and degraded operation.
What happens in the event of a deviation?	Ad hoc political revision or absence of consequence.	Zombie initiatives, retention of the label and sunk costs.	Alert thresholds, corrective plan, suspension, resizing or reasoned closure.
Who can challenge?	Dispersed mechanisms or ones limited to contractual partners.	Beneficiaries bear the effects without a procedural voice.	Petition, complaint, independent counter-assessment and proportionate redress.

10.5 An implementation and accountability layer for Sevilla

The proposal consists in adding a common, light and federated layer, and not a new central organisation. This layer may be called the Sevilla Implementation and Accountability Layer in technical documents; it remains a protocol subordinate to the instruments of the 7+3 and to the mandates of the sponsors. It comprises eight standardised objects.

1. **Initiative passport.** Identity, purpose, Sevilla actions covered, responsible parties, countries, beneficiaries, legal basis and duration.
2. **Theory of change.** Problem, activities, outputs, outcomes, assumptions, risks and proportionate counterfactual.
3. **Financing plan.** Sources, currency, cost, maturity, risk-sharing, additionality, commitment and disbursement schedule.
4. **Data contract.** Provenance, frequency, access, confidentiality, interoperability, quality, model version and right of correction.
5. **Distributive matrix.** Winners, losers, vulnerable groups, territorial, generational and gender effects, mitigation measures.
6. **Maturity level.** A common status ranging from announcement to verified impact and replication.
7. **Corrective mechanism.** Thresholds, responsibilities, reallocation, assistance, resizing, suspension and closure.
8. **Avenue of participation and redress.** Information, petition, complaint, independent counter-assessment, mediation and independent review.

These objects must not be filled in like an abstract compliance form. They constitute the minimum case file allowing decision, financing, monitoring, correction and learning. The intensity of the protocol must be proportionate to the amount, the risk, the cross-border character, the irreversibility and the vulnerability of the beneficiaries.

10.6 The initiative passport: basic unit of actionability

Table 31 — Minimum content of the Sevilla passport

Block	Minimum content	Evidence or source	Party responsible for updating
Identity	Name, identifier, lead, partners, jurisdictions, duration, Sevilla actions covered.	Launch document, agreements and official register.	Lead.
Problem	Need, population, constraint, baseline and reasons for collective intervention.	National data, diagnostics, consultations and literature.	Promoter + beneficiary country.
Results	Outputs, outcomes, indicators, milestones, assumptions and critical risks.	Versioned results framework.	Programme manager.
Financing	Announced, committed, approved, disbursed, spent; instruments, currency, cost and maturity.	Contracts, budgets, disbursement statements and audit.	Funder/operator, independent verification.
Additionality	What would not have taken place without the initiative; new or redirected resources.	Documentary counterfactual, history of commitments.	Independent evaluator.
Distribution	Direct and indirect beneficiaries, potential losers, protective measures and participation.	Surveys, administrative data and consultations.	Countries/communities + HuIB.
Data	Sources, owner, access rights, frequency, quality, model, confidentiality and archiving.	Data governance contract.	Certified data steward.
Accountability	Oversight forum, publication, complaint, mediation, redress, withdrawal rules and closure.	Governance charter and procedures.	Lead + independent forum.

10.7 A common maturity scale, without reducing initiatives to a single rating

The platform must distinguish the number of initiatives from their degree of execution. A maturity scale makes it possible to compare statuses without claiming to compare the substantive value of heterogeneous projects. It complements, but does not replace, the indicators specific to each initiative.

Table 32 — Proposed maturity scale

Level	Status	Minimum conditions	Publication permitted
M0	Announcement	Public intention, identified lead, field and prospective partners.	Announcement, with no amount counted as effective mobilisation.
M1	Specified	Passport, theory of change, beneficiaries, governance and risks.	Complete record; explicit uncertainties.
M2	Financed	Approved resources, instrument, timetable and conditions documented.	Amounts separated between commitment and disbursement.

Level	Status	Minimum conditions	Publication permitted
M3	Operational	Team, contracts, activities, data and first implementation milestone.	Progress, delays and changes of scope.
M4	Verified results	Outputs and outcomes independently examined; distribution and adverse effects documented.	Results with level of evidence and limitations.
M5	Institutionalised or replicated	National capacity, sustainable financing, adoption or replication with adaptation.	Transferability conditions and full costs.
MX	Suspended or closed	Stopping threshold reached, objectives no longer relevant or risks outweighing benefits.	Reasons, transferred assets, surviving obligations and lessons.

An initiative may fall back a level when financing disappears, when data become unavailable or when the scope changes. The register keeps the history; it does not replace the old status with the new one without trace. The MX level is not necessarily a failure: a rapid and reasoned closure may protect more resources than an artificially maintained initiative.

10.8 How the seven functions make Sevilla actionable

Table 33 — Functional application of the chain to the Sevilla initiatives

Function	Application to Sevilla	Deliverable	What it does not do
HuIB	Measures need, exposure, beneficiaries, results and unanticipated effects.	Impact passport, baseline, distribution and uncertainties.	Does not declare political success and does not set financing.
GIRA	Qualifies maturity, additionality, equity, resilience and the quality of the evidence.	Multidimensional opinion and reasons, not a single score.	Does not replace sectoral evaluation and does not price.
GFEA	Analyses incentives, displaced costs and burden-sharing options; initially uses shadow prices.	Scenarios of contribution, guarantee, interest subsidy or correction.	Does not automatically impose a levy on every initiative.
BFM	Activates only where an initiative involves a trade or border mechanism.	Non-discrimination, equivalence and proportionality test.	Is not a general condition of development financing.
GSF	Finances preparation, capacity, prevention, transition, guarantees and insufficiently financeable public goods.	Traceable financing plan and allocation independent of the measurement.	Does not finance its own rating and does not alter the data.
IPDA	Certifies high-impact digital systems for monitoring, allocation and targeting.	Data contract, audit, degraded mode and human sign-off.	Does not turn the dashboard into an automatic decision.
Humanity Court / accepted forum	Handles challenges concerning procedure, access, jurisdiction or obligation where consent exists.	Reasoned decision, review, procedural injunction or finding.	Does not adjudicate the general merits of development policy.

10.9 The six decision gates before qualifying an initiative as actionable

An initiative is actionable when it passes six independent gates. Passing one gate does not compensate for failing another; abundant financing does not correct the absence of a defined beneficiary, and excellent measurement does not create a legal basis.

- **Gate 1 — mandate and ownership.** The responsible parties, the countries concerned, the beneficiaries and the competences are identified; the required consent is documented.
- **Gate 2 — evidence and measurement.** The baseline, the data, the assumptions and the limits make it possible to track a real change.
- **Gate 3 — financing.** Resources are distinguished between announcement, commitment, approval, disbursement and expenditure; the full cost is sustainable.
- **Gate 4 — execution.** The team, procurement, partners, schedule, capacities and critical dependencies are operational.
- **Gate 5 — equity and resilience.** Distributive effects, debt, climate, gender, generations, territories and shock risks are addressed.
- **Gate 6 — accountability and correction.** Deviations trigger a response, data are contestable and affected parties have an avenue of redress.

Stopping rule. An initiative that does not pass a critical gate must not be presented as operational. It may remain in the platform as an initiative under preparation, accompanied by an explicit plan to close the gap.

10.10 Financing: moving from announced amounts to useful flows

The proposed financial monitoring separates five magnitudes that are often aggregated: announced amount, legally or budgetarily authorised commitment, approved financing, disbursement and expenditure actually allocated. It also distinguishes gross financing from the net cost to the beneficiary, guarantees from loans, attributable private mobilisation from co-financing that would have existed, and new resources from the recycling of earlier commitments.

The GSF is not intended to absorb all Sevilla financing. It intervenes as a functional last resort, where prevention, project preparation, capacity, insurance, first-loss risk, local currency or a global public good remain insufficiently financed. Allocation must be independent of the institution that measures and of the authority that qualifies.

Table 34 — Minimum financial dictionary

Quantity	Operational definition	Publication rule	Error to avoid
Announced	Public intention without sufficient authorisation or contract.	Published separately, never added to disbursements.	Presenting a target as an available resource.
Committed	Appropriation, decision or agreement authorising a future obligation.	Date, currency, conditions and duration.	Counting the same commitment several times across different coalitions.
Approved	Operation accepted with beneficiary, instrument and conditions.	Amount, grant component, cost, maturity and guarantees.	Confusing approval with effective access.
Disbursed	Flow transferred to the beneficiary or paid on its behalf.	Timetable, delays, cancellations and currency.	Ignoring fees, commissions and counterparts.
Usefully spent	Resource used in accordance with the objective and checked.	Link with outputs, beneficiaries and audit.	Inferring impact from the budget execution rate alone.

Quantity	Operational definition	Publication rule	Error to avoid
Mobilised	Third-party financing caused by the intervention, according to a predefined method.	Attribution method and no-intervention scenario.	Attributing all co-financing to the initiative.
Net cost	Present value of repayments, fees, risks and subsidies for each party.	Assumptions on rates, exchange rates and scenario.	Comparing instruments by their nominal amount.

10.11 Data governance and artificial intelligence

The platform may benefit from artificial intelligence in order to match initiatives with Sevilla actions, detect duplicates, identify delays, translate reports, verify the consistency of amounts and produce scenarios. But AI must neither automatically attribute a success, nor select beneficiaries, nor close an initiative, nor trigger a financial consequence without identifiable human authority.

Each pipeline must retain the source, the date, the licence, the transformations, the model version, the validation rules and the corrections. Where a datum is not available, the system publishes the absence instead of inventing an estimate. Low-capacity countries must be able to participate through proportionate routes, including offline formats, simple administrative data and funded assistance.

- a unique identifier for each initiative, action, financing, beneficiary and deliverable;
- automatic checks on currencies, price years, units, duplicates and totals;
- a change log and retention of earlier versions;
- separation between public data, restricted data and protected information;
- a right of correction for the sponsor, the beneficiary and affected persons;
- independent audit of the classification, detection and summarisation models;
- a degraded mode allowing continuity without a proprietary supplier or model.

10.12 Dashboard: few indicators, several registers

The dashboard must not aggregate incompatible dimensions into a single index. It retains at least five registers: resources, execution, results, distribution and risk. Financial totals remain distinct from welfare valuations and from capacity indicators. An initiative may be well executed and distributively bad; it may be equitable but under-financed; it may produce an asset without creating durable capacity.

Table 35 — Proposed portfolio indicators

Register	Priority indicators	Mandatory disaggregation	Use
Resources	Announced, committed, approved, disbursed, net cost, additionality, local-currency share.	Country, instrument, source, concessionality and maturity.	Verifying the reality and quality of the financing.
Implementation	Milestones, disbursement lead time, procurement, capacity, delays and administrative costs.	Promoter, country, type of activity and cause of delay.	Triggering assistance or correction.
Results	Outputs, outcomes, coverage, quality and sustainability.	Beneficiaries, territory, sector and level of evidence.	Assessing change, not activity.

Register	Priority indicators	Mandatory disaggregation	Use
Distribution	Access of LDCs, small entities, women, young people, fragile areas; winners and losers.	Income, gender, age, territory, disability where relevant and feasible.	Preventing the average from masking exclusion.
Risk	Debt, exchange rate, climate, governance, data, vendor dependence and conflict.	Probability, severity, reversibility and risk holder.	Preparing scenarios and stopping thresholds.
Accountability	Complaints, responses, counter-assessments, corrections, suspensions and closures.	Type of complainant, time taken, outcome and effect.	Measuring real access to the system.

10.13 Correction loop: what happens when an initiative drifts

Actionability is verified when a deviation appears. The protocol provides for a graduated response. A minor delay calls for assistance or a revision of the schedule; a data deficiency calls for an audit or a degraded mode; a distributive drift calls for a change of targeting and protective measures; a loss of legal basis calls for suspension; a risk greater than the benefit calls for closure.

Table 36 — Proposed corrective scale

Level	Trigger	Response	Authority
C0 — observation	Minor deviation or missing data with no material effect.	Request for information and correction deadline.	Promoter / secretariat.
C1 — assistance	Delay or reversible capacity shortfall.	Technical support, internal reallocation or simplification.	Promoter + country + funder.
C2 — corrective plan	Missed milestone, increased cost, distributive effect or significant risk.	Public plan, new milestones, financing conditioned on the corrective action.	Independent governance forum.
C3 — targeted suspension	Unreliable data, risk of harm, failure to follow procedure.	Suspension of a component, audit and protection of beneficiaries.	Agreed authority; avenue of redress available.
C4 — resizing or transfer	Model no longer viable but assets or partners still useful.	Reduction, transfer to another entity or merger.	Parties and oversight forum.
C5 — closure	Obsolete objective, risk outweighing benefit, persistent breach or absence of financing.	Reasoned closure, data protection, surviving obligations and lessons.	Parties according to the legal basis; procedural review.

10.14 Federated governance: making visible without centralising

The proposed layer may be governed in a federated manner. The central register keeps the identifiers, statuses and common requirements; detailed data remain with the sponsors or countries where law, confidentiality or capacity so requires. Accredited bodies may carry out measurement, verification or mediation according to common standards and a recognition of equivalence.

A minimal governance architecture comprises: an independent methods committee; a light secretariat for the register; country focal points; a forum of initiative sponsors; a chamber of beneficiaries and civil society; an audit function; and an avenue of redress. Appointments,

budgets and conflicts of interest must prevent the main funders from simultaneously controlling measurement, rating and allocation.

Access must be asymmetrically supported. The least developed countries, small States, municipalities, local organisations and low-budget initiatives cannot bear the same documentary burden as the multilateral banks. Proportionality requires simplified templates, funded assistance, minimum data and a graduated build-up of compliance.

10.15 Proposed pilot: a portfolio of twelve initiatives

A pilot of twelve initiatives would make it possible to test the implementation layer without claiming to cover the whole platform immediately. The sample should be stratified by function, region, size, maturity, financial instrument and level of capacity.

Table 37 — Design of the Sevilla pilot

Component	Proposal	Success criterion	Stopping criterion
Sample	12 initiatives: public financing, private financing, debt, data, capacity and systemic issue.	Sufficient diversity to test the templates and interfaces.	Sample captured by a single type of actor or sector.
Duration	15 months: 3 preparation, 9 implementation, 3 evaluation.	At least two update cycles and one corrective loop.	Fundamental data still unavailable after the preparation phase.
Levels	M0 to M5 and MX applied retrospectively then prospectively.	Inter-rater agreement and usefulness for promoters.	Classification unstable or not understood by users.
Financing	Traceability from announcement to disbursement and additionality test.	Reduction in double counting and better visibility of delays.	Cost of traceability exceeding its decision-making value.
Distribution	Beneficiaries/losers matrix and field consultation.	Concrete corrections to targeting or protective measures.	Symbolic participation with no influence on the design.
Data and AI	Data contract, automatic checks, audit and degraded mode.	Reproducibility of the essential indicators.	Unmanageable dependence on a vendor or model.
Comparator	Existing standard monitoring retained in order to measure the added value.	Demonstrated gain in quality, timeliness, correction or trust.	No improvement relative to the existing system.
Publication	Case file, methods, errors and limitations published with safeguards.	Independent replication possible.	Unmanageable legal or human risk.

The pilot must be co-constructed with the sponsors and the beneficiary countries. It must not condition access to existing financing. In its first phase, qualification is experimental and financial consequences remain notional, except for correctives voluntarily accepted.

10.16 How the chain concretely supports development

Table 38 — Channels of added value for development

Channel	Mechanism	Expected benefit	Condition
Allocation	Comparing need, additionality, capacity, net cost and distribution.	Resources directed towards the most binding constraints.	Sufficient data and absence of a single score.

Channel	Mechanism	Expected benefit	Condition
Preparation	Financing studies, data, legal frameworks, skills and consultation.	More projects turned into bankable operations without sacrificing ownership.	The cost of preparation is recognised as an investment.
Risk reduction	Targeted guarantees, insurance, first loss and local currency.	Increased investment with less debt or exchange-rate exposure.	Risk genuinely transferred and public cost transparent.
Capacity	Transfer of skills, systems and institutions to the beneficiary country.	Reduced dependence and continuity after the end of the project.	Capacity indicators and multi-year financing.
Equity	Measurement of winners, losers and access of under-represented groups.	More inclusive development and prevention of regressive effects.	Effective participation and funded corrective measures.
Resilience	Shock scenarios, adaptive clauses and pre-arranged financing.	Less disruption of services and investment in a crisis.	Public triggers, expiry and oversight.
Learning	Register of errors, replication and reasoned closure.	A cumulatively more effective portfolio.	Honest publication of failures and independence of evaluation.
Trust	Traceable data, reasons, avenues of redress and separation of roles.	More durable cooperation between funders, States and beneficiaries.	The powerful accept the same accountability requirements.

10.17 Antithesis: can the accountability layer slow Sevilla down?

The principal objection is that a voluntary platform was created precisely in order to act quickly, whereas an additional layer of measurement, qualification, data and redress could increase transaction costs, discourage coalitions and favour actors capable of filling in the forms. A second objection holds that the initiatives are too diverse for a common protocol and that comparability will produce an artificial standardisation. A third warns against transforming a political platform into a surveillance mechanism dominated by donors or data providers.

These objections impose a frugal design. The protocol must not require the same depth for a knowledge initiative and for a multi-billion financial instrument. It must recognise equivalent systems, limit mandatory fields, finance capacity, test the cost of compliance and remove any requirement that improves no decision. The maximum burden must be fixed ex ante as a proportion of the budget or of the risk of the initiative.

Table 39 — Operationalisation risks and responses

Risk	Antithesis	Design response	Empirical test
Bureaucratisation	The protocol consumes the resources intended for beneficiaries.	Proportionality, equivalence, controlled automation and capped compliance budget.	Time and cost per initiative compared with the decision-making gain.
Single metric	Comparability destroys diversity and contexts.	Separate registers, local indicators and absence of a global ranking.	The system's capacity to accept non-commensurable results.
Conditionality	Funders use the layer to impose their priorities.	Shared governance, procedural rights, transparency and counter-assessment.	Share of corrections initiated by beneficiaries and accepted.
Data colonialism	Data are extracted without local capacity or control.	Data sovereignty, appropriate storage, skills transfer and minimisation.	Share of data governed locally and community access.

Risk	Antithesis	Design response	Empirical test
Duplication	Promoters report the same information several times.	Interoperability, import of existing reports and recognition of equivalence.	Number of genuinely new fields and reduction of redundant reporting.
False precision	Ratings mask uncertainty and politics.	Intervals, evidence classes, narrative opinion and the right not to conclude.	Frequency of justified abstentions and revisions.
Capture	The best-funded actors define the methods.	Non-circular budgets, pluralistic appointments and external audit.	Concentration of roles and variation in decisions across actors.
Rigidity	The protocol prevents innovation and adaptation.	Pilots, sunset clauses, reasoned exemptions and annual review.	Number of simplifications adopted on the basis of feedback.

10.18 Criteria for success, simplification and rejection

The proposed layer must be simplified where an existing mechanism produces the same information and the same protections at lower cost. It must be limited to high-risk initiatives if the burden proves excessive for the others. It must be rejected if, after the pilot, it improves neither the quality of the data, nor the speed of correction, nor distribution, nor trust, or if its costs exceed the losses avoided.

- **Minimum success.** The financial and operational status of initiatives is clearer; double counting decreases; delays trigger a correction; beneficiaries have a verifiable voice.
- **Strong success.** Sponsors effectively reallocate resources, change targeting, improve sustainability or close non-viable initiatives earlier.
- **Simplification.** An architecture with three functions or a data protocol suffices for certain categories; the other functions remain dormant.
- **Rejection.** The protocol slows disbursements, increases asymmetry, produces contested rankings or changes no important decision.

10.19 Proposed road map

1. Phase 0 — agreement in principle, three months. Constitute a methods group, confirm the partners, select the twelve initiatives and publish the criteria.
2. Phase 1 — common standard, three months. Finalise the passport, the financial dictionary, the maturity levels, the data contract and the correction rules.
3. Phase 2 — retrospective, three months. Apply the protocol to existing data, identify the gaps and measure the cost of compliance.
4. Phase 3 — prospective monitoring, six months. Two update cycles, at least one corrective loop and a consultation of beneficiaries.
5. Phase 4 — replication and comparison, three months. Independent evaluation, comparison with standard monitoring, publication of the data and recommendation for simplification.
6. Phase 5 — conditional extension. Extend only to the categories for which added value is demonstrated; form regional and national networks.

10.20 Decision conclusion

Sevilla has provided a political architecture of commitment and a platform for action. The Global Accountability Chain can bring to it an infrastructure of continuity: linking announcement to responsibility, financing to result, result to distribution, data to contestation and deviation to correction. It does not make initiatives actionable by the mere production of

a dashboard; it makes them actionable when each step has a duty-holder, evidence, a schedule, a resource, a decision rule and a possibility of re-examination.

The objective is not to centralise the Sevilla Platform, nor to transform all its voluntary initiatives into obligations. It is to offer a common language making it possible to distinguish what is announced, specified, financed, operational, verified, replicated, suspended or closed. Such a layer can support development if it reduces double counting, protects beneficiaries, improves the quality of financing, finances capacity and accepts putting an end to initiatives whose cost or risk exceeds their value.

11. Preventive peace and resilience in the face of crises

This chapter shows how to transform cross-border grievances into evidence, dialogue, proportionate responses and peaceful avenues of redress. It extends the chain to two neighbouring functions — conflict prevention and crisis resilience — by arguing that instrumented accountability is, upstream, an infrastructure of peace.

11.1 Executive summary

This chapter specifies the conditions under which the Global Accountability Chain may contribute to peace without being wrongly presented as a treaty putting an end to a war or as a substitute for the existing mechanisms of diplomacy, mediation, collective security or peacebuilding. Its potential contribution lies upstream: making displaced effects visible, distinguishing harm from attribution, opening a structured adversarial process, financing a response and offering avenues of redress before the grievance is absorbed into the balance of power.

The thesis is conditional. An economic, environmental, technological or informational externality does not lead mechanically to violence. It may, however, feed a sequence of destabilisation where its costs are concentrated, its causes opaque, the responses asymmetric and the institutions of contestation weak. The architecture can interrupt this sequence at several points: independent measurement, public qualification, mediation, voluntary or financial correction, financing of prevention, certification of digital systems and judicial review. It produces peace only if these functions are exercised with consent, impartiality, proportionality, participation and evidentiary discipline.

This proposal is in line with the prevention orientation carried by the United Nations, the World Bank and the Pact for the Future: development processes, diplomacy, mediation, human rights and institutional capacities must be articulated before escalation, not only after the crisis (United Nations and World Bank, 2018; United Nations Secretary-General, 2023; United Nations General Assembly, 2024). The Global Accountability Chain adds to this orientation a procedural grammar: who measures, who qualifies, who decides, who finances, who certifies, and before which forum the decision may be contested.

Qualification rule. The Global Accountability Chain becomes an infrastructure of peace only if it effectively reduces uncertainty, humiliation, asymmetry and unilateral recourse. An architecture that stigmatises, sanctions without evidence, imposes its metrics or reproduces power relations may on the contrary increase tensions.

11.2 Purpose, scope and status of the proposal

Purpose. The present chapter makes explicit the possible contribution of the 7+3 architecture to preventive and structural peace. It does not add an eighth institution. It identifies a cross-cutting purpose and a protocol for the use of the existing functions where cross-border or intergenerational effects risk feeding a durable contestation, a retaliation, a polarisation or an escalation.

Perimeter. The disputes concerned are those in which a decision that is lawful or rational within its space of origin displaces costs, risks or vulnerabilities onto actors who have neither participated in the decision nor access to a credible adversarial procedure. Armed conflicts, ceasefires, borders, disarmament and peace operations remain governed by the competent institutions. The chain can only complement these arrangements by measuring the economic, financial, environmental, technological and distributive causes that precede them, prolong them or complicate their settlement.

Epistemic status. This is a design proposal, not an established causal result. The link between accountability and the reduction of violence must be tested by pilots, comparisons

and independent evaluations. Success cannot be inferred from the coherence of the architecture alone.

Principle of non-substitution. The chain replaces neither national authorities, nor regional organisations, nor the preventive diplomacy of the United Nations, nor mediation, nor existing jurisdictions. It provides a common, versioned and contestable case file capable of improving their action.

11.3 From peace as the absence of violence to peace as institutional capacity

Peace may be understood at three levels which must not be confused. The first is the absence or the cessation of organised violence. The second is prevention: the capacity to address tensions before they cross a threshold of escalation. The third is structural: the existence of legitimate institutions making it possible to render grievances visible, to apportion burdens, to correct errors and to preserve the dignity of the parties. The Global Accountability Chain intervenes principally at the second and third levels.

This reading does not reduce peace to development, nor conflict to poverty. The work on prevention places more emphasis on configurations of exclusion, perceived injustice, low legitimacy, shock, opportunity for mobilisation and political competition than on a single cause. The contribution of the architecture is therefore procedural: it seeks to prevent a material dispute from becoming an identity-based or sovereigntist confrontation for want of a common language and a credible forum.

Preventive peace does not mean suppressing all disagreement. It means making disagreement manageable. A pacifying accountability regime must allow the parties to contest the data, the models, the attribution, the values and the consequences without being obliged to contest the existence or the legitimacy of the other party. The quality of the procedure then becomes an asset of peace.

11.4 Theory of change: from the ungoverned grievance to escalation, then to de-escalation

The theory of change rests on a cautious causal chain. A displaced effect does not automatically produce a crisis. It becomes politically dangerous when it is large or repeated, when it affects groups that are already vulnerable, when its causes are opaque, when responsibilities are narrated in incompatible ways and when no credible avenue of correction exists. The grievance may then be aggregated by political actors, linked to a history of injustice and converted into polarisation, retaliation or violence.

Table 40 — Possible escalation chain and points of intervention of the Global Accountability Chain

Sequence	Risk mechanism	Point of intervention	Intended result
1. Displaced effect	A shock or a decision produces costs outside its decision scope.	HuIB: measurement, counterfactual, exposure and distribution.	Making the phenomenon visible without prematurely designating a culprit.
2. Competing attribution	Each party constructs a total causality compatible with its interests.	HuIB + GIRA: bounded attribution, classes S0–S6, level of evidence.	Reducing the space of incompatible narratives.
3. Perceived injustice	The cost is experienced as arbitrary, humiliating or systematically asymmetric.	GIRA + participation: public qualification, reasons, hearings and minority opinion.	Recognise the grievance without turning every incidence into a claim.
4. Unilateral reaction	Retaliation, closure, public campaign or discriminatory measure.	Mediation, GFEA in shadow mode, BFM subject to proportionality.	Create a cooperative option less costly than escalation.

Sequence	Risk mechanism	Point of intervention	Intended result
5. Inability to correct	Even a political agreement remains without financing or without execution.	GSF: prevention, transition, guarantees and assistance.	Make the solution materially possible.
6. Contestation of the procedure	The parties accuse the system of bias, capture or opacity.	IPDA + Humanity Court: certification, audit, redress and review.	Move the conflict towards a verifiable and reversible procedure.
7. Learning	The same causes reproduce the dispute.	Register, after-action review and guarantees of non-repetition.	Turn the case into a collective capacity for prevention.

The chain does not require all the stages to be activated. A case file may stop after measurement if the attribution is too weak; after qualification if no consequence is admissible; after mediation if a voluntary correction is accepted; or before the court if the contestation bears on legality or procedure. The capacity to stop is a condition of peace: an institutional machine that must always conclude and sanction creates its own incentives to escalate.

11.5 The seven functions as capacities for peace

Table 41 — Contribution of each function to peace and limits to be preserved

Function	Potential contribution to peace	Decisive negative mandate	Conflict-generating risk to be prevented
HuIB — measure	Establishes a common factual baseline; locates the affected agents; makes uncertainty public.	Does not qualify morally and determines no sanction.	Turning an uncertain estimate into an incontestable official truth.
GIRA — qualify	Distinguishes severity, equity, vulnerability and level of proof; allows public recognition of the grievance.	Does not monetise and collects no financing.	Stigmatising a State, a population or a sector through a simplifying rating.
GFEA — determine a consequence	Makes options for correction, burden-sharing or compensation comparable.	Acts only within the admissible classes and does not measure its own triggering event.	Confusing correction, punishment, solidarity and reparation.
BFM — adjust	May prevent voluntary cooperation from being circumvented and reduce incentives for a race to the bottom.	Does not invent the schedule and remains subject to applicable law.	Becoming a protectionist instrument or a disguised retaliation.
GSF — finance	Makes prevention, transition and guarantees of non-repetition executable.	Does not modify the measurement or the rating on which the allocation depends.	Buying consent, creating dependence or financing the best-organised actors.
IPDA — certify	Protects the chain against data manipulation, opaque systems and the algorithmic propagation of bias.	Does not govern the substantive decision by algorithm.	Increasing surveillance, digital exclusion or technological asymmetry.
Humanity Court — adjudicate	Offers a peaceful, reasoned and limited avenue of redress; may order a review or find a violation.	Reviews legality and procedure without substituting itself for politics.	Over-judicialising a dispute that would require mediation and compromise.

11.6 The three instruments and pacifying legitimacy

The three cross-cutting instruments do not produce the same form of legitimacy. The Carthage Charter sets the rights and the limits, in particular dignity, non-discrimination,

participation, proportionality and the non-derogable floors. The chain's operational framework agreement organises the interfaces, the obligations of cooperation, the data, the audit, accession and withdrawal. The Call of Carthage opens public accession, qualified petition, deliberation and agenda-setting. Its full text is reproduced in Annex P.

For peace, their complementarity is decisive. A purely technical procedure may lack legitimacy; a charter of principles without capacity for execution may disappoint; participation without rules of evidence may be captured by the most powerful mobilisation. Preventive peace requires simultaneously a normative limit, an operational capacity and a civic opening.

- **The Charter protects.** It prohibits an emergency, a majority or a promise of financing from neutralising essential rights.
- **The framework agreement makes cooperation predictable.** It sets who answers, within what time limit, with what data and under what control.
- **The Call makes the grievance audible.** It makes it possible to reach the agenda before the only visible route is the street, closure or diplomatic confrontation.

11.7 A preventive-peace protocol based on the chain

Where a case file presents a plausible risk of escalation, the chain may activate a specific pathway. This pathway does not create a security competence. It organises the accelerated and adversarial treatment of a cross-border grievance, in liaison with the competent peace and development authorities.

Table 42 — Minimum pathway of a preventive-peace case file

Step	Decision or deliverable	Principal actor	Safeguard
K0. Referral	Description of the grievance, actors, urgency, risk of irreversible damage.	Affected party, State, institution, Call of Carthage.	No presumption of attribution; protection against manifestly abusive referrals.
K1. Admissibility filter	Plausible cross-border link, importance, processing capacity and required consents.	Procedural secretariat or existing mandated body.	Reasoned decision, public unless confidentiality is necessary, open to review.
K2. Stabilisation of facts	Provisional HuIB passport, points of agreement, disputed points, critical uncertainties.	HuIB or accredited network.	Adversarial teams, provenance data, right to independent counter-assessment.
K3. Conflict-sensitivity assessment	Analysis of affected groups, narratives, thresholds, distributive effects and publication risks.	Mediator/peace team with HuIB.	Do no harm, graduated confidentiality, local consultation.
K4. Dialogue and mediation	Non-financial options, voluntary correction, timetable, guarantees and confidence-building measures.	Independent mediator or competent body.	Consent, impartiality, separation from the adjudicative function.
K5. Response package	Prevention, transition, burden-sharing, financing, monitoring and guarantees of non-repetition.	GFEA/GSF as the case may be, parties and funders.	Proportionality, additionality, absence of double counting, protection of the most vulnerable.
K6. Review and redress	Certification of systems, examination of the procedure and decision on challenges.	IPDA/Humanity Court or accepted forum.	Independence, reasoning, targeted suspensive effect where the risk is irreversible.

Step	Decision or deliverable	Principal actor	Safeguard
K7. After-action review	Results, errors, unanticipated effects, lessons and correction of protocols.	Independent team.	Deferred or anonymised publication where peace so requires.
Mediation first. Adjudication is a last-resort safeguard and a guardian of procedure. Save in cases of serious violation, urgency or refusal to cooperate, the pathway must first seek joint fact-finding, facilitation, mediation and voluntary correction.			

11.8 Articulation with existing peace infrastructures

The value of the architecture depends less on the creation of a new organisation chart than on its capacity to supply missing functions to the institutions that exist. The interfaces must be designed before the institutions. Within the United Nations system, a working hypothesis may apportion the roles as follows, subject to the mandates and to the consent of the States concerned.

Table 43 — Possible interfaces with the existing peace and development architecture

Actor or level	Existing role	Possible contribution of the chain	Limit
State and national platforms	Prevention, public policy, security, development and dialogue.	Supporting evidence pack, distributive diagnosis, capacity for redress and correction plan.	No substitution for national responsibility; effective participation of local actors.
Resident Coordinator / country teams	Coherence of the United Nations system and support for national priorities.	Orchestration of the pathway, access to data, peace-development liaison and monitoring.	Respect for the mandate, for confidentiality and for national ownership.
DPPA and mediation	Preventive diplomacy, good offices, mediation and political analysis.	Economic, financial, climatic or technological factual baseline; correction scenarios.	Data replaces neither political judgement nor mediation.
Peacebuilding Commission	Advice, mobilisation and coherence for sustaining peace.	Examination of cross-border dimensions, mobilisation of the GSF and monitoring of commitments.	No duplication of mandate and no imposed conditionality.
UNDP and development actors	National capacities, governance, resilience and programming.	Impact passports, financing directed towards vulnerabilities and prevention indicators.	Avoid the single metric and preserve local learning.
IFIs and multilateral banks	Financing, macroeconomic analysis, investment and assistance.	Identification of displaced effects, burden-sharing options and traceability of benefits.	Do not confuse financial risk rating with human impact rating.
Regional organisations	Norms, mediation, prevention, integration and knowledge of context.	Federated hosting of functions, recognition of equivalence and local avenues of redress.	Ensure independence and access for low-capacity States.
Civil society and communities	Alert, user expertise, trust, scrutiny and inclusion.	Petition, funded counter-assessment, monitoring of beneficiaries and minority opinion.	Prevent façade representation and capture by the best-funded actors.

11.9 Three families of peace-oriented demonstrators

The data-centre demonstrator verifies the continuity of the interfaces, but it does not suffice to demonstrate a contribution to peace. Three families of cases could test the added value of the chain without waiting for an open crisis.

11.9.1 Monetary shock, fiscal space and social tensions

A monetary tightening in a large economy may be transmitted through the exchange rate, debt service, capital outflows, credit, imported prices and the responses of recipient central banks. The pilot would presume neither fault nor claim. It would test whether decomposition into mechanisms, partial attribution, the taking into account of domestic vulnerabilities and targeted preventive financing make it possible to avoid the shock being narrated as a total external aggression or, conversely, as an exclusively domestic failure.

11.9.2 Cross-border resource: water, energy or pollution

The case file would concern a measurable change in availability, quality, cost or risk affecting several jurisdictions. The chain would distinguish hydrological or environmental measurement, distributive qualification, the applicable obligations, the compensation options and the joint investments. Mediation should precede any pricing, and vital uses would remain protected by the principle that some things are not for sale.

11.9.3 Digital infrastructure, information and trust

A platform, an artificial intelligence model or a data infrastructure may alter access to information, to credit, to work or to public services beyond its place of decision. The pilot would test the provenance of the data, distributive biases, redress mechanisms, the certification of systems and publication risks. The objective would not be to govern political debate by an algorithm, but to make contestable the pipeline that influences civic space.

11.10 Safeguards against the conflict-generating effects of the architecture

Table 44 — Peace risks and mandatory safeguards

Risk	Possible manifestation	Safeguard	Stopping signal
Politicisation of measurement	Selection of cases or parameters according to alliances.	Pre-registration, multiple teams, publication of conflicts of interest and external audit.	Unexplained systematic divergence according to the identity of the parties.
Stigmatisation through the rating	A rating becomes an identity-based or sovereign label.	Multidimensional rating, uncertainty interval, right of reply and prohibition of automatic use.	Economic or diplomatic effects disproportionate to the evidential content.
Disguised sanction	Financial correction becomes punitive.	Separation of the efficiency, equity, solidarity and legal windows; proportionality review.	An amount with no demonstrated link to the net loss or to the legal basis.
Capacity asymmetry	Powerful actors control the data and the avenues of redress.	Independent assistance, funded counter-assessment and local representation.	Persistent absence of substantive participation by the affected parties.
Over-judicialisation	Adjudication closes a political space necessary for compromise.	Mediation first, limited jurisdiction, procedural remedies and review.	Multiplication of procedures without improvement in conduct or results.

Risk	Possible manifestation	Safeguard	Stopping signal
Dangerous disclosure	Transparency exposes persons, resources or negotiations.	Classification, minimisation, anonymisation, graduated access and deferred publication.	Credible risk to security, to rights or to mediation.
Algorithmic error	A bias propagates across several decisions.	Containment, adversarial testing, versioning, degraded mode and human signature.	Inability to reproduce or explain a significant output.
Asymmetric club	The weak are bound, the powerful remain outside the regime.	Reciprocity, equivalence, distributive assessment and right of orderly withdrawal.	Lasting concentration of obligations on recipients without commitment from source jurisdictions.

11.11 Evaluation framework: how to know whether the chain really contributes to peace

An architecture of peace must not be evaluated by the number of meetings, notes or financings. It must be judged on its capacity to alter the trajectory of a dispute, with an explicit counterfactual. The following indicators are proposed for a pilot; they must be adapted to the context and are never added together into a single score of peace.

Table 45 — Process, outcome and impact indicators

Level	Possible indicators	Validation question	Risk of interpretation
Process	Time to admissibility; access to data; share of contested assumptions; participation of affected groups; time devoted to mediation.	Was the procedure accessible, adversarial and sufficiently rapid?	A perfect procedure may produce no agreement.
Immediate result	Common factual points; narrowing of the attribution interval; voluntary agreement; secured financing; redress resolved.	Has the dispute become more manageable?	An agreement may shift costs onto absent third parties.
Conduct	Suspension of a retaliation; modification of a policy; data cooperation; implementation of guarantees.	Did the parties choose a cooperative option that they would not otherwise have chosen?	Causal attribution is difficult without a comparison group.
Distribution	Incidence on vulnerable groups; access to reparation; gender, generational and territorial effects.	Was de-escalation obtained without sacrificing the least powerful?	Averages mask the losers.
Durability	Recurrence of the grievance; declared trust; national capacity; compliance with commitments at 12/24 months.	Did the solution strengthen a durable infrastructure for peace?	Declared trust is sensitive to the political context.
Adverse effects	Stigmatisation, administrative cost, data leakage, forum shopping, decision delay, exclusion.	Did the remedy create a risk greater than the dispute addressed?	Diffuse effects appear late.

11.12 Proposed pilot: Peace Accountability Track

A pilot may be conducted without creating a new institution and without producing any binding effect. It would use teams hosted by existing bodies and would compare the complete chain with a simplified architecture. Its purpose would be to test the value of procedural continuity, not to legitimise the 7+3 in advance.

- **Duration.** Eighteen months: three months of preparation, nine months of processing, three months of follow-up and three months of independent replication.
- **Cases.** Two or three consented disputes, belonging to different families and not involving a situation where publication could aggravate an active conflict.
- **Consequences.** Rating, pricing and adjustment in notional mode only during the first phase; only voluntary corrections and consented financing may be implemented.
- **Comparator.** One team processes the same case file by means of a lighter protocol in order to estimate the cost and the marginal value of each function.
- **Pre-registration.** Assumptions, admissibility criteria, indicators, stopping thresholds, confidentiality rules and evaluation method published before processing.
- **Governance.** Independent committee, representation of the affected parties, declaration of interests, non-circular budget and the right to publish a dissenting opinion.

The pilot must be able to conclude that the chain is too heavy, too slow or too conflictual. It is successful if it produces useful information on the validity of the architecture, even where it leads to simplifying or rejecting a component.

11.13 Antithesis, limits and criteria for rejection

The strongest antithesis holds that conflicts do not come from a lack of measurement but from incompatible interests, power relations, ideologies, security dilemmas and political calculations. An accountability chain could then produce more data without altering the fundamental incentives. It could even offer new instruments of pressure, delay an urgent decision or turn a negotiable disagreement into a dispute of principle.

This objection is partly founded. The architecture does not claim to dissolve power. It seeks to alter the range of available options and the political cost of opacity, of arbitrariness and of the refusal to answer. It must be rejected as an infrastructure of peace if the pilots show any one of the following results:

- the publication of ratings systematically increases polarisation or retaliation;
- the parties do not place greater trust in the procedure than in the existing mechanisms;
- the costs of coordination and delay exceed the gains from prevention;
- powerful actors durably escape obligations while the weak bear the consequences;
- mediation is marginalised in favour of pricing and litigation;
- digital systems cannot be sufficiently explained, audited or contested;
- affected populations do not have effective participation and independent counter-assessment;
- a simpler architecture obtains equivalent or better results at lower human and institutional cost.

11.14 Decision conclusion

The Global Accountability Chain is not a peace treaty in the conventional sense. It may nevertheless constitute an infrastructure of preventive peace if it makes it possible to address, before escalation, the grievances linked to cross-border and intergenerational effects. Its contribution is neither to suppress political conflict nor to substitute technique for diplomacy.

It is to produce a common space in which the facts, the uncertainty, equity, financing and redress can be discussed without power being the sole arbiter.

The proposal must therefore be presented as a testable hypothesis, not as a validated architecture. Its qualification as an infrastructure of peace depends on the results of the pilot.

11.15 Resilience and crisis response: rapid modes within fixed mandates

The body of this document deals with chronic harm — the externalities that accumulate slowly. Acute shocks constitute the other half of the problem, and they are no longer rare. On cautious readings of the usual risk registers, the probability that at least one severe global shock materialises within the decade is judged high; that of three or more shocks combining within a generation is higher still; and there is a non-negligible probability that one shock triggers others (World Economic Forum, 2025). An architecture designed solely for slow harm would fall silent precisely at the moment when it would be most needed. This section sets out how the seven institutions and the three instruments behave in the face of an acute shock.⁴

11.16 The cost of the crisis to come

If the probability of severe shocks is now high, their price is in no way hypothetical. The episodes of the previous generation point the way to the next: the financial crisis of 2008 and the COVID-19 pandemic each imposed output losses running into trillions of dollars, and natural catastrophes alone, predominantly climate-driven, inflicted \$318 billion of economic losses in 2024 alone, of which 57% uninsured — on a rising trend observed over four decades (Swiss Re Institute, sigma 1/2025). These are not independent draws. The compounding described by the risk registers — one shock raising the probability of the next (World Economic Forum, 2025) — means that the expected annual bill from acute crises is large, recurrent and growing, and not a rare event to be absorbed and then forgotten.

As with the chronic harms of section 13, this burden is not shared equally. The economies that lack the cushions needed to self-insure — no reserve currency, no common fiscal safety net, restricted access to capital precisely when a downturn arrives — absorb the largest relative losses, exactly where a shock most easily turns into a debt crisis or a lost decade. This is the acute counterpart of the cost of inaction, and it must be read as a distinct magnitude: the chronic flow of unpriced externalities and the expected losses from extreme shocks are different measures, and they are never added together here. What they have in common is a single conclusion — that the least costly moment to build a response is before the shock, not during it.

This caution has a precise theoretical basis. Under fat-tailed uncertainty — where catastrophic scenarios, even if unlikely, cannot be excluded — expected damage may become so large that ordinary cost-benefit analysis ceases to guide the decision, and the only rational response is to insure against the worst (Weitzman, 2009). What the architecture draws from this is not catastrophism — it predicts nothing — but the justification for pre-commitment: one guards against a tail one cannot date, precisely because one cannot date it.

11.16.1 Cost discipline.

These orders of magnitude are drawn from third-party risk registers, and not from a forecast: they are reported as ranges attached to indicated sources. They justify a pre-commitment — the construction of the rules-based rapid modes set out below, while the political and budgetary openings still exist — and not a discretionary emergency power once the crisis is

⁴The probabilities are a high-level synthesis drawn from published registers such as the World Economic Forum's Global Risks Report; they are orders of magnitude, and not the output of a formal model.

under way. A high expected cost is an argument in favour of rule-bound preparation, never a mandate to suspend it.

11.17 Rapid modes within fixed mandates

The guiding principle is that of resilience by pre-commitment, not by discretion. Each institution has a rapid mode that is triggered by objective and published indicators rather than by a judgement of expediency; pre-authorised in the constitutive instruments, so that no institution seizes a new power in the moment; strictly bounded to that institution's single mandate; time-limited, with automatic expiry unless renewal is entered in the case file; and subject to review by the Humanity Court. This is the logic of a circuit breaker, not that of an emergency executive. It is a deliberate response to the oldest failure mode of crisis governance — the fact that emergency powers ratchet forward and never ratchet back — and it is consistent with the document's negative-mandate backbone: speed within a mandate, never an emergency power beyond it.

The rapid-response model is in no way hypothetical. Pre-arranged, indicator-triggered financing already outperforms ex post appeals (Clarke and Dercon, 2016), and the Fund's Resilience and Sustainability Trust shows that standing shock facilities can be built within existing mandates (International Monetary Fund, 2022). Table 46 maps each institution's peacetime function to its rapid mode, the indicator that activates it, the discipline that closes it, and the closest existing precedent.

The three instruments carry the safeguards. The Global Accountability Framework contains the crisis protocol itself — the catalogue of rapid modes, their triggers and their sunset clauses — so that emergency behaviour is authorised in advance and in writing, never improvised. The Carthage Charter sets the non-derogable floors that no rapid mode may cross, on the model of non-derogable rights in a state of emergency compliant with law (United Nations, 1966, article 4). The Call keeps crisis measures accountable to the populations concerned, so that speed never becomes a blank cheque for technocratic government.

So framed, resilience is not a new mandate grafted onto the architecture; it is a property that emerges from completing the chain and from giving each institution a rapid mode bounded by rules. It also redistributes something that is today held unequally. The capacity to absorb shocks — rapid decision, common fiscal cushions, integrated response — is concentrated in the largest blocs and largely absent for smaller economies and regions. By providing rapid financing, shock measurement and crisis legality as global functions rather than as privileges attached to size, the architecture offers a minimum floor of resilience to those that are not, and may never be, a bloc.

Two disciplines bound this claim. First, what is at stake is enabling resilience and crisis accountability, not a global emergency government: the architecture replaces neither central bank swap lines, nor the Fund's liquidity role, nor humanitarian response, and it must not claim to do so. Second, a rapid mode is only as safe as its sunset clause; the design therefore entrusts the enforcement of expiry to the Court and treats any rapid mode that cannot be switched off as a defect, not a feature.

Table 46 — Each institution's peacetime function and its rules-based rapid mode

Institution	Function in peacetime	Rapid mode	Trigger	Closes through	Closest precedent
HuIB	Measures externalities	Accelerated nowcasting; permanent polycrisis watch	Certified shock indicator	Automatic reversion; standing review	IPCC; FSB early warning
GIRA	Rates impact	Accelerated flagging of contagion / severity	Systemic threshold	Challenge + revision	Prudential stress tests
GFEA	Prices inequity	Countercyclical contribution conditional on the state of the economy	Certified slowdown / expansion	Pre-established formula	Automatic fiscal stabilisers
BFM	Adjusts at the border	Time-limited derogations; rapid equivalence credit	Certified supply / price shock	Automatic expiry	WTO safeguards; GATT art. XX
GSF	Finances	Rapid response window; parametric disbursement	Parametric index / shock threshold	Pre-committed ceiling; sunset clause	IMF RFI/RCF/RST; CCRIF, ARC
IPDA	Certifies algorithms	Accelerated certification; information-integrity watch	Declared emergency measure	Ex post review + sunset clause	Non-derogable rights (ICCPR art. 4)
Humanity Court	Adjudicates legality	Expedited necessity / proportionality review	Emergency measure filed	Enforces expiry	Review of states of emergency

12. The political economy of adoption

The question every reader should ask is not “is this desirable?” but “through what sequence of individually rational steps could any one of these elements come into being?”. Three routes, cumulative rather than alternative, answer it — and none requires a founding treaty in order to start.

Incorporation, the general mechanism. Under P3, every output of the architecture is designed to be incorporable: a rating that a regulator can reference, a scale that a finance ministry can promulgate, a model law that a parliament can adopt, an arbitration clause that two contracting parties can sign. This is precisely how credit ratings, the IFRS accounting standards, the Basel ratios and the ISO standards acquired their grip on the world — none of them by treaty. The outputs of the architecture are built to the same standard of incorporability, with one difference: a public issuer, glass-box, whose acts are themselves justiciable.

The existing institutions, without amendment. A systematic examination of the legal frameworks of the principal incumbents, conducted for this programme, led to a conclusion that surprised us: the essential part of what the architecture asks of them requires no statutory amendment (Table 50, *infra*). The only exception is full justiciability, which does require new instruments — which is why the Court is sequenced last (Section 5.8).

Table 50 (*infra*) constitutes a working legal hypothesis and a map of cooperation, not a definitive legal opinion. “No statutory amendment” means only that a plausible existing decision channel has been identified. This establishes neither that the proposed action falls within the mandate, nor that the executive boards would adopt it, nor that a national implementing law would be unnecessary, nor that the affected parties could not contest it.

This chapter now distinguishes two questions. The first is that of functional adoption: through what individually rational decisions can the elements of the chain begin to operate? The second is that of institutional approval: what level of endorsement is to be sought, through what forum, with what mandate and according to what passage gates? The first leads from constant law to the pilot (§12.1-12.6); the second leads from the pilot to a possible resolution, then from voluntary incorporation to only those legal commitments whose necessity will have been demonstrated (§12.7).

12.1 Legal feasibility scale

Table 47 — Legal feasibility scale

Level	Instrument	Illustrative use	Validation required
L0	Research cooperation / public methodology	Joint measurement and pilot datasets	Data authority, confidentiality and institutional mandate
L1	Internal policy or board decision	Supervisory lens, lending criterion or standard	Constitutive instrument and administrative-law review
L2	Contractual incorporation	Procurement, financing or arbitration clause	Consent, applicable law, enforceability and avenues of redress
L3	National legislation	Contribution schedule, border collection, transposition of a model law	Constitutional, fiscal, trade and rights review
L4	Treaty or treaty amendment	Compulsory inter-State jurisdiction or common legal obligation	Negotiation, ratification, reservations and entry into force

12.1.1 Legal mapping, competence and effectiveness

Scope of the mapping. The L0–L4 scale identifies possible vehicles; it does not constitute a conclusion as to competence. An existing institution may hold a substantively close mandate without being authorised to produce the act envisaged, to process the necessary data, to commit resources, to recognise an external output or to confer effect on a decision. The possibility of a pilot under constant law must therefore be validated body by body, act by act and jurisdiction by jurisdiction.

Four-step legal gate. Before any activation, the case file must identify: first, the legal basis and the competent actor; second, the applicable procedural guarantees — information, adversarial process, reasoning, confidentiality and redress; third, the mechanism for incorporating or recognising the output; fourth, the conditions of execution, including immunities, budgetary law, commercial, tax, constitutional and data protection law. Failure at any one of these steps limits the output to the non-binding level immediately below. The four-step gate is the entry filter; the full examination follows the twelve-question test of Annex H.1.

Principle of non-deduction. A scientific measurement does not create an obligation; a rating does not create a base; a political agreement does not create a fiscal competence; a treaty is not self-executing in every jurisdiction; a decision is not effective so long as its recognition and its enforcement are not established. The law therefore does not intervene only at the end of the chain: it qualifies every interface.

Cautious formulation. A first mapping suggests that several non-binding functions — data protocols, comparable measurements, methodological review, shadow prices and advisory chambers — could be trialled under constant institutional law. This hypothesis must be confirmed by independent opinions and does not prejudice the competence required for any binding consequence.

12.2 Political economy of adoption

Adoption requires a coalition, and not only incorporable outputs. The analysis of first movers should identify the net beneficiaries of an unpriced harm; the jurisdictions seeking a lower cost of capital; the parliaments seeking leverage over AI; the standard-setting bodies seeking public legitimacy; the firms that gain from a common rather than fragmented compliance regime; and the donors willing to finance a public infrastructure. Ranged against them stand the actors confronted with new prices, with disclosure, with litigation or with the loss of discretionary power. A viable pilot must make participation individually useful before the complete chain exists, and must offset capacity costs without buying methodological control. The diffusion of a new norm follows, moreover, a documented cycle: norm entrepreneurs carry it first, up to a tipping point where adherence propagates in a cascade, before being taken for granted (Finnemore and Sikkink, 1998). The adoption strategy exploits this cycle — begin with the willing jurisdictions, reach the threshold at which abstention becomes costly, then internalisation.

One obstacle needs to be named without circumlocution: the principal beneficiaries of the status quo hold a real veto power, and may seek less to oppose frontally than to block the critical interfaces — refusing a datum, contesting a rating, delaying an incorporation. The architecture does not claim to dissolve that power; it reduces its yield: by making abstention costly (reputational rating, access, border adjustment) rather than by requiring adherence, by building useful coverage without universality, and by sequencing adoption through an incorporation cascade that does not need the most reluctant actors in order to start. This is a mitigation, not a guarantee: where a dominant bloc chooses durable blockage, coverage plateaus — and this document accepts that as a limit (§14), not as a detail.

This opposition is itself mappable, and it is instructive that it should arise simultaneously from both directions — from those who hold that pricing cross-border harm oversteps the

market, and from those who hold that pricing it concedes too much to the market. A position contested on both flanks is not thereby validated; but it situates the debate, and the task of political economy consists in answering the strongest version of each flank rather than in treating this crossfire as proof.

None of this presupposes new trust among the actors; recent history shows, on the contrary, that binding coordination is possible when it is properly equipped. The Montreal Protocol (United Nations, 1987), ratified by almost all States, reversed the destruction of the ozone layer, today on the path to recovery (OMM et al., 2022): a measured damage, a binding timetable, a compliance mechanism. More recently, the reform of international taxation carried by the OECD/G20 Inclusive Framework brought one hundred and thirty-six jurisdictions together around a global minimum tax of 15% (OECD, 2021). These precedents are not transposable as they stand — the first bore on a narrow and well-defined problem, the second remains imperfectly applied — but they establish the point that matters: what the 7+3 architecture asks for is not a supplement of virtue, but the replacement of trust by architecture — binding what must be bound, and measuring what is not.

The human impacts ledger offers the architecture its most concrete point of entry. Each line carries the minimum that makes it verifiable — an affected party, a causal mechanism, a magnitude, an attribution logic, an evidentiary status, a remedy and an assurance level — so that a board may read it, an auditor may check it and an injured party may contest it. Its diffusion follows two converging forces. From above, a jurisdiction may impose it first on the largest firms — as the European Union mandated sustainability disclosure above a size threshold (§13) —, not through a coercive world authority, which the architecture rejects, but by incorporation into national law (P3): the large actors concentrate the bulk of cross-border impact and have the capacity to keep the register, while the smallest are exempted from it or supported (special and differential treatment, §5.5; transition window, §12.6). From below, demand arises within the actors: employees, customers and investors — interested parties as much as affected ones — have shown that they can require transparency of impacts, making the register an asset of legitimacy rather than a constraint; this is the constituency that the Call of Carthage (§6) federates, and that Table 49 (infra, §12.5) breaks down into entry offers specific to each actor. Neither force suffices alone — the first without the second freezes into formal compliance, the second without the first remains without leverage —, but their conjunction is the realistic route by which a register of responsibility takes hold without waiting for a treaty.

A fact of experience illuminates why coordination is not a luxury but a condition. A jurisdiction that internalises an externality on its own bears the cost while its competitors dispense with it: the harm avoided is global, the burden is local. The European Union illustrates this — carbon pricing, sustainability disclosure, environmental standards: a pioneer of rules, it pays the competitive price for them when it alone applies them, to the point of having to correct course (carbon border adjustment, easing of the CSRD). This is not an argument against rules, but against their unilateral application: the first to internalise is penalised so long as the free-rider is not (Buchanan and Tullock, 1962; Nordhaus, 2015). This is precisely what the architecture corrects — the coordinated minimum (§12) removes the free-rider's advantage, border adjustment (§5.5) neutralises leakage, and reputational rating (§5.3) makes going it alone visible. The good rule does not need to be universal in order to hold; it needs not to leave the virtuous paying alone.

These dynamics have a grammar: that of non-cooperative games. Without a device, the equilibrium of a commons dilemma is defection — each has an interest in free-riding, and cooperation, though collectively superior, is not an equilibrium (Nash, 1951); the history of international environmental agreements confirms that goodwill alone does not hold against free-riding (Barrett, 2003). The architecture does not answer this by pleading virtue, but by changing the game: incorporation, border adjustment and reputational cost alter the payoffs

so that participating becomes the individually rational choice, and abstention ceases to be free. This is also what makes commitment credible — a voluntary commitment is credible only in so far as it serves the interest of the one who makes it (Selten, 1975), whereas an incorporated and justiciable commitment no longer depends on good faith alone. The architecture does not ask for cooperation; it makes it pay.

12.3 Producing and disciplining political will

An architecture that depended on a prior political will would merely displace the problem it claims to solve. The will to act is neither a resource available in fixed quantity, nor a moral quality that the law could presume: it results from a distribution of interests, of information, of costs, of benefits, of veto capacities and of electoral horizons. The Humanity Compact therefore does not treat it as a condition external to its adoption. It seeks to modify the conditions under which action becomes individually rational, publicly visible and politically sustainable, and then to prevent that will, once mobilised, from turning into power without limits. Its doctrine of adoption thus comprises two inseparable movements: producing commitment and disciplining its exercise.

Making inaction politically legible. The first function consists in transforming a diffuse harm into a case file for decision without transforming science into prescription. The HuIB recommends neither a tax, nor a prohibition, nor an expenditure; it produces, for every material impact, a territorialised reading that distinguishes the magnitude, the affected parties, the distribution between households, firms and public finances, the time horizon, the counterfactual, the compensations and the uncertainty (§5.2). This legibility creates a political event: beyond a pre-agreed threshold, the competent government or parliament must place the case file on its agenda and publish a reasoned response within a fixed period. The response may conclude in favour of action, of postponement, of a different measure or of no consequence for want of sufficient evidence; it cannot treat the case file as though it did not exist. Politics retains the right to choose; it loses the right not to explain.

Organising a coalition of compatible interests. Table 49 (infra, §12.5) must not merely describe the actors: it constitutes the matrix of a coalition. The impact-recipient jurisdictions obtain evidence and a forum; parliaments, a lever of control over transnational decisions; firms, a common regime more predictable than a proliferation of incompatible rules; investors and insurers, comparable information on risks today dispersed; standard-setting bodies, an articulation with public legitimacy; donors, a measurement infrastructure that improves targeting and monitoring. None of these gains requires the complete chain to be already in place. Each module must create autonomous value before adherence to the next, while the Fund finances weak capacities and transition costs without buying the method, the rating or control (§5.6, §5.10).

Grading commitment rather than demanding total adherence. Political entry follows a progression that is reversible in its first steps and more binding as evidence accumulates: data sharing and methodological participation; shadow assessment without consequence; pre-registered public pilot; incorporation into a financing, an authorisation or a public procurement; mutual recognition between jurisdictions; limited and contestable financial consequences; and finally, treaty commitment and consented jurisdiction. Each step possesses an entry condition, a review period, success criteria, an exit rule and the identification of the obligations that survive withdrawal. This progression allows a government to enter without having to approve the whole of the 7+3 from the outset, but it forbids “progressive” from meaning “indefinitely voluntary”: exemptions expire, milestones are public and any move to a stronger consequence requires new evidence.

Making peer review a mechanism of soft enforcement. Several regimes show that a common method, an independent or peer review, the publication of results and a corrective

plan can convert a political commitment into national implementation without immediately creating a universal coercive authority. The enhanced transparency framework of the Paris Agreement submits the information communicated to a technical expert review; the FATF and the Financial Stability Board use peer evaluations to examine the implementation and effectiveness of standards; the minimum standards of the OECD/G20 Inclusive Framework on BEPS are monitored through reviews in which members participate on an equal footing; the Extractive Industries Transparency Initiative combines disclosure, multi-stakeholder oversight and validation (UNFCCC, 2018; FATF, 2025; FSB, 2017; OECD, 2025; EITI, 2023). None of these precedents is transposable as it stands. They do, however, establish a common institutional technology: explicit standard, documented evidence, adversarial process, publication, recommendations and follow-up.

The GAF would take up this technology in a graded form, without a moral blacklist. A public register would distinguish documented participation, verified progress and demonstrated compliance; it would publish the method, the limits, the response of the assessed actor and the agreed corrective actions. Any unfavourable conclusion would be preceded by an adversarial procedure and open to review. The objective is not to manufacture an autonomous reputational sanction, but to reduce the asymmetry of information and to make the cost of inaction comparable to the benefit of action. Reputation becomes legitimate only as the consequence of a verifiable case file, never as a substitute for evidence or for law.

Incorporate before centralising. The most realistic route of influence runs through the integration of the chain's outputs into the instruments that the actors already use: administrative authorisations, public procurement, financing conditions, investment contracts, disclosure obligations, professional standards and national law (§12.1). This incorporation increases the usefulness of participation and progressively makes abstention costly. It nevertheless carries the risk identified by H2: that a large market or a focal institution should turn its economic power into normative power. Any incorporation having a market-access effect must therefore satisfy five cumulative conditions: co-development of the method; financing of capacities; recognition of equivalent methods; a proportionate transition period; and independent redress. The Border Fairness Mechanism constitutes the last storey of this progression, not its starting point (§5.5).

Reducing the cost of transition without subsidising the status quo. The first actor to internalise a cross-border cost on its own may lose out to the free-rider; conversely, to compensate all compliance indiscriminately would amount to socialising an obligation that belongs to the source actor. The GSF must therefore finance the public goods of transition — data, meters, methods, training, corrective infrastructures and access to redress — as well as the jurisdictions and parties whose weak capacity would prevent participation. It does not automatically reimburse the normal compliance costs of actors able to bear them, and its support lapses when the capacity or the exposure targeted reaches the agreed threshold (§12.6). Support makes the rule practicable; it does not pay for adherence and confers no right over the measurement or the rating.

Disciplining the will once mobilised. A political coalition can be as captured, as punitive or as precipitate as the status quo it fights. Any political decision taken on the basis of a measurement or a rating must therefore publish its grounds, the interests consulted, the conflicts declared, the principal contributions received, the analysis of distributive effects and the duration of the measure. Temporary decisions carry a sunset or review clause; departures from the HuIB-GIRA case file are permitted but expressly reasoned; the AI models or systems used to classify contributions, simulate effects or monitor execution fall under IPDA certification; and legality, proportionality and respect for rights remain reviewable before the Humanity Court (§5.7–§5.8). The architecture therefore does not seek only to make power act: it keeps the trace of the reasons for which it acts and of the limits within which it may do so.

Financing the adversarial process. Formal participation produces no legitimacy if the weakest actors cannot read the case file, produce an independent counter-assessment or support an avenue of redress. The participation mechanism must finance, independently of the institutions called into question, access to data, translation, scientific and legal assistance, collective actions and the protection of persons who report material information. This guarantee holds for affected communities as much as for small States and low-capacity firms. It gives an operational translation to H3: contestability improves legitimacy only when the cost of information and of redress does not exclude those to whom that right is recognised.

The counter-hypothesis must finally be formulated without weakening it: the Humanity Compact could become a new technology of conditionality, in which the holders of data would define the metric, the large markets would impose their method and the less powerful countries would finance a compliance designed elsewhere. Four prohibitions follow from this. No financier controls the method it finances; no unfavourable public rating is published without an adversarial process and a right of reply; no market-access condition is applied without equivalence, assistance and proportionality; no financial consequence follows from reputation alone or from a non-justiciable indicator. The symmetry of obligations matters as much as their severity: an architecture that measured the weak more easily than the powerful would be technically effective and politically illegitimate.

Political will thus becomes an object of governance, not an act of faith. The project makes the cost visible, organises the beneficiaries, offers a progression of commitment, reduces the first mover's disadvantage and uses incorporation and peer review to stabilise commitments. At the same time, it submits that mobilisation to adversarial scrutiny, to transparency, to the financing of weak parties and to redress. Producing action is therefore not enough; it remains to establish to whom those who act answer, who takes part in their decision and under what conditions a member may withdraw. That is the object of the following sub-section.

12.3.1 First-mover theory and minimal coalition

Two coalitions, two thresholds. The pilot and the regime do not require the same coalition. A non-binding pilot can begin with a willing host jurisdiction, a technical institution capable of measuring, an independent financier, representatives of the affected parties and an external evaluator. It can operate without the adherence of the source actor, provided that its results remain experimental, adversarial and without binding effect. A binding regime, by contrast, requires that at least one recognised legal vehicle connect the consequence to the actors to whom it applies.

Autonomous value of the first move. The first mover must not adhere out of abstract altruism. It must receive a value of its own before any universalisation: better-quality data, reduction of regulatory risk, access to technical assistance, transition financing, recognition of equivalence, improvement of negotiating capacity or reduction of litigation costs. Each entry offer must identify the beneficiary, the gain, the transition cost and the withdrawal condition.

Protection of the first mover. A small jurisdiction that measures a cross-border effect may bear diplomatic, commercial or financial costs. The pilot must therefore provide for the confidentiality of the exploratory phases, legal assistance, the diversification of partners, collective rather than isolated publication and a clause prohibiting the use of experimental results as a sanction. The absence of credible protection against reprisals constitutes a condition of non-launch.

Diffusion test. The activation theory is confirmed only if the autonomous advantages bring about the voluntary adherence of additional actors, if the cost of withdrawal remains orderly and if influence does not concentrate in the financier or the host. A coalition that extends only to the affected jurisdictions without including, directly or by incorporation, actors capable of acting on the source of the harm remains a device of knowledge and negotiation, not a regime of correction.

12.3.2 Veto map, incentives and failure criteria

Political economy must be written as a veto map rather than as a general hypothesis of goodwill. For each determining actor, the pilot identifies the blocking power, the expected benefit, the incentive instrument, the risk of capture and the possible response. An incentive is admissible only if it does not pay the actor to accept a measurement that ought to remain independent and if it does not transfer control of the device to the financier.

12.4 Legitimacy, representation and withdrawal

Input legitimacy requires more than a parliamentary veneer: affected persons hold rights of petition, of information, of hearing and of qualified agenda-setting; a petition reaching a threshold triggers a reasoned response; an independently financed participation mechanism supports the gathering of evidence and the avenues of redress. Throughput legitimacy (Schmidt, 2013) rests on transparent methods, the reasoning of decisions, inclusion, expeditiousness and review. Output legitimacy is measured by accuracy, by distribution, by compliance and by harm avoided, and is not presumed from design. Each institution must publish withdrawal rules: notice, pending case files, data portability, surviving obligations, financial settlement and continuity. These requirements are not merely normative: the theory of legitimacy in international law shows that a rule exerts a compliance pull of its own — a power to secure observance without compelling it — when it is determinate (clear), coherent and attached to a recognised normative hierarchy (Franck, 1990). It is that pull that the architecture seeks through public, contestable and incorporable methods, rather than through coercion.

This wager is institutional in the strong sense. Lasting prosperity follows inclusive institutions — those that distribute participation and rights — and not extractive institutions that concentrate power and rent (Acemoglu, Johnson and Robinson, 2001; Acemoglu and Robinson, 2012). The legitimacy of the architecture therefore rests not on its function alone, but on its inclusive character: parity between source and recipient jurisdictions of impact, rights of affected persons, contestable methods, tested representation. A corrective architecture designed in extractive fashion — captured by those it ought to hold responsible — would reproduce the very harm it claims to correct; inclusiveness here is not an ornament, but the condition of its success.

When the architecture opens access to affected persons, it does so within an established human rights framework rather than within an ad hoc one. The third pillar of the United Nations Guiding Principles on Business and Human Rights — access to effective remedy (United Nations, 2011) — provides the standard against which that access is designed and judged: remedies should be legitimate, accessible, predictable, equitable and rights-compatible. The rights of petition, of hearing and of agenda-setting mentioned above are intended to satisfy that standard, not to substitute a bespoke standard for it.⁵

Two formulas of representation are retained for pilot comparison rather than selected without probative data. Option A uses a double chamber: groups of equal States distributed according to their net impact position, plus a chamber of affected interests selected by transparent mixed methods. Option B uses a single council with capped weightings combining population, exposure, contribution and a floor for small States. Both require scientific independence, conflict-of-interest rules, gender and regional balance, and published simulations of voting power.

⁵The third pillar of the 'Protect, Respect and Remedy' framework; Guiding Principles 25 to 31 set out the effectiveness criteria for grievance mechanisms (United Nations, 2011).

12.4.1 Dual channel of representation

Dual channel. Representation by the State and participation by affected persons answer two different legitimacies. The State carries constitutional responsibility, international commitments and the general interest that it defines according to its own law. The individuals, communities, workers, local authorities and generations represented carry the experience of the harm, of the distributive effects and of the obstacles to access to redress. Neither channel automatically replaces the other.

Effective guarantees. Every case file with a significant impact provides, according to its nature, for accessible notification, translation, sufficient time, independent financing of the counter-assessment, protection against reprisals, publication of the responses to observations and standing to request a review. Participation does not amount to presumed consent and does not create a general veto absent from the applicable law; it obliges the authority to take cognisance of, to address and to give reasons on the effects upon those who do not control the decision.

Independence of support. The financing of participation and of counter-assessment comes from an envelope independent of the decision-maker, of the measurer and of the assessed entity. Representatives declare their mandates and conflicts of interest; significant dissents are annexed to the case file.

12.5 Minimum viable pilot

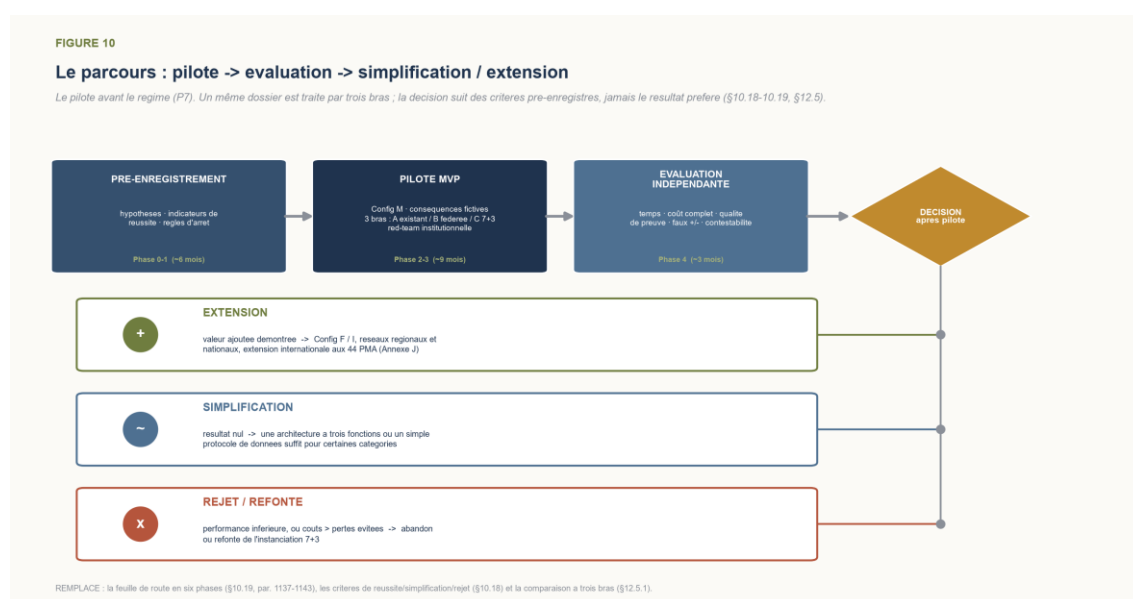


Figure 9. The pathway: pilot → evaluation → simplification / extension

The artificial intelligence data centre case of Section 8 constitutes a natural candidate for this phase: it has minimal public metrics, combines several externalities without requiring that they be monetised, and makes it possible to test the passage of a case file between distinct functions. It nevertheless preselects neither a country nor an operator; the pilot jurisdiction must be willing, the data legally accessible and the consequences kept in shadow mode during the first phase.

Table 48 — Pre-registered minimum viable pilot

Element	Current specification
Scope	One volunteer jurisdiction; one sector; measurement and rating in shadow mode only; no tax, border charge or sanction in phase 1

Element	Current specification
Candidate	A lower-middle-income country with usable public data; Tunisia may be assessed but is not pre-selected
Duration	12 months of baseline and construction; 6 months of evaluation and external replication
Comparator	Existing fragmented process or matched historical benchmark
Principal indicators	Coverage, error/correction, time to decision, participation, cost of redress, distribution and full operating cost
Safety indicators	Data incidents, misclassifications, derogation rate, supplier concentration and recovery in degraded mode
Governance	Independent evaluator, public protocol, panel of affected parties and legal/ethical data review
Stopping rules	Substantial infringement of rights, uncorrected security failure, persistent error on a subgroup, financially inaccessible redress or cost above the declared ceiling
Extension lock	Only if stand-alone value is demonstrated and the next phase has legal authority and funded capacity

Table 49 — Political-economy entry offers by actor

Actor	Probable gain	Probable concern	Entry offer
Pilot State	Visibility, negotiating assets and support for stability	Administrative burden and reprisals	Funded measurement and a first phase in shadow mode only
Incumbent institution	Standardised data and early risk signals	Mandate drift and reputational exposure	Severable cooperation note and absence of institutional subordination
Private company	Common method and reduction of regulatory fragmentation	New liability and disclosure obligations	Secured pilot, correction rights and transition credits
Affected communities	Standing, visibility and potential reparation	Technocratic appropriation and data extraction	Representation, consent, benefit and accessible redress
Major source jurisdiction	Predictable rather than unilateral responses	Budgetary and sovereignty cost	Reciprocity, credit for equivalent action and revision
Employees, customers and investors	A voice on the impacts of the organisation on which they depend; alignment between values and work, purchase or investment	Reprisals or instrumentalisation; exposure without any real power of correction	A register that can be invoked and contested; a protected reporting and redress channel; internal demand recognised as a source of legitimacy (Call of Carthage)

Figure 10 brings out, at a glance, the interface points of each institution with an existing incumbent and the reasons why the IMF constitutes the natural first pilot; Table 50 sets them out in detail, interface by interface.

LES 7 PILIERS ↓ INSTITUTIONS →	FMI	Banque mondiale · BMD	OMC · OMD	BRI · banques centrales	OCDE	Système ONU (Stat, GIEC, fiscal, FFD)	UIT · GDC · Panel IA	CIJ · CPA arbitrage
HuIB mesurer	●				●	★		
GIRA noter	★			●	●	●		
GFEA tarifier	★	●		●	★	★		
BFM ajuster			★	●	●	●		
GSF financer	★	★			●	★		
IPDA certifier					●	★	★	
Cour juger	●	●	●			●		★

● **pilote proposé** ★ interface principale (axe de coopération)
● interface secondaire / point de contact
● FMI = pilote proposé (étoile sur GIRA, GFEA, GSF : point sur HuIB, Cour)

Une invitation, non une injonction — continuité, jamais substitution ; adoption par consentement.

Figure 10. Interoperability with existing institutions — where each pillar articulates with an actor already in place, in continuity and by consent, never in substitution. The IMF, highlighted on four pillars, is the proposed pilot. Source: author’s elaboration; see Table 50 for the details.

Table 50 — Interfaces with the institutions in place: working hypothesis on action without statutory amendment

Incumbent actor	Principal interface	What the architecture would draw on / offer	Anchoring requiring no statutory amendment	What the incumbent actor gains
IMF	GIRA · GFEA · GSF · HuIB	Draw on: surveillance data, debt sustainability analysis. Offer: impact lens, severity coefficients	Article IV surveillance guidance by Board decision; methodological annex to the DSA; precedents of SDR reallocation (Resilience and Sustainability Trust)	Early and standardised visibility of debt distress induced by externalities
World Bank and MDBs	GSF · GIRA	Draw on: project portfolios, safeguard practices. Offer: concessionality criteria linked to rating	Board-level lending criteria; existing safeguard frameworks	A sharper impact pricing of portfolios
WTO and WCO	Border Fairness Mechanism	Draw on: customs data, valuation practices. Offer: measured-gap methodology	CBAM precedent; trade facilitation instruments; de minimis practice	A principled, non-discriminatory standard in place of ad hoc unilateralism
OECD	GFEA	Draw on: BEPS architecture, guidance instruments. Offer: externality schedules	Soft-law guidance; the Pillar Two model	Extension of its normative role to impact equity
BIS and central banks	Contact point and measurement of harm	Draw on: research on spillover effects. Offer: the measurement, the rating and, where appropriate, the pricing of cross-border harm — never a say over the monetary decision	The independence of the monetary decision remains a red line; cross-border harm is treated like any externality, with the issuing central bank accountable for it	A better evidence base on spillover effects

Incumbent actor	Principal interface	What the architecture would draw on / offer	Anchoring requiring no statutory amendment	What the incumbent actor gains
UN statistical system and IPCC	HulB	Draw on: 2025 SNA, beyond-GDP indicators, climate science. Offer: institutional completion of the measurement agenda	Work of the Statistical Commission; continuity of expert groups	A permanent consumer and amplifier of its outputs
ITU and AI governance bodies	IPDA	Draw on: technical standards. Offer: a channel of parliamentary legitimation	Model-law practice; the scientific panel established by UNGA resolution 79/325	The democratic anchoring these bodies currently lack
ICJ and PCA	Humanity Court	Draw on: case law, procedure. Offer: complementarity, never competition	Opt-in arbitration within existing frameworks; advisory continuity	None required — the relationship is deferential by construction

The interface with the IMF illustrates the method. Nothing in the Fund’s Articles prevents surveillance that takes externalities into account: Article IV consultations already incorporate new analytical prisms by Board decision, as was the case for climate and macrofinancial risk; an annex of severity coefficients to the debt sustainability analysis constitutes a methodological, not a statutory, change; and the reallocation of special drawing rights through the Resilience and Sustainability Trust has already established the precedent on which the solidarity fund would rely. What the Fund would gain is symmetrical: early and standardised visibility of the fiscal distress induced by externalities, precisely in the countries where its programmes are concentrated. The case of central banks calls for a distinction that the architecture holds firmly. The independence of monetary decision — which sets rates sheltered from capture — remains a red line: the architecture seeks no anchorage there and claims no right of oversight over the policy itself. But the cross-border harm that this decision inflicts on third parties is an externality like any other; it would be measured, rated and, where appropriate, priced on the same footing as the others, and the party liable would be the source central bank — not the treasury of the recipient country nor its taxpayer —, precisely so that the social cost of spillover effects returns into the decision function and is internalised in subsequent trade-offs. The charge would be automatic and rule-based, never a discretionary sanction; it would target harm to third parties, never the domestic orientation of policy; and on large non-consenting jurisdictions its enforcement would remain limited (P3) — but stating the principle costs nothing. The externality is thus corrected without the decision being overseen from above.

Two disciplines govern every line of Table 50. First, invitation, never injunction: each interface is recorded in the form of a cooperation note — what the architecture would consume, what it would offer, what the incumbent would gain — and lapses in the event of refusal. Second, severability: the architecture seeks no anchorage within any incumbent, and each interface stands or falls in isolation, so that the refusal of one institution compromises nothing else.

National platforms as pilots. The architecture is a set of global rules; its natural pilots are national. A country implementing an integrated financing framework can adopt the measurement taxonomy, run a shadow rating on its own portfolio and pilot an equity contribution scale at the domestic level — demonstrating the chain end to end at national scale, where consent is not a problem because it is sovereignty. Lower-middle-income countries may have strong incentives to position themselves first when they are net recipients of unpriced damage; section 2.1 illustrates one such national case, while the broader distributive claim remains to be tested comparatively.

The discipline of the pilot borrows from experimental development economics, which made the controlled, pre-registered trial the benchmark of causal evidence (Duflo, Glennerster and

Kremer, 2007; Banerjee and Duflo, 2011). Two borrowings, one reservation. Pre-registration first: fixing in advance the hypothesis, the success indicators and the failure criteria — which Table 48 formalises — avoids reading success after the fact. Causal humility next: a pilot establishes what works in a context, not a universal law, and its external validity remains to be tested by replication (§14). The reservation, finally: one does not randomise a global architecture as a block; what is piloted are components — a measurement board, a proto-rating, a national platform — each of which creates autonomous value (P7), the assembly being a matter of a distinct institutional inference, not of a single trial.

12.5.1 Comparator, pre-registration and adversarial team

Three-arm comparison. The pilot does not test the 7+3 in isolation. A single case file, based on the same data and the same freeze date, is processed by three routes: A, the existing process; B, a light federated architecture; C, the 7+3 chain. The teams are separated and gain access to the results of the other arms only after their own decisions have been frozen. The protocol pre-registers the hypotheses, the permitted decisions, the stopping rules and the indicators.

Indicators. The comparison bears at a minimum on processing time, full cost, the quality and traceability of the data, the frequency of requests for further information, false positives and false negatives, divergences between assessors, the number of decisions revised, comprehension by the parties, access to counter-assessment, procedural satisfaction, resistance to conflicts of interest and the capacity to identify a correct decision of non-activation.

Institutional red-team. An independent team seeks to make each architecture fail by representing in turn a large source jurisdiction, a recipient country, a firm, an affected community, a financier, a regulator and a non-participating jurisdiction. It tests data retention, forum shopping, model manipulation, capture of financing, political pressure, abuse of process, dependence on a single AI supplier and coordinated withdrawal.

Decision after the pilot. The 7+3 is not retained because it produces the substantive decision preferred by the author or by the parties. It is retained only if it improves the pre-registered criteria without disproportionate cost or risk. A null result justifies simplification; inferior performance justifies abandonment or redesign of the instantiation.

12.6 Transition and capacities: a graded and framed trajectory

Adoption does not have to be simultaneous or immediate. Three observations impose this: low-capacity jurisdictions cannot bear the data and compliance burden from the outset (a refutation condition recognised in §4.4); the institutions in place need time and tools in order to interface without amending their statutes (§12.1); and a credible reform is first proven on a pilot (§12.5). The transition is therefore graded — but graded is not optional. Three principles frame it. First, targeted support, not a new body: transition support — financing, measurement tools, methods, training, certification — operates through a dedicated window of the Solidarity Fund (§5.6) and through the capacity-support mandates of the measurement layer (§5.2) and of the certification layer (§5.7); it introduces no eighth institution. Second, it targets weak capacities, not the powerful: assistance goes to low-capacity jurisdictions and to injured parties — those whom the burden would exclude — and not to actors that have the means to adopt by themselves; failing which, the device would subsidise the status quo it intends to correct. Third, gradualness is accompanied by commitment devices: each phase is bounded by pre-agreed milestones, a scheduled expiry of exemptions and non-reversible ratchets (the same discipline as the rapid modes of §11); without which “progressive” slides towards “eternally voluntary” — precisely the best-effort defect that this architecture corrects. Two inherited safeguards apply: transition support is governed separately, with published eligibility rules, and cannot finance the entities that it rates or prices (non-circularity firewall,

§5.1). The precedent exists: the Multilateral Fund of the Montreal Protocol financed the transition of developing countries — a condition of its binding success —, as did the capacity support of the IMF and the OECD and the transition period of the EU carbon border mechanism. The detailed design (fund scale, curricula, tooling) is a matter for later work, not for the present framework.

12.7 From the work to institutional approval: the United Nations sequence

A global governance architecture does not pass directly from publication to legal obligation. Its adoption is a succession of decisions of differing reach: recognising that a problem deserves common treatment; authorising a study or a pilot; approving principles or a protocol; incorporating certain outputs into institutions or national laws; and, only for the functions that require it, negotiating a treaty obligation or accepting a dispute settlement jurisdiction. To confuse these levels would lead either to underestimating the reach of the first decisions, or to asking too early for a commitment that the evidence, the law and the political economy do not yet permit to be sustained.

The path proposed is therefore cumulative, modular and reversible. It seeks a first approval limited enough to be rational for States with divergent interests, but structured enough to produce new evidence and to prevent a further general report from simply being added to its predecessors. The initial object is not the adoption of the 7+3: it is the adoption of a procedure allowing the status quo, a light federated architecture and the 7+3 instantiation to be compared on the same case files, according to pre-registered indicators and stopping rules (§12.5).

12.7.1 Approval is not a single act

The term covers at least six levels, whose political and legal force must remain distinct. Table 51 orders them.

Table 51 — The political approval scale AP0-AP5

Level	Decision sought	Possible vehicle	Real effect
AP0	Recognition of the problem	Declaration, debate, report or mention in an existing text	The subject becomes legitimate and monitored, without any new obligation
AP1	Authorisation to study and to test	Resolution, board decision, research mandate or voluntary pilot	Data, comparators and results that can be invoked in debate are produced
AP2	Approval of common principles and procedures	Voluntary framework, guidelines or annex to a resolution	Participants commit politically to measure, notify, give reasons and publish
AP3	Institutional incorporation	Board decision, internal policy, contract, standard or national legislation	Certain results acquire effect within the participating institutions or jurisdictions
AP4	Modular legal commitment	Agreement, sectoral protocol, arbitration clause, or organisational rule adopted by tacit acceptance	Identifiable obligations bind the consenting parties or the members that have not exercised the opt-out
AP5	Integrated and justiciable regime	Treaty, enforcement mechanisms and accepted jurisdiction	The complete chain becomes enforceable within the agreed scope

This political AP0-AP5 scale complements the legal L0-L4 scale of §12.1: AP describes the level of endorsement of a decision, L describes the legal vehicle of its effects. A General Assembly resolution may have strong normative reach, request studies, create a subsidiary organ or organise follow-up without rendering, by itself, its recommendations binding on States; conversely, a limited obligation may become enforceable by contract or by national incorporation without waiting for a global architecture — and, where the hosting arrangement retained allows it, by tacit acceptance within an existing organisation (§3.1.1, second route).

The first reasonable target is AP1, accompanied by certain elements of AP2: an official mandate for comparison and pilot, a public protocol of evidence, voluntary procedural obligations and a clause providing for a return before the States. The move to AP3 or AP4 occurs only function by function, on the basis of the pilot results, of legal opinions and of the consent of the competent actors — each act passing through the legal gate of §12.1.1 and then the twelve-question test of Annex H.1.

12.7.2 Building on the commissions of 2009 and 2025 without redoing them

The United Nations system has already produced the diagnoses: the 2009 Commission of Experts on Reforms of the International Monetary and Financial System (Box 7) and the International Commission of Experts on Financing for Development, whose report prepared Sevilla (§3.3). Box 9 documents what becomes of their recommendations: the same Global Economic Coordination Council, proposed in 2009 and reiterated in 2025, was not taken up — the demonstration, internal to the system, that a recommendation without a duty-holder loses its reach. The present work therefore claims as new neither the existence of spillovers, nor the asymmetries of the monetary system, nor the need to reform debt, liquidity, representation or development financing. Its contribution begins after these diagnoses: not to produce a third general list of reforms, but to test why repeated recommendations remain without a duty-holder, without continuity of evidence, without a reasoned response and without a forum of contestation. The international mandate sought bears on the functional, relational and procedural breaks between institutions — not on a global rewriting of the international financial architecture.

Proposed non-duplication clause (to be taken up in any text of referral). “The process builds on prior work relating to the reform of the international monetary and financial architecture — in particular the commissions of experts of 2009 and 2025, the Monterrey Consensus, the Doha Declaration, the Addis Ababa Action Agenda, the Compromiso de Sevilla and its Platform for Action, as well as the Pact for the Future and the biennial Summit on a sustainable, inclusive and resilient global economy. It does not aim to establish a new general list of recommendations. It aims to identify the functions already recognised but remaining discontinuous, to test the interfaces necessary for their execution and to compare several institutional configurations, including an option creating no new permanent body.”

12.7.3 A chain of forums rather than a single forum

The right forum is not a single one: like the architecture it must examine, the approval path is itself a chain. The Economic and Social Council Forum on Financing for Development Follow-up is the natural place of technical incubation — intergovernmental, of universal participation, bringing together States, the Bretton Woods institutions, international organisations and stakeholders. The Second Committee of the General Assembly is the principal political channel for the economic and financial dimensions; the initial text should be attached to an existing agenda item — first and foremost the item devoted to the follow-up to and implementation of the outcomes of the international conferences on financing for development, under which the Compromiso de Sevilla

was precisely endorsed. The plenary of the General Assembly remains the level of formal adoption: the Charter allows it to initiate studies and to make recommendations (Art. 13) and to establish such subsidiary organs as are necessary (Art. 22) — the 2025 precedent shows, moreover, that a resolution carried under this item can be adopted directly in plenary, without referral to a Main Committee. The biennial Summit on a sustainable, inclusive and resilient global economy, convened for the first time in September 2025, offers the recurrent high-level political moment at which to bring interim conclusions. The Sixth Committee is not the first point of entry: it becomes relevant at a later phase, for delimited legal questions — the nature of procedural obligations, responsibility, dispute settlement, recognition of decisions, treaty vehicles; the Economic and Social Council may in addition, in matters within its competence, prepare draft conventions for the General Assembly (Art. 62). These routes are activated only after the pilot has identified the functions for which soft law, contract or national incorporation do not suffice. Table 52 summarises the chain.

Table 52 — The chain of forums: role, expected output and mandate limit

Forum	Recommended role	Expected output	What it must not do at the outset
ECOSOC Forum on Financing for Development	Technical incubation and coalition	Framing note, preparatory pilots, intergovernmental conclusions	Immediately negotiating a jurisdiction or a global pricing scheme
Second Committee of the General Assembly	Principal political negotiation	Draft resolution under the existing item devoted to the follow-up to financing for development	Endorsing the 7+3 as a definitive solution
General Assembly (plenary)	Formal adoption and institutional mandate	Report of the Secretary-General, temporary advisory group, pilots, review clause	Automatically creating external obligations for all States
Biennial Summit on the World Economy	Recurrent high-level political moment	Presentation of interim results and voluntary commitments	Substituting for the intergovernmental adoption process
Sixth Committee of the General Assembly	Targeted legal maturation (later phase)	Legal options, model clauses, possible codification mandate	Taking on the economic diagnosis in its entirety
Volunteer institutions and States	Experimentation and incorporation	Internal decisions, contracts, model laws, data protocols	Waiting for prior universality

12.7.4 The content of the first resolution

The first draft should be procedural, comparative and experimental. Its official title would gain from being neutral — for example “Towards a United Nations framework for accountability for cross-border and intergenerational effects” — so that States can appropriate the process without being invited to endorse a brand, a doctrine or an organisational chart already settled.

The text distinguishes what States recognise, what they authorise to be tested and what they still refuse to presume. It recognises that certain economic, financial, technological, commercial or infrastructural decisions produce significant effects beyond the jurisdiction that decides; requests a mapping of existing mechanisms; organises voluntary pilots; requires the publication of methods and uncertainties; and provides for a comparison between competing architectures. It specifies at the same time — in the terms of the source clause and of the non-presumption of constraint (§3.1.1 and Annexes N-O) — that the measurement of an effect does not, by itself, demonstrate a legal causality, a fault, a net global loss or a right to compensation; that national mandates and the

independence of the competent institutions remain protected; and that no additional binding effect arises without an identifiable legal basis and consent — participation in the pilots, registers and simulations amounting neither to recognition of a responsibility, nor to consent to a jurisdiction.

The minimum operative part comprises: recognition of the possible deficit of continuity between measurement, qualification, response, financing and redress; the request for a report of the Secretary-General prepared with the institutions concerned and submitted to public consultation; an independent, pluralist and time-limited advisory group, charged not with recommending a single architecture but with comparing options — including the one that creates no new permanent body; voluntary three-arm pilots, based on pre-registered data and indicators; the publication of the corpora, methods, dissenting opinions, costs and negative results; the participation and the financing of the counter-assessment of the affected parties; the non-duplication clause of §12.7.2; a sunset clause for the temporary group and a decision on review by the States; and the explicit possibility of concluding that the framework should be maintained, simplified, federated or abandoned. The corresponding content elements — preamble, operative part, non-duplication locks and sources — are gathered in Annex Q; they appear there as a model mandate, without session, without agenda item and without a sponsoring State, a referral belonging to the delegations that carry it (§12.7.6).

12.7.5 A six-phase trajectory

Table 53 orders the six phases of the sequence; no phase imposes a uniform time limit.

Table 53 — The six-phase trajectory: purpose, actors, deliverable and decision gate

Phase	Purpose	Principal actors	Deliverable	Decision gate
0 — External validation	Separating contribution, evidence and proposal	Researchers, lawyers, red team, affected parties	Open corpora, legal opinions, costing and replication	Do not refer the matter to political bodies if key evidence remains closed or unaudited
1 — Incubation	Building a coalition and testing the framing	Volunteer States, ECOSOC FfD Forum, regional commissions, partner institutions	Framing note and preparatory pilots	Proceed only if a cross-regional coalition exists
2 — Initial mandate	Obtaining AP1 and part of AP2	Second Committee and General Assembly	Procedural resolution, report of the Secretary-General, temporary group	No creation of a permanent body and no automatic consequence
3 — Pilots and evaluation	Comparing architectures on real case files	Volunteer States and institutions, independent evaluators	Three-arm results, costs, errors, redress and views of the parties	Simplify or abandon if the 7+3 delivers no net gain
4 — Modular incorporation	Giving effect to the validated functions	Boards, legislators, contracting parties	Internal policies, contracts, model laws and voluntary frameworks	Each act passes separately through the gate of §12.1.1 and the test of Annex H.1
5 — Targeted binding law	Addressing only the gaps not resolved otherwise	States, ECOSOC, Second and Sixth Committees	Sectoral protocols, convention or consented jurisdiction	No comprehensive treaty if lighter mechanisms offer equivalent guarantees

Certain functions may reach AP3 through institutional incorporation while others remain at AP1. Measurement, the traceability of evidence, notification and the reasoned response can be trialled before any pricing; a consented solidarity mechanism may precede a liability regime; a contractual arbitration can operate without a universal Humanity Court. The progression bears on the functions, not on an indivisible block. The Compromiso de Sevilla offers a useful procedural precedent: an outcome negotiated at an international conference, then endorsed by the General Assembly within the framework of financing for development follow-up. The present process must not reproduce it identically, but may draw on it in order to articulate expertise, negotiation, formal adoption and follow-up.

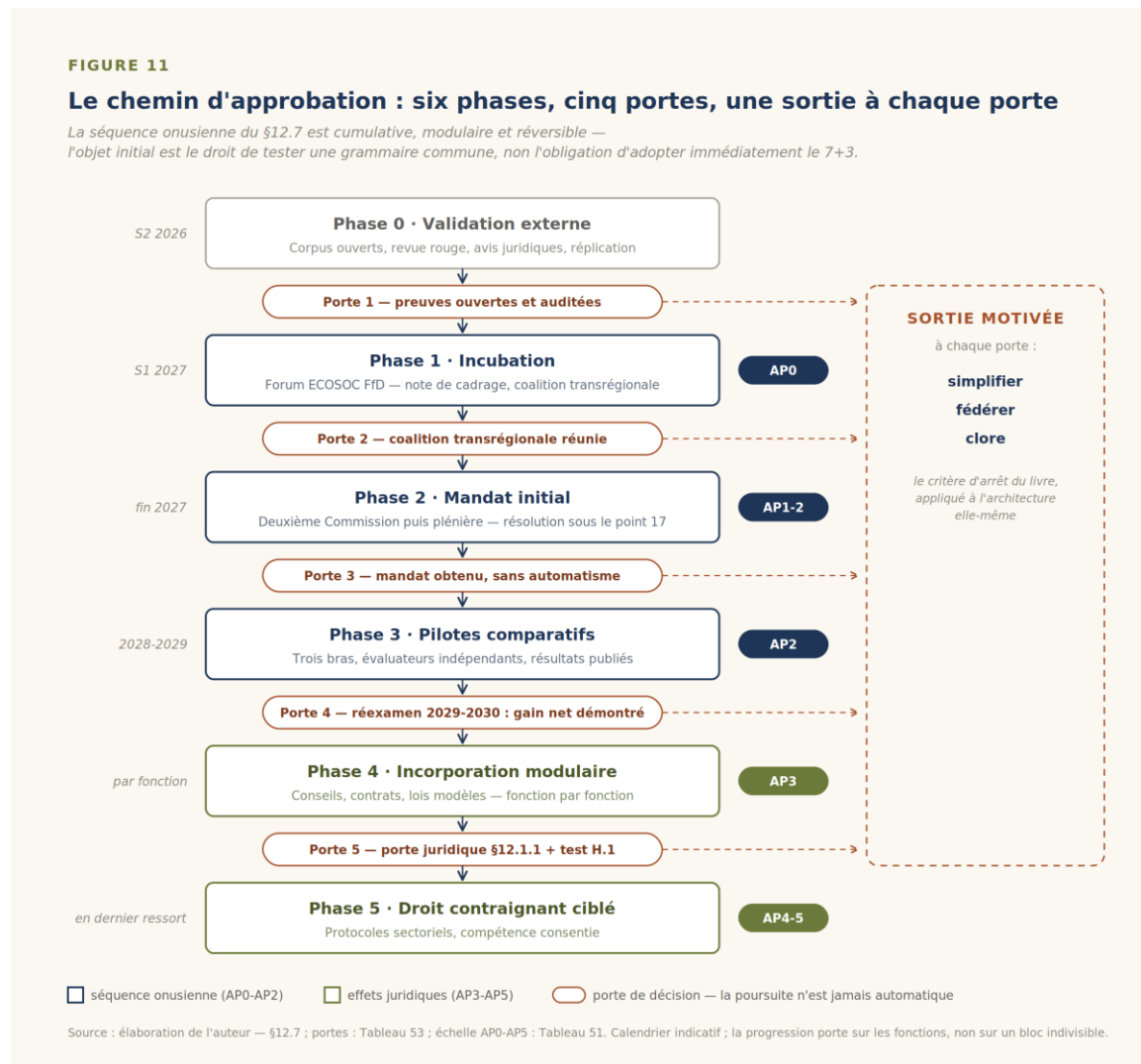


Figure 11. The approval path: from open evidence to legal commitment, through successive decision gates

12.7.6 Coalition, intellectual property and political ownership

A resolution can be carried only by Member States. The author can supply the theory, the evidence, the protocols and a draft text; he cannot substitute himself for the delegations that table, negotiate, amend and sponsor. The transition from the work to a multilateral process therefore presupposes a change of political ownership: the framework must become amendable and appropriable by a coalition, without its intellectual origin or its documented versions disappearing. The composition of the coalition follows the analysis of §12.2 and 12.3 — transregional, bringing together exposed countries, countries with analytical capacities, small States, emerging economies,

development partners and at least one State able to engage with the principal source jurisdictions: a coalition composed solely of affected countries would make the project appear as a unilateral distributive demand; a coalition limited to the large source jurisdictions would risk neutralising its substance. Appropriation must not, however, become a silent dilution: the public corpus retains a register of versions, a matrix linking each modification to its justification, the dissenting opinions and the functions deleted or merged. The official name of the United Nations process may be neutral; the Humanity Compact remains the intellectual source and the comparative reference, not a condition of political adherence.

12.7.7 Antithesis: can approval neutralise the proposal?

The United Nations route may produce the opposite effect to the one sought. In order to obtain consensus, a text may reduce accountability to a further request for study, delete the stopping rules, avoid the question of the forum or refer the entirety of the adjustment to the affected countries. Box 9 shows that a recommendation without a duty-holder progressively loses its reach. This objection justifies neither withdrawal from the multilateral process nor acceptance of any dilution: it imposes minimum criteria. The process adds value only if it retains at least five elements — a traceable case file; the separation between measurement, causality, equity and law; a reasoned response from the competent actor; the possibility of counter-assessment; and a comparator capable of concluding in favour of non-activation, of simplification or of failure. A resolution that limited itself to “encouraging further studies” without a pilot, without open data, without a timetable for return and without identifiable responsibility would not constitute an imperfect first step: it would reproduce the deficit that the work describes, and amounts to a political stopping criterion.

12.7.8 Criteria of passage, suspension and rejection

The passage from one phase to the next is authorised only if: the data, codebooks and methods necessary for the test are accessible to an independent evaluation; the legal opinions identify a plausible vehicle for the acts envisaged; the coalition includes States from several regions and is not reduced to a single category of beneficiaries; the mandate protects the light comparator and the option of creating no new permanent body; the affected parties have financed access to information and to counter-assessment; the full cost, the conflicts of mandates and the risks of capture are published; and a clause providing for return, sunset and review is fixed. The process is suspended or revised if: the political referral precedes the publication of the essential materials; the mandate reproduces a general commission of recommendations without an execution or pilot function; the existing architecture or a federated solution obtains equivalent results at a lower cost; the device creates a new capacity asymmetry or an unjustified conditionality; the collection of data or the certification causes a disproportionate infringement of rights; or political adherence requires the abandonment of traceability, of adversarial process or of the stopping rules.

12.7.9 Decision conclusion

The path towards approval does not begin with a demand made to the world to adopt the 7+3. It begins with a more limited and more demanding request: to recognise that a discontinuity of accountability may exist, to open the evidence, to compare the architectures and to authorise pilots designed to be able to fail. The first institutional success would be a resolution that prejudges neither causality, nor compensation, nor the number of bodies, but that organises the production of a verifiable answer to those questions. The next success would be the incorporation of the functions that demonstrate autonomous value. Legal constraint would intervene only last, by modules and by consent, when the lighter alternatives prove insufficient. Conceived in this way,

approval is neither a political label nor a consecration of the author: it is a chain of revisable decisions that submits the architecture to the same requirements it imposes on others — evidence, justification, proportionality, adversarial process, redress and the possibility of rejection.

13. Stress tests, objections and the cost of the architecture

An architecture is credible not when it claims to have no internal tension, but when it can show where those tensions lie and how they are resolved. The design process behind this document maintained a public register of inter-institutional inconsistencies — detected by interface audits, an adversarial review and a full-scale simulation in which distinct internal teams played each institution against realistic cases — and now tested by the integrated demonstrator of Section 9. That demonstrator does not validate the architecture in the real world; it makes observable the possible breaks between measurement, qualification, consequence, financing, certification and redress. Six tensions deserve to be recorded here, together with their resolutions.

13.1 Design tensions and resolutions

13.1.1 Can fragmentation protect?

Constitutional antithesis. The fragmentation of the global system is not always a gap to be repaired. It may constitute a deliberate protection against the concentration of authority, premature standardisation, the propagation of a common error and the disappearance of competing forums. Separate mandates permit experimentation, subsidiarity, exit and resistance to central capture. A regime complex may be more adaptable than an integrated organisation, particularly under high uncertainty (Ostrom, 2010; Keohane and Victor, 2011; Alter and Meunier, 2009).

The framework's response. The Global Accountability Chain must not therefore seek the unification of decisions. It seeks a coordinated fragmentation: centres that remain legally and operationally autonomous, but that make explicit the evidence formats, the reasons, the incompatibilities and the avenues of redress. The interface does not impose agreement; it prevents disagreement from disappearing into an opaque transmission.

Firewalls. Interoperability must be accompanied by circuit breakers: the possibility for a function to refuse an insufficiently documented input; no cross-cutting machine learning by default; the maintenance of multiple models and suppliers; publication of divergences; a right of re-examination; and the capacity to revert to a local or manual procedure. Useful redundancy is not eliminated where it provides an independent counter-assessment or an alternative avenue.

Rejection criterion. The architecture must be simplified or rejected if the common standard propagates errors faster than it detects them, if the portability of the case file reduces the diversity of forums, if interoperability becomes a de facto centralisation, or if coordination costs remove the adaptability that justified pluralism. Completeness is not uniformity.

VALIDATION STATUS The interface audits, the red-team exercises and the full-scale simulation reported here constitute validation internal to the programme, unless the protocol, the scenarios, the participants, the independence guarantees, the evidence, the scoring and the complete results are published. Internal adversarial tests improve the design; they are not a substitute for external validation.

The orphan price. In the early versions, the border fairness mechanism expected a “reference price” from the rating authority — which, by virtue of its own negative mandate, prices nothing. The resolution created the most important doctrinal line of the architecture: rating is not pricing. The rating authority issues a dimensionless coefficient; the pricing authority publishes the price; the border fairness mechanism multiplies. One institution per transformation (P5).

Double penalty. If the pricing authority prices an externality and the border fairness mechanism makes an adjustment for it, the same harm could be billed twice. Resolution: a

scope contract — flows already corrected at the border are excluded from the tax base, and conversely; the two apply alternatively, never cumulatively, and the Court settles boundary disputes.

Budgetary circularity. A fund financed by border revenues, feeding institutions that generate those same revenues, is a perpetual motion machine that fails in the first year in which revenues disappoint. Resolution: P6 — an independent seed endowment with a designated guarantor; revenues grow the regime, they never establish it.

Consent versus justiciability for private actors. States may accede to a treaty; but how could a global platform or a commodity trader ever be made subject to the Court? This is the most structural weakness that the adversarial simulation brought to light. Resolution: a layered consent — contractual arbitration clauses in any instrument that incorporates the outputs of the architecture; a derived adherence through national law where parliaments incorporate the Charter as a model law; and, residually, the reputational force of a public and contestable rating, whose publication requires no one's consent.

Who certifies the certifiers' algorithms? The rating pipeline, the allocation engine and the adjustment computations are themselves algorithmic systems of exactly the kind that the architecture proposes to govern. Resolution: the reflexive certification mandate of the digital authority (Section 5.7), under a three-tier risk regime with judicial review at the highest tier.

Feedback without capture. Downstream institutions learn things that upstream institutions need — but binding feedback would allow the taxed entity to shape the rating. Resolution: all feedback loops running upstream are expressly non-binding improvement signals; methodological authority remains with the issuing institution; the loop is published.

When to compress a signal — and when never to do so. The rating authority compresses the measurements into a coefficient and a class; the watchtower refuses to compress its six dimensions into a single score. The asymmetry is deliberate, and the resolution comes down to a general rule: a signal may be compressed where the downstream decision requires a single number and where an adversarial procedure exists in which to contest it (a rating feeds a price, and is open to redress); it must never be compressed where the compression would itself constitute the judgement (a single “danger score” for a digital system would pre-empt the qualification that falls to the deliberative and judicial process). Compression follows contestability — never the reverse. This asymmetry has a theoretical foundation: Arrow (1951b) showed that no rule can aggregate plural values into a single ordering without sacrificing one of the minimal conditions of coherence; the answer is not to force aggregation, but to enrich the informational base and to keep the dimensions separate where compression would make the judgement (Sen, 1970). The watchtower therefore does not aggregate preferences into a social welfare function — it measures impacts along declared dimensions; Arrow's problem does not apply to it.

The general lesson generalises beyond this project: it is interface failures, and not failures of institutional design, that make multi-body architectures fail — and interface auditing, including adversarial simulation before any deployment, should be treated as a first-order design discipline, with AI-assisted coherence verification as a supporting instrument (a dedicated methodological document is in preparation).

These tensions belong, in the last analysis, to contract theory. No interface between institutions can foresee everything: contracts are necessarily incomplete, and what then matters is the allocation of residual control rights — who decides in the unwritten contingencies (Grossman and Hart, 1986). The resolutions set out above are precisely such allocations: methodological authority remains with the issuing institution, feedback remains a non-binding signal, a single institution prices. Likewise, the refusal to compress six dimensions into a single score is not an aesthetic scruple: placing a strong incentive on a single measurable metric distorts effort to the detriment of what is less measurable — the

multitasking problem (Holmström and Milgrom, 1991) —, whereas the informativeness principle justifies, conversely, retaining all the relevant signals in the nineteen-field data contract (Holmström, 1979). The negative mandates, finally, are the institutional version of deliberately incomplete contracts: by strictly bounding what each body may do, they allocate decision rights cleanly and prevent the conflicts that the unforeseen would give rise to.

13.2 Objections and responses

“This is world government.” It is the reverse, by construction. Each mandate is single-purpose and negatively enclosed (P2); nothing is binding without incorporation or consent (P3); primacy is purely internal (section 5); the Court reviews legality, never policy; and the whole replaces no existing institution (P4). The precedents are instructive: States already accept binding dispute settlement (WTO), binding arbitration (thousands of investment treaties) and border price adjustment (CBAM) where the arrangement is reciprocal and adherence voluntary. The architecture generalises forms of binding force that the world has already accepted — it invents no new coercion. To centralise is not to govern: following Koremenos, Lipson and Snidal (2001), the centralisation of a function — normative, informational or analytical — determines neither coercive power nor political control, which remain distinct variables. A single global stratum of measurement and standards (HuIB) is therefore not a world bureaucracy: definitions, identifiers and methods are common, while collection, verification and enforcement remain federated.

Two classic frameworks explain the importance of this design choice: Rodrik’s trilemma (2011) warns that deep integration, national sovereignty and democratic politics cannot be maximised simultaneously — this architecture favours consent over depth precisely in order to respect that constraint rather than to deny it; and Ostrom’s polycentric governance (2010a) names the theoretical family to which this arrangement belongs: multiple centres of partial authority, checking one another, none of which is sovereign over the whole. Far from eroding sovereignty, the architecture relies on voluntary cooperation between national institutions — a networked governance in which States retain control and consent to each commitment (Slaughter, 2004). The interparliamentary digital authority illustrates this: it links parliaments in order to strengthen democratic control over digital systems, not to bypass it. The network serves sovereignty by coordinating it; it does not substitute itself for it.

“This will never be adopted.” The response of section 12 is empirical: the general mechanism (incorporation) is the one by which every successful transnational norm of the past century actually spread; most of the adaptations of the incumbents require no statutory change; and the pilot route requires only a single volunteer country. The right question is not whether the regime arrives fully formed from the outset — it is whether each phase is useful individually. A measurement board is useful on its own. A proto-rating is useful on its own. The sequencing principle (P7) constitutes the theory of adoption. This objection has its scholarly form: the record of the great global architectures — universal, binding and comprehensive treaties — is a record of deadlock, and the route that succeeds is rather that of small clubs of the willing, of experimentation and of building on national interests (Victor, 2011). The architecture does not contest that diagnosis; it espouses its method. It rests on no founding treaty, begins with volunteer jurisdictions (P3), pilots components (§12.5) and builds coalitions that make abstention costly (§12) — precisely the bottom-up strategy that the failure of the great treaties recommends. What it adds to the bottom-up is the chain: enough to turn scattered clubs into a connected accountability.

“The measurements will be contested.” They will be, and the arrangement anticipates it: ranges rather than points, declared gaps, published methods, adversarial contestation and judicial review of the measuring institution itself. The disaggregation rule of Box 2 — never to add together market costs, welfare valuations and transfers — constitutes in itself a response to the principal honest criticism addressed to externality aggregates. What is not credible is

the implicit alternative: that the best treatment of an unmeasured harm consists in leaving it unmeasured.

“It will be captured.” Capture is the most serious risk to the architecture, and four features respond to it structurally: parity of governance between impact-source and impact-recipient jurisdictions; the prohibition of payment by the issuer; glass-box methods with versioned changes; and non-solidarity between institutions, so that the capture of one does not deliver up the others. The reflexive certification of the architecture’s own algorithms (section 5.7) extends this response to the technical layer. This is the public choice objection in its hardest form — every new institution risks becoming a captured bureaucracy (Buchanan and Tullock, 1962); the architecture does not dismiss it, it is designed against it, each of the features above answering a failure mode that public choice predicts.

“This duplicates what already exists.” Table 11 and the Sevilla mapping respond quantitatively: the existing landscape saturates financing and measurement, and leaves rating, binding pricing and adjudication vacant. The architecture is deliberately complementary — it consumes IPCC-type science (IPCC, 2023), CBAM-type instruments and Sevilla-type financing, rather than replacing them. The existing landscape is what political science calls a regime complex: a set of loosely coupled institutions, without clear hierarchy (Keohane and Victor, 2011). Such a complex may be more adaptable than a single regime, but it pays for that flexibility in inconsistencies, in gaps and in forum shopping. Adding an institution may therefore aggravate fragmentation as much as reduce it — and that is why the architecture does not add one more loosely coupled piece: it joins the existing links into a coherent chain (non-substitution P4, severability, one function per body), filling the voids without duplicating what already holds.

“These are merely known components, reassembled under new names.” The observation is partly right at the level of the building blocks — a scientific council, a rating agency, Pigouvian pricing, border adjustment, a fund, parliamentary oversight and a tribunal exist separately. But in institutional design, originality does not reside in the components: it resides in the architecture, the separation of functions, the conflict rules, the interfaces and the sequence of decisions. An aircraft is not original by virtue of its metals or its engines, but by virtue of the organisation that draws from those parts a new capacity. The claim is therefore not to have invented each of these elements, but an institutional capacity — a closed accountability chain — that does not exist so long as they remain separate.

“The new institutions will be accountable to the States and the funders that create them, not to the people they claim to protect.” This objection is eliminated neither by transparency alone nor by the assertion of a universal interest. It calls for a differentiated architecture that combines control by the delegators, the procedural rights of affected parties, independent supervision, peer review, budgetary consequences, judicial review and public reputation. The risk remains that the best-resourced actors will dominate the participatory avenues themselves; this is why the pilot programme measures not only the number of participants, but representativeness, accessibility and the rate at which objections from low-capacity groups are taken into account. The chain removes none of these mechanisms: it synchronises them so that a measured harm reaches a consequence and a remedy.

“Why would these seven institutions not develop their own interests, routines and pathologies, like the existing international organisations?” The objection is a serious one and does not dissolve in negative mandates alone. An organisation endowed with expertise and rational-legal authority can acquire an autonomy of its own and, without ever formally violating its rules, progressively redefine its mission, turn its procedures into ends and favour the problems it already knows how to handle (Barnett and Finnemore, 1999). The Charter and the negative mandates are initial guarantees, not guarantees of duration. That is precisely why the architecture does not stop at creation: each institution is bounded by revision and sunset

clauses, exposed to external feedback loops — affected parties, peers, judicial review — rather than to its own internal evaluation alone, held to a professionally heterogeneous composition against the homogeneity that feeds the blind spot, and bound to a precise mission any redefinition of which must be publicly justified. The prevention of pathologies is not an added corrective: it is part of the mandate.

“By multiplying institutions, forums, audits, parliamentary scrutiny and judicial avenues, the architecture risks a multiple accountabilities disorder: incompatible control requirements that no institution could satisfy at once.” The risk is real — but it is handled by discipline, not by reduction. To the separation of functions is added a separation of the modes of accountability: each institution receives a distinct accountability profile, which ranks the forms of control compatible with its function and sets aside those that would corrupt it (Koppell, 2005). A requirement that is legitimate for one institution may be pathological for another: the measurement board must answer to scientific standards and to the data of affected parties, not to the instructions of a State that would like a more favourable measurement; the Court must remain faithful to the law, never commanded by opinion or by its delegators. Failing such an ordering, an organisation oscillates between contradictory expectations and leaves its leaders to choose after the fact the conception of accountability that justifies the decision already taken. The density of the architecture is therefore an ordered strength, not a confusion.

“You are adding fragmentation to an already crowded system: new actors, overlapping competences, forums that may be chosen at one’s convenience.” The architecture responds to this fear by its very construction. It does not duplicate existing functions; it assigns each transformation to a principal responsible body; it employs the institutions in place as sources and operators rather than replacing them; it imposes an interface contract on each link; it confines normative conflicts and provides a rule of redress where two competences meet. Turning an unmanaged fragmentation into an organised fragmentation does not add to the disorder: it disciplines it (Biermann et al., 2009).

“Why create seven separate institutions ex ante if a division of labour can emerge of itself among the existing institutions?” Order can indeed emerge within an institutional complex: common members, playing nested games, lead overlapping bodies to specialise and to recognise one another (Gehring and Faude, 2014). But this emergent order has three decisive limits. It emerges from the convenience of the most powerful members, not from the affected parties. It coordinates the functions that already exist, not those that are missing — independent rating, binding consequence, adjudication. And it equips itself with no constitutional core that would make it coherent and contestable. The 7+3 provides precisely what emergence does not produce: the absent functions, the constitutional foundation and contestability by those who bear the effects. Where institutions overlap, the architecture employs them as sources and operators; it does not wait for a convenient division of labour to take the place of a chain that must be complete, separated and contestable.

“Is this not simply ESG reporting?” ESG cleared the ground — it imposed the idea that a firm has impacts beyond its balance sheet, built the disclosure and data infrastructure on which this architecture relies, and its regulatory descendants (CSRD, ISSB) carry forward what it achieved. The arrangement does not overturn it; it completes what a voluntary, self-declared regime of financial materiality could not accomplish alone, on three counts. Materiality: dominant ESG rating measures the risk that the world places on the firm, whereas internalising a harm requires measuring the firm’s footprint on third parties — MSCI acknowledges as much (Bloomberg Businessweek, 2021), and the architecture rates that footprint (GIRA, §5.3). Source: ESG is self-declared and rated by agencies that the entity pays, and its ratings diverge (correlation 0.38–0.71 against close to 0.99 for credit, the gap being mainly a matter of measurement; Berg, Kölbel and Rigobon, 2022) — the architecture separates independent measurement (HuIB) from a rating never paid for by the rated (P6).

Consequence: ESG discloses, where the chain prices, adjusts, finances and adjudicates. These three steps are not internal adjustments to ESG but functions that it has, by construction, never carried: to provide them requires institutions, not one more score. The architecture therefore consumes the data and the rails that ESG built — a framework still maturing (the first global assurance standard in force at the end of 2026, IAASB, 2025) and being recomposed (the lightening of the CSRD by the “Omnibus”, European Union, 2026) — rather than starting again from scratch. The human impacts ledger (conclusion) is not one more ESG score: it is the register, measured and rated by third parties, that ESG made thinkable without being able to keep it.

“Where does the money come from?” For the institutions: modest and non-circular budgets (P6) — the measurement and rating layers cost millions, not billions, and it is they that create the option value for everything else. For the fund: a sequenced growth, from an endowed pilot through to the revenues generated by the pricing and border layers — the regime finances protection out of the very flows that today externalise the harm: the fund is not paid for by humanity as a whole; it is paid for by the mechanisms that destabilise humanity as a whole.

“Pricing these harms confuses ordinary economics with market failure.” A recurrent objection from welfare economics holds that a pecuniary externality — a cost transmitted through prices rather than outside them — is not a market failure but the normal working of competition; that where a genuine technological externality exists, prevailing prices and Coasian bargaining already internalise the essential part of it; and that the failures of a corrective authority usually exceed the failure it corrects. The document treats this as its sharpest challenge. Its response is threefold. First, the harms at issue are priced nowhere for the party that bears them: a monetary spillover effect, an unpriced data levy or a cross-border emission reaches a community that never entered the market on which the price was formed, so that the Coasian precondition — a forum in which the parties can bargain — is precisely what is missing and what the chain is built to supply. Second, where a cost is authentically pecuniary and where no welfare loss remains under zero-friction assumptions, the architecture does not price it: entry into the system requires that an externality satisfy declared criteria (§2.2, §9.6), and a mere transfer is never counted as a global loss. Third, the risk of government failure is conceded, not brushed aside, and that is the reason why the institutions are negatively enclosed, contestable, bounded by consent and sequenced by pilots, rather than empowered to fix outcomes — the arrangement is calibrated on the possibility that the corrector is wrong. The claim is not that public action is costless, but that a status quo which leaves a measurable, uncompensated and cross-border harm entirely outside any price or any forum is not the neutral baseline that the objection assumes.

“Putting a price on harm amounts to authorising it.” A distinct objection, coming from the ecological and degrowth left, holds that pricing a wrong authorises it against payment and launders extraction into compliance. The response is already inscribed in the principles of the document rather than added here: gravely unlawful harms are placed entirely outside the pricing logic under a non-compensable exclusion (P8), which ring-fences what is not for sale and distinguishes the pricing of a measurable externality from the authorisation of what must on the contrary be prohibited. On this point, the architecture is deliberately reformist rather than revolutionary, and it owns that choice: to render a harm visible, costly and accountable is not to endorse it.

“This is a regime of taxes and barriers that stifles trade and financial flows, and pushes towards sovereigntist closure.” The objection inverts the mechanism. Trade and investment are capped by trust: weaker bilateral trust measurably reduces trade, portfolio investment and FDI — all the more so for trust-intensive goods (Guiso, Sapienza and Zingales, 2009); and where contract enforcement is weak, exchange is under-produced for want of credible institutions (Dixit, 2004). By making measurable, rated and contestable wrongs that are today

invisible, the architecture completes missing markets and levels the playing field, removing the grievance of unfair competition through externalities that is precisely what feeds retaliatory protectionism. Three qualifications against the opposite excess. First, the effect depends on the design: only rules perceived as legitimate, reciprocal and uncaptured produce trust; asymmetric rules would fragment — hence the parity of governance and the anti-capture safeguards already set out, and the differentiated treatment that protects low capacities. Next, the architecture does not claim to increase all exchange: it reallocates externality-intensive exchange towards clean and fair exchange, and externality-laden trade shrinks — an intended effect, not collateral damage. Finally, this is not a matter of more tax but of better-placed tax: where the conditions of §9.7 are met, a Pigouvian pricing of the harmful corrects a distortion instead of creating one. Where they are not, the chain measures, rates and publishes — and does not price. The same logic holds for financial flows, which the GFEA disciplines: trust affects portfolio investment and FDI as much as trade (Guiso, Sapienza and Zingales, 2009). One nuance specific to finance, however: the objective is not more flows but better flows — the GFEA reallocates the speculative and the destabilising (regulatory arbitrage, hot money, high-frequency rent) towards productive investment, and disciplining instability itself (capital surges, sudden stops, §9) reduces what provokes capital flight and financial fragmentation; capital flees the arbitrary, not the fair and predictable rule. There remains a risk more acute here than in trade — migration towards non-participating jurisdictions (arbitrage). The response is the coordinated minimum: the global minimum tax of 2021 showed that one hundred and thirty-six jurisdictions can agree on a floor (OECD, 2021); to which are added reputational rating (GIRA) and conditions of access. There remains the counterfactual, and it is decisive: the alternative is not perpetual openness but the fragmentation already under way — unilateral tariffs, interdependence turned into a weapon, sovereignty brandished as protectionism (Aiyar et al., 2023). This enclosure occurs without the architecture, by the law of the strongest. The architecture does not close the system: it offers the only ruled, reciprocal and fair way of reopening it on a basis of trust (see also “the objection to the objections”, *infra*: the status quo is not neutral).

And the objection to the objections. Each of the arguments above measures the architecture against the yardstick of the status quo as if the latter were neutral. It is not. The status quo is a choice — one that currently costs, on the basis of conservative third-party figures alone, trillions a year in unpriced harms, borne disproportionately by those least able to bear them and least represented where the decisions are taken. The externalities we fail to price today become the crises that the next generation will have to manage tomorrow. Complexity and resistance are signals inviting the design of better systems — not reasons to abandon the field to inertia.

“The architecture costs more legitimacy and coordination than it creates.” This objection cannot be refuted by the scale of the harms alone. It requires comparative indicators of administrative cost, decision time, burden of redress and representation. The design response lies in modularity, common data contracts, severability and the sunset clause; the empirical response must come from the pilots.

“Powerful actors will stay outside.” Some will. The architecture must not presuppose universal participation. Its test consists in determining whether voluntary measurement, reputational ratings, public procurement, financing clauses and a coalition of incorporating jurisdictions create useful coverage without coercive universality — and whether the costs of non-participation remain lawful, proportionate and reversible. This is the prognosis of game theory — non-participation is an equilibrium so long as free-riding remains costless; the issue is therefore not to force adherence but to make abstention costly (rating, access, border adjustment), so that useful coverage is built without universality (Nash, 1951; Barrett, 2003).

“The system will reproduce the North-South hierarchy through data and expertise.” This is a central risk. Open methods do not suffice if data ownership, computing power, language, the

selection of experts and the capacity for redress remain concentrated. Capacity financing, distributed research nodes, multilingual procedure, rights over local data and the representation of affected communities are constitutive safeguards, not development-aid accessories. This risk has a name in the literature: data colonialism — the appropriation of human life through data extraction, which reproduces, in informational form, the asymmetries of colonial extraction (Couldry and Mejias, 2019). The safeguards above are aimed precisely at preventing the architecture, in measuring the world, from itself becoming an instrument of that appropriation. This objection extends the critique long conducted by Third World Approaches to International Law (TWAIL) and by postcolonial studies: international institutions, even well intentioned, have historically reproduced the asymmetries of power that they claimed to correct. The risk is real, and the architecture cannot avert it by decree; it responds to it through its design — differentiated treatment according to capacity to contribute, representation of affected parties within the bodies, and sequencing that does not place the burden from the outset on low-capacity jurisdictions (§12.6) — while acknowledging that these safeguards are judged in use, not in intention.

“What governs local commons does not scale to the world.” The objection is a serious one: the enduring institutions documented by Ostrom (1990) rested on proximity, shared norms and low-cost monitoring — three conditions absent between States and multinationals on a planetary scale. The architecture’s response is not to deny the gap, but to fill it by design: where community and trust are lacking, it is independent measurement (HuIB), contestable publication (GIRA), justiciability (Court) and incorporation by consent (P3) that stand in the place of shared norms and proximate monitoring — not a supposed global civic spirit. This is also the response to the question of costs raised by transaction cost theory (Williamson, 1985): a chain of institutions does indeed have an interface cost, but that cost is measured against the counterfactual (§4.6, §13), not against zero, and interface auditing (§13) makes it a design discipline rather than a blind spot.

“Institutions are shaped by power, and power will not constrain itself.” This is the deepest objection. The institutional literature teaches that institutions are endogenous to the distribution of power: the powerful resist those that would hold them to account (Acemoglu and Robinson, 2012). The architecture does not claim to dissolve that fact. It responds to it by three routes already set out: it begins without the consent of the most powerful (incorporation by the willing, P3); it alters the payoffs so that abstention becomes costly rather than costless (§12); and it distributes power within its own design — parity, contestability, non-capture — so as not to be extractive itself. As regards the non-consenting major players, enforcement remains limited, and the document owns that; but the history of inclusive institutions shows that they are rarely built through the initial assent of the powerful, and more often through coalitions that make their resistance progressively more costly.

“The world has already refused this, where the science was strongest.” The objection is the weightiest of all, and it must be stated without attenuation. Climate is the only domain in which the scientific attribution of a cross-border externality has reached maturity. Yet in 2015, decision 1/CP.21, which adopted the Paris Agreement, “agrees that Article 8 of the Agreement” — the one on loss and damage — “does not involve or provide a basis for any liability or compensation” (United Nations, 2015, §51; official English text). The clause was obtained by the United States, and it was the price of their adherence. If payment was explicitly ruled out where the science is most robust and the historic emitter most clearly identified, how would it be any less so where attribution is more contested and where the presumed debtor is an independent central bank?

The answer lies in examining what the climate regime has actually built. It built an authoritative measurement stratum: the Intergovernmental Panel on Climate Change. It built a rating: global warming potential, the social cost of carbon. It built a pricing: allowance markets, carbon taxes. It built a border adjustment: the Carbon Border Adjustment

Mechanism. It built a financing: the Green Fund, then the loss and damage fund. Measure, rate, price, adjust, finance — five links out of seven. And it built neither the sixth nor the seventh: the enforceable consequence and the judge.

Paragraph 51 is therefore not a counter-example: it is the amputation, expressly dated and expressly attributed, of the last link of an almost complete chain. It confirms, with a precision that this document would not have dared hope for, the law of attrition stated in Box 9: what survives is what obliges no one; what disappears is what obliges someone who has not consented to it. Measurement survived, because it does not oblige. Pricing survived, because it proceeds from the consent of whoever incorporates it. The loss and damage fund survived, because it is voluntary. Liability alone was excised — and it was excised by the text, at the request of the party that would have borne it.

The present document does not claim to escape that law. It claims to know it.

That is the *raison d'être* of principle P3 and of the feasibility scale of §12.1: one first builds the links that oblige no one — measurement, rating, publication —, and the link that obliges comes about only through incorporation, jurisdiction by jurisdiction, contract by contract. The chain is not decreed: it closes by consent, or it does not close. This is not a concession wrung from prudence: it is, to this day, a route that no negotiation has closed off.

“Incoherence protects the weak; your coherence would expose them.” The objection is advanced by the most serious critique in the field, and it deserves to be quoted in its own terms. Grabel (2017) argues that the incoherence of global financial governance is productive and not debilitating: a denser, fragmented and multipolar governance widens the space for institutional experimentation and the autonomy of developing economies, where a coherent design would be captured by the powerful. Ocampo formulates the same preference in terms of architecture: “in a heterogeneous international community, the creation of networks of global, regional, and national institutions can provide a better system of governance than arrangements based on single global organizations”; the International Monetary Fund should be conceived as “the apex of a network of regional reserve funds”, within a “dense” and multi-level architecture (Ocampo, 2017, pp. xiii, 200 and 231). The argument is not one of convenience: it is one of justice. Single global organisations give, he says, a weaker voice to small countries.

The response does not consist in removing functions, but in distinguishing the function from the body. The chain requires that each function have a duty-holder, and that its negative mandate forbid it the neighbouring functions. It does not require that this duty-holder be single, global and centralised. Nothing in §4.7 requires the measurement stratum to be a monopoly: it is designed as an accreditation body — it approves the methods, aggregates knowledge, preserves provenance and uncertainty, and re-measures nothing (§5.2). Nothing prohibits a plurality of accredited raters, under the prohibition of issuer-pays (P6). Nothing prohibits regional chapters of the measurement stratum, regional windows under the solidarity fund, or regional chambers of the Court. Ostrom’s polycentricity, invoked in §4.6, is not opposed to the chain: it describes the way in which each of its links must be organised.

There remains the substance of the objection — the risk of capture —, which is also principle P6 of this document. Two responses are owed to it. The first is structural. A single institution that held measurement, rating, pricing and adjudication all at once would be capturable once only, and neutralised in its entirety. That is precisely what became of the Palais-Royal chain: it was entrusted to the International Monetary Fund, an institution governed by the very countries that it ought to have penalised (Box 9). The separation of functions is therefore not a design elegance: it is the principal anti-capture device available. To capture seven institutions, endowed with seven governance structures, seven negative

mandates and a court that reviews them all, is not to capture one organisation: it is to capture seven.

The second response is empirical, and it is owed to an adversary. Incoherence has lasted for eighty years. It has not protected the weak: it has left them the bill. Self-insurance through reserves costs developing countries on the order of one point of output a year — and it is Rodrik (2006) who puts the figure on it, the very author whose preface opens Grabel's book. Sevilla produced seventy-one financing initiatives and no binding instrument (§3.3). Incoherence is productive for those who can arbitrage it; and those who can arbitrage it are those who have the lawyers, the negotiators and the balance sheets. The weakest do not take advantage of the disorder: they are the ones who cannot afford to find their way through it.

13.3 The cost of inaction

The last objection of section 13 deserves a section of its own — for it does not target this architecture, but every alternative, including the tacit alternative of carrying on as before. Four observations make it possible to assess that alternative.

Externalities are stocks, not passing flows. The annual figures of section 2 read like the weather; they behave like a debt. An unpriced harm does not expire at the end of the year — it accumulates: in the atmosphere and the water tables, in morbidity and disability, in sovereign balance sheets weighed down by the spillover effects of other actors, and — least visibly but most corrosively — in institutional trust. And the stocks compound with one another: each year without credible measurement makes the next measurement more contested; each uncompensated transfer makes the next cycle of cooperation politically more costly in the country that has borne it; each unpunished harm lowers the expected cost of the next. The status quo is not a stationary state. It is a trajectory.

Let us project the five modes through time. Extending each transmission mode of Table 4 over a decade, with rules unchanged: market mediation — rents concentrate further, extraction compounding while being accounted for as creation (Mazzucato, 2018) — and systemic fragility reproduces itself, each rescue being socialised; the pattern is documented, not speculative (the World Bank, 2020, recorded in real time the scale of the pandemic contraction). Policy spillover effects: a world of more frequent shocks and of more assertive domestic mandates reproduces the 2022–2025 episode with growing amplitude, and the fiscal buffers of the recipient countries, already thinned by the previous cycle, absorb the next from a lower position. Technological mediation: informational externalities compound within the very infrastructures that democracies use to correct everything else — the only stock that degrades the mechanism of repair itself. Embedded in flows: on current trends, a further decade will again yield ten trillion dollars of illicit outflows from the countries least able to afford them. Commons: the non-linearities are the best documented in science, and that is why this mode alone already has its scientific institution — what it lacks is everything that comes after measurement.

What past crises actually cost. The 2008 crisis and the pandemic each cost the world economy cumulative output losses running into trillions of dollars — recorded figures, not projections. Neither of the two was a black swan. Each was an accumulation — of unpriced leverage in one case, of unpriced biological risk in the other — measured too partially, priced nowhere, and justiciable before no one until it detonated. The honest counterfactual must be stated with care: this architecture would not have prevented 2008, and it claims no omniscience. What it would have done is to make the accumulation visible, rated, and increasingly costly to ignore — early warning is not prophecy, but insurance has never needed prophecy to justify its premium. Set against annual institutional budgets counted in millions, the arithmetic of averted cost requires no optimism; it requires only that visibility bend a fraction of a single one of these trajectories.

The argument is not new in climate economics: the most cited analysis of the cost of inaction concluded that the benefits of strong and early action far outweigh its costs, and described climate change as the greatest market failure ever observed (Stern, 2007). The scope of this document is broader — it deals with the whole set of invisible externalities, not climate alone —, but the logic is the same: a harm left outside any price is not free; it is simply billed later, and more.

Who pays, and when the window closes. The costs of inaction are not distributed uniformly. They fall, first and most heavily, on those who are least represented where the choices are made — the uncompensated incidence quantified in section 9, the populations situated behind the last column of Table 4, and the generations yet to be born, who have neither a seat, nor a vote, nor a hedge; the harms left unpriced this decade arrive as budget lines of the next. And the window for building the corrective stratum is not indefinite. The multilateral openings on which this document relies — the Pact for the Future, the Sevilla agenda, a universal tax convention under negotiation — exist today, and the political capital that carries them is dated. The realistic alternative to a reformed multilateralism is not the status quo; it is a world increasingly governed by the balance of force rather than by law, in which the adjustments occur in any event — unilaterally, without equity clauses, and without anyone's consent being sought. To do nothing, in other words, does not avoid the question of architecture. It answers it — with the answer of the strongest actor. And the institutional record is unambiguous as to where this road leads: prosperity follows inclusive institutions, and their absence is never a neutral state (Acemoglu and Robinson, 2012).

It is here that the criterion of governance choice set out in §4.6 finds its measure. An architecture is not justified because its institutions are virtuous, nor condemned because they have a cost: it is judged net, against the right counterfactual. The transaction costs and the human costs that a chain of institutions saves are not to be compared with a costless world, but with this one — a world in which unpriced harm accumulates and in which the crises that it prepares arrive in any event. Measured against that baseline, the cost of acting is an investment in an option; the cost of doing nothing, a premium paid without being insured.

Counterfactual discipline.

The cost of inaction is not the benefit of adopting the 7+3. The harm averted depends on adherence, on compliance, on behavioural response, on administrative cost, on substitution and on unintended effects. Future work should compare at least three counterfactuals: unchanged fragmentation; incremental reform by the incumbents; and the progressive adoption of the 7+3. Option value claims should state their assumptions and their ranges rather than treating the entire stock of externalities as avoidable.

14. Limits, refutability and research programme

Sixteen limits bound the claims of this document, and each defines a research front on which collaboration is invited.

14.1 The sixteen limits and their research fronts

Empirical validation and the hierarchy of results. The formal model and the estimation protocol are specified; their general empirical execution is not. The conformity of the equations, the reconciliation of the reference case and the availability of an identification plan constitute necessary research conditions, not a validation of the amounts. A result can change status only after publication of the data and scripts, estimation of uncertainties, sensitivity tests, comparison of counterfactuals, independent replication and examination of null or contradictory results.

1. From measurement to price. The conversion chain (metric → coefficient → price) is specified institutionally, but not yet econometrically: the formation of the reference price under uncertainty, and its incidence, call for formal treatment. The attribution model, by contrast, is now written formally (Annex F) and its estimation protocol — identification conditions, fallback scale — is specified (Annexes G and J); what remains open is the econometric estimation itself, on published data.
2. Resistance to capture. The anti-capture devices are design claims; they call for testing by game theory and by historical comparison with the record of existing rating agencies, standard-setters and courts.
3. Distributive effects of border adjustment. The Mechanism's special and differential treatment must be calibrated so that the equity correction does not turn into a penalty on poverty; the emerging CBAM evidence base constitutes the natural laboratory.
4. The citizen instrument. The design of the permanent body of the citizen instrument (selection, mandate, agenda-setting power) remains the least specified component — deliberately, since it is the one component that should not be designed by experts alone.
5. Pilot design. The national platforms pathway requires a complete protocol: which country characteristics, which sectors, which success indicators.
6. An intermediate continental scale. The anatomy of the spillover effects in section 9 is quantified at the national scale; the intermediate (continental) estimate and the global extrapolation alike remain to be constructed. The magnitudes of the Tunisian case in Section 9 are, since revision 2.1 of Annex F, requalified pre-Configuration M scenarios (§F.16); their evidentiary status, the reconciliation obligation and the recalculation trajectory are consolidated in Annex I. The reconciliation of the reference case with the programme's national net is, for its part, now discharged with a zero residual (Annex I, §I.5).
7. The political economy of adoption. The subsection devoted to the production and the discipline of political will specifies a first theory of activation — visibility, coalitions, graduated commitment, incorporation, peer review, transition financing and safeguards against capture. It remains a design proposal: the causal effect of each of these mechanisms on accession, on coalition stability, on the behaviour of dominant actors and on perceived legitimacy must be tested on the pilots.
8. Reproducibility.

The review of sources, the Sevilla mapping, the aggregate synthesis of externalities, the spillover model and the simulation results require public data, codebooks, equations and changelogs before independent replication is possible. The model, its multidimensional identification protocol and its extension to the forty-four least developed countries are now

specified (Annexes F, G, J); publication of the data, codebooks and scripts remains the outstanding condition.

9. Legal feasibility.

The legal pathways are reasoned hypotheses, not opinions covering the whole set of relevant jurisdictions; questions of trade, taxation, treaties, arbitration, immunity, data protection and constitutional law require validation by specialists.

10. Governance and strategic behaviour.

Appointment, voting, funding, withdrawal, the strategic choice of jurisdiction (forum shopping), coalition breakdown and coordinated capture are not yet modelled.

11. Dependence on data and on AI.

Continuous global measurement depends on lawful access to data, on concentrated infrastructure and on model performance across languages and contexts; operation in degraded mode remains to be tested.

12. Cost and institutional burden.

The operating cost of the architecture — bottom-up budget, staffing model, decision times and interface costs — has not yet been costed. It is plausible that the cost of a pilot arrangement, or of a federated architecture relying on existing institutions, remains modest in relation to the macroeconomic costs of the recurrent systemic crises it seeks to prevent, running into the trillions (§13). This proportionality hypothesis must nonetheless be established by a bottom-up budget and by an estimate of the share of those crises that is genuinely avoidable; it does not, at this stage, permit any determinate quantitative ratio to be asserted. The feasibility question therefore concerns the sizing of the instantiation — and the demonstration of that sizing — not a trade-off settled in advance between the benefit of separation and its cost.

13. Inter-coder reliability. The two classification exercises — the Sevilla mapping and the register of United Nations sources — were coded by a single coder within the programme; the register was built pillar by pillar and required deduplication (each merger being documented in the supporting evidence pack, the original being archived in full), and neither exercise yet includes an independent second coding with published agreement statistics. Both remain open precisely to that test.

14. Asymmetry of quantitative easing and quantitative tightening. The specific effect of quantitative tightening on spillovers, distinct from that of rate increases, remains poorly identified: its only large-scale episode is recent (2022-2025), it is not the exact mirror image of the easing deployed in crisis on illiquid markets, and the empirical separation of its flow, stock and announcement components has not been established. Isolating the balance-sheet component of the shock, propagating it through the fifteen mechanisms by way of predetermined exposures, and testing the asymmetry on the recipient economies constitute a dedicated front; the end of the Federal Reserve's tightening, in December 2025, opens the window of observation for it.

15. Validation of the integrated demonstrator. The artificial intelligence data centre case of Section 8 is a parameterised simulation, not a field evaluation. It verifies the coherence of the interfaces and reveals the data that are missing; it demonstrates neither that the rating thresholds are empirically valid, nor that the proposed consequences would be legally incorporable in a determinate jurisdiction. Its transformation into evidence requires a real project, a pre-registered protocol, audited operator data, participation by the affected communities, an independent comparison of competing architectures and the publication of errors and challenges.

16. The appointment of the independent panels. The architecture rests, in several of its links, on independent panels: measurement, qualification, the assessment of alerts. Their independence is addressed through negative mandates, the publication of methods, adversarial procedure and the right of challenge. None of these devices answers the prior question: who appoints.

The problem is structural, not practical. A panel appointed by the States it is charged with rating reproduces at the entrance the conflict that the separation of functions eliminates at the exit — this is the identified cause of failure of the 2016 rating proposal (§9.9). A self-appointed panel, or one co-opted by its peers, escapes that conflict but has no opposable legitimacy and finds itself exposed to the first serious objection on representativeness. The known intermediate solutions — random selection from qualified lists, appointment by academies, non-renewable terms, mixing of regional panels — mitigate the risk without resolving it: each displaces the question towards the authority that draws up the list or recognises the academies.

No satisfactory solution is proposed at this stage. This limit is of a different nature from the fifteen preceding ones: those call for work — replication, costing, legal opinions —, this one calls for an institutional solution that does not yet exist, and that no quantity of data will produce. It must therefore figure among the open questions of the architecture, not among its points to be consolidated.

It also constitutes a stopping criterion: so long as a mode of appointment resistant to the double objection — capture by the rated, illegitimacy of the self-appointed — is not specified and tested, the qualification function should not pass beyond the pilot stage, whatever the quality of the measurement that feeds it.

Each of these limits corresponds to a planned companion document; the Sevilla mapping note and the methodological document are the most advanced.

These additional limits broaden this document into a staged research programme covering reproducibility, legal feasibility, governance, dependence on data and on AI, as well as institutional cost.

The architecture and “bad GDP”. What national accounting records the wrong way round — defensive expenditures counted as positive — and what it leaves off its books — the costs displaced onto others and onto the future — forms a gap between what is counted and what counts, which the genuine progress tradition has named and measured without ever institutionalising it (§5.2). The 7+3 architecture acts on that gap along its chain: the HuIB makes it visible (measurement); GIRA designates who produces what share of it; GFEA and the Border Fairness Mechanism price that share — contracting externality-intensive and purely speculative activity; the Solidarity Fund makes the causer pay and makes reparation to the injured party — internalising the displaced cost; the Digital Authority and the Court govern and adjudicate. The result is not a smaller GDP but a GDP of better composition: less illth, as much real wealth. Two reservations: the architecture reaches only the cross-border and intergenerational share of that gap — purely domestic defensive expenditures escape it —, and the objective remains the quality of growth, not degrowth. Above all, narrowing this wedge is not the *raison d’être* of the architecture: it is what a chain designed first for accountability does to the books of the world. What counts ends up being counted — because the body that measures it and the chain that draws the consequences from it have been built.

14.1.1 Minimal external validation package

Change of status. The passage from a work of design to an empirically and legally consolidated architecture requires a minimal validation package. No isolated element — publication of the data, legal opinion, demonstrator or institutional support — suffices on its own.

Eight deliverables. The package comprises: (1) the open corpora and codebooks, with a version log; (2) an independent double coding and the agreement statistics; (3) the equations, data, scripts and execution environments; (4) an independent replication of the main case and the publication of null results; (5) at least four distinct legal opinions covering public international law, trade and taxation, immunities and enforcement, data and fundamental rights; (6) a bottom-up budget comparing configurations M, F and I; (7) a pre-registered multi-arm pilot; (8) a documented consultation of the populations and institutions concerned.

Transparency rule. Each deliverable is published with its commissioning party, its conflicts of interest, its assumptions, its inaccessible data and its divergences. External assessors are not invited to approve the model, but to identify the conditions under which it must be simplified, merged or rejected.

Threshold of claim. Before the completion of this package, the document may claim an explicit theory, a candidate architecture and specified protocols. It must not claim the empirical superiority of the 7+3, the general causal validity of the estimates, universal legal compatibility or field effectiveness.

This package encompasses and extends the minimal reproducibility package of Annex F (§ F.14, Table F3): it adds to it legal validation, the pre-registered multi-arm pilot and the documented consultation of the populations concerned.

14.2 Headwinds accepted

In preparing and publishing this document, I fully appreciate the headwinds, and I accept the risks taken. The first is disciplinary: a paper that calls at once upon public and international economics, finance, international law, international relations theory, institutional design, the statistics of measurement, the governance of artificial intelligence and ethics fits into almost no classical journal category, nor within the remit of a customary panel of reviewers. The second is methodological: an ambition as cross-cutting as this, carried by a single article, mechanically implies less depth per discipline — which is precisely what the empirical programme of the present report (Annexes G, I and J) is charged with correcting. The third is political: the interests that the architecture proposes to discipline, and several currents of thought that it unsettles, may judge the undertaking problematic — each for different reasons, which is in itself an indication of its independence. The fourth is geopolitical: the trend of the moment runs towards a multipolar world, less organised rather than more. Despite all this, I forbid myself to keep to myself what practice has taught me, when unpriced harms run into trillions of dollars a year, when the associated avoidable mortality is counted in millions of lives (§2.4), and when humanity, better organised, already possesses, for the most part, the remedies.

15. From corrective accountability to anticipatory accountability: the prevention loop

Status of this chapter. This chapter develops an exploratory extension of the framework: a cross-cutting prevention and alert loop (Preventive Accountability Loop, PAL). It is a refutable design proposal, of the same evidentiary status as the application to peace — neither a result, nor an eighth institution. Prevention is treated here as a cross-cutting function, distributed across the seven existing functions, whose definitive hosting remains open and must be tested against a federated solution.

The prior link: to prevent. An accountability chain that begins only after the harm has materialised remains incomplete where the mechanisms of propagation are reasonably foreseeable. In interdependent systems, the first decisions alter the conditions to which the other actors react; those reactions in turn become shocks. The risk is therefore not only that of an isolated harm, but that of a cascade produced by several decisions that are locally rational and globally uncoordinated. Responsibility cannot then be confined to measuring after the event: it must also organise the manner in which credible forward-looking information enters the decision before the buffers are exhausted.

A two-loop architecture. The present work accordingly distinguishes two complementary loops. The Global Accountability Chain remains the principal loop: it organises the treatment of an observed or sufficiently measurable effect, from evidence to redress. The Preventive Accountability Loop is cross-cutting: it organises anticipation, the detection of cascade risks, the qualification and notification of the alert, the reasoned response of the decision-maker, any anticipatory action and ex post learning. This second loop does not create a general competence to prevent risky decisions. It creates a procedural duty of diligence: reasonably foreseeable risks must be capable of being known, transmitted, examined and reasoned, while forecasting errors must be measured and made public.

15.1 Two temporalities, one and the same accountability

Two temporalities. The Global Accountability Chain and the Preventive Accountability Loop answer two moments of the same problem. The first intervenes where an effect is observed, measurable or sufficiently materialised to be investigated: it preserves the evidence through to qualification, to any consequence and to the remedy. The second intervenes where the harm has not yet occurred, but where a combination of decisions, exposures and vulnerabilities makes a cascade reasonably foreseeable. It transforms forward-looking knowledge into an alert, and then the alert into an obligation of examination and response.

One and the same discipline. The two loops apply the same principles: data provenance, declaration of uncertainty, separation of roles, participation, reasoned justification, the possibility of independent counter-assessment, control of conflicts of interest and stopping rules. Prevention therefore constitutes no exception to accountability; it brings forward its point of entry in time.

No absolute separation. The distinction is not strictly chronological. An effect already realised may reveal a future risk; an alert may be revised as the data become observable; an anticipatory action may produce its own externalities and enter the principal chain. The two loops share a versioned case file and may reactivate one another.

15.2 Preventive accountability

Definition. Preventive accountability exists where an actor or a system is required to account for the manner in which it identified, transmitted and examined a reasonably foreseeable risk before its materialisation. It does not create an obligation of result consisting in preventing all

harm. It creates a procedural obligation of diligence: to seek out the relevant signals; to test several scenarios; to flag the uncertainties; to notify the competent recipients; to examine the available measures; to give reasons for the decision; and to assess after the event the quality of the alert and of the response.

Activation threshold. The loop is not activated for every abstract possibility. Four minimal conditions are required: a plausible cross-border or intergenerational link; identifiable transmission mechanisms; a material potential harm in the light of pre-registered thresholds; and a time window within which reasonable action could still reduce the exposure, the vulnerability or the magnitude of the cascade. Where these conditions are not met, the correct outcome is monitoring or closure.

Nature of the alert. An alert is an act of knowledge and of procedure, not a policy decision. It describes a scenario, a horizon, mechanisms, exposures, thresholds, uncertainties and a set of options. It determines neither the policy rate, nor fiscal policy, nor the legal adjustment to be adopted. The decision-maker retains its mandate and its competence; it must only render visible the manner in which the alert was examined.

15.3 The seven operations of the preventive loop

- 1. Anticipate.** To construct several plausible trajectories, including a central scenario, adverse scenarios and regime breaks, without converting radical uncertainty into artificially precise probability.
- 2. Detect.** To identify the exposures, vulnerabilities, thresholds, feedbacks and second-round reactions liable to transform an initial impulse into a cascade.
- 3. Qualify the alert.** To assess the plausibility, the magnitude, the urgency, the reversibility and the distributive reach of the risk, distinguishing signal, extreme scenario and established result.
- 4. Notify.** To transmit an actionable alert to the authorities and parties concerned under a graduated disclosure regime, with the data, assumptions, uncertainties, recipients and time limits.
- 5. Respond.** To obtain from the competent decision-maker an acknowledgement of receipt and a reasoned response indicating the elements accepted, those contested, the options examined and the reasons for the decision.
- 6. Act.** To prepare or activate, where this is proportionate and legally authorised, measures of mitigation, of capacity, of liquidity, of social protection, of phasing or of anticipatory financing.
- 7. Evaluate.** To compare the alert with the outcome, to measure false positives and false negatives, to identify the specific effects of the alert and of the response, and then to correct the models, thresholds and procedures.

15.4 Articulation with the principal chain

Entries into the chain. The preventive loop may feed the principal chain in three ways. An alert may lead to mere monitoring; it may produce a measure of prevention or of solidarity without attribution of a harm; or it may open a case file in the chain where effects become observable. Conversely, a case file processed by the chain may reveal a recurrent mechanism and feed the prevention scenarios.

Shared case file. The preventive case file preserves the same architecture of evidence as the accountability case file: source data, freeze date, scenarios, models, assumptions, uncertainties, disagreements, recipients, responses and revisions. A common identifier makes

it possible to follow the passage from the alert to the observed harm without rewriting the initial assumptions after the event.

Non-automaticity. No alert automatically creates a pricing, a sanction, a financing obligation or a presumption of liability. It may, by contrast, trigger procedural obligations: examination, notification, consultation, preparation and reassessment. Any substantive consequence remains subject to the classes, to the evidence, to the applicable law and to the forums of the principal chain.

Table 54 — The two loops of the architecture

Dimension	Global Accountability Chain	Preventive Accountability Loop
Trigger	Observed or sufficiently measurable effect	Reasonably foreseeable cascade risk
Question	What happened, through which mechanisms and with what admissible consequence?	What might happen, who must be alerted and what must be examined before harm occurs?
Temporality	During and after materialisation	Before and during materialisation
Principal output	Closure, prevention, solidarity, correction or remedy	Monitoring, alert, reasoned response, anticipatory action or closure
Decision authority	Actor competent under the function and the law	The substantive decision-maker retains its mandate
Major risk	Over-attribution or automation of the consequence	Government by forecast or false alert
Quality criterion	Evidence, attribution, proportionality and redress	Decision usefulness, timing, accuracy, actionability and learning

15.5 Preventing without governing by forecast

P10 — Preventing without governing by forecast. Where a cross-border or intergenerational risk of cascade is reasonably foreseeable and a window for action remains, the architecture must be able to anticipate it, to qualify it, to notify it and to obtain a reasoned response. The alert never transfers the competence of the decision-maker to the producer of the forecast; it creates neither a presumption of fault, nor a pricing, nor a sanction. The models, thresholds, recipients, uncertainties, dissents, false positives and false negatives are published or audited under a proportionate regime. The preventive loop is subject to the same rights, negative mandates, stopping rules and avenues of redress as the principal chain.

15.6 Illustration: the monetary cascade alert

Purpose. The monetary alert protocol seeks to inform decision-makers before a combination of tightenings, of defensive reactions and of exhaustion of the buffers transforms several rational decisions into a systemic contraction. It does not recommend a global policy rate and does not subordinate domestic mandates to an external authority. It produces structured information on the plausible cross-border consequences, the thresholds and the mitigation options, and then requires a reasoned response from the participants that have consented to the protocol.

Unit of analysis. The alert bears on an episode and a time window, not on an isolated decision. It links the impulse of the source jurisdiction, the synchronisation among source jurisdictions, the exposures of the recipient countries, their policy reactions, the state of the buffers and the distributive effects. The protocol preserves the distinction between anticipated causality, stress scenario and observed effect.

The complete protocol — inputs, cascade risk memorandum, action options and stopping rules — is specified in Annex L.

15.7 Objection, limit and refutability

Objection — Prevention becomes government by forecast. An authority may multiply alarming scenarios, impose costs on the basis of unrealised risks, disrupt markets or acquire a power greater than that of the responsible decision-makers. False positives may lead to alert fatigue; false negatives may create a false sense of security; publication may become self-fulfilling; confidentiality may become a pretext for opacity.

Response. The PAL confers no original power of decision. The thresholds, levels, models, recipients and time limits are pre-registered; the alert is contestable; decisions remain with the competent authorities; no financial or legal consequence follows automatically from the scenario; alerts expire; performance is published; and a pilot compares the value of the arrangement with lighter alternatives.

Rejection criterion. The loop must be suspended or simplified if its alerts are unstable, if the recipients cannot interpret them, if the false positives exceed the benefits, if disclosure causes significant harm, if the models converge artificially towards a single doctrine or if the obligation to respond persistently diverts decision-makers from their mandate without demonstrated gain in preparedness.

17. Prevention may produce the risk that it announces. The loop depends on forward-looking models, on thresholds and on a disclosure regime whose effects are themselves endogenous. An alert may stabilise the system by permitting rapid action; it may also provoke a run, displace the risk, stigmatise a jurisdiction or create a dependence on the central scenario. The research programme must therefore jointly estimate the predictive performance, the decisional usefulness and the reflexive effects of the alert. It must compare models, levels of disclosure, horizons and institutional architecture, publish the errors and provide for operation without artificial intelligence.

Refutation criterion for the preventive loop. The proposal is weakened if a light information-sharing protocol produces the same usefulness without institutional qualification; if the alerts improve neither the timing nor the preparedness; if decision-makers respond formally without modifying their understanding; or if the costs and reflexive effects exceed the plausibly avoidable harms. In those cases, the prevention function must be reduced to a monitoring capacity, merged with existing arrangements or abandoned.

15.8 Foundations and specific contribution

Existing literatures. The loop draws on several traditions that often remain separate. Anticipatory governance links foresight, participation and learning in order to act while trajectories remain modifiable (Guston, 2014; OECD, 2024). Early warning systems organise risk knowledge, detection and forecasting, the dissemination of the alert, and then preparedness for action (UNDRR, 2024). Macprudential policy assesses warning indicators in the light of the decision problem, the timing and the costs of error (Drehmann and Juselius, 2014). The Early Warning Exercise of the IMF and the Financial Stability Board examines low-probability, high-impact global risks and their interactions (IMF-FSB, 2010). The law on the prevention of transboundary harm offers, finally, analogies of diligence, prior assessment, notification and consultation, in a legal field that cannot be transposed automatically to monetary policy or to any economic decision (International Law Commission, 2001).

Proposed contribution. The originality claimed therefore lies neither in early warning nor in foresight taken in isolation. It lies in their insertion into an architecture of accountability: separation between the producer of the evidence, the qualifier, the decision-maker and the

funder; obligation of reasoned response; contestability of the alert itself; preservation of versions and of dissents; measurement of false positives and false negatives; and an explicit interface with a chain capable of treating the effects that materialise.

Status. This proposal belongs to institutional design and to *lex ferenda* where it aims at new obligations. It does not claim that a general legal duty to prevent monetary spillover effects already exists. It proposes a procedural standard to be tested by consent, protocol, contract, internal policy or a suitable legal instrument.

“An institution is not protected by the nobility of its mission; it is protected by the rules that prevent that mission from becoming a power that answers to no one.”

Conclusion — From moral aspiration to structural responsibility

1. From the displaced effect to institutional responsibility

The starting point of this book is a mismatch that has become structural: decisions cross borders faster than accountability. A policy may be lawful and technically justified within the scope that produced it, while altering the choices, the prices, the balance sheets, the resources and the development possibilities of actors who took no part in its formation. This mismatch does not automatically turn the decision-maker into a wrongdoer, nor the affected actor into a creditor. It creates a more fundamental requirement: to build a common procedure making it possible to know what occurred, what could reasonably have been anticipated, through which mechanisms, with what uncertainty, who benefited, who bore the cost and what response is admissible.

Institutional responsibility begins when explanation by intention no longer suffices. It does not deny domestic mandates; it places them back within an environment of interdependence. It does not moralise about the recipient; it examines its vulnerabilities, its choices and its capacities. It does not presume correction; it organises the evidence, the adversarial process and the possibility of not concluding.

2. The theoretical contribution that must outlive the organisation chart

The most durable contribution of the Humanity Compact is neither the number seven nor the names of the institutions. It is the theory of the three completenesses. An accountability architecture must cover the necessary functions; connect each duty-holder of a function to a forum capable of demanding explanation and correction; and preserve at the interfaces the provenance, the uncertainty, the reasons, the objections and the avenue of redress. This grammar can be applied to a single organisation, to a network, to a federated protocol or to several institutions.

The governance of interfaces constitutes a decisive contribution. An architecture sometimes fails less through the incompetence of its components than through what disappears between them: an assumption becomes a figure, a figure becomes a rating, a rating becomes a price, and uncertainty ceases to be visible. The case file must therefore be portable, versioned and contestable; each function signs only the transformation for which it answers.

3. The safeguards: negative mandates, routing and stopping

Negative mandates limit power by construction: the measurer does not price; the qualifier does not reconstruct the science; the financier does not control the base; the certifier does not decide; the judge does not design the policy. This separation protects against certain conflicts of interest, but it is not costless. It creates interfaces, delays and costs. The 7+3 can therefore be preferred only on condition that it demonstrates a value superior to that of a common protocol, an accredited network or a merged architecture.

The S0–S6 classification and the stopping rules give the system the capacity to recognise that not all effects justify the same response. A pecuniary transfer, a domestic friction, a global loss, an inequity and a legal violation are not interchangeable categories. To measure does not oblige one to price; to prevent does not oblige one to prohibit; to finance does not establish fault; and the absence of sufficient evidence must be able to lead to a reasoned closure.

4. The monetary programme: a research infrastructure, not yet a verdict

The monetary programme provides an anatomy in fifteen mechanisms, a theory of the superposition of instruments and of reactions, a multidimensional shock model, a bounded partial

attribution, a discipline of non-additivity and a distributive tracking of the complete cycle. It makes it possible to pose with greater rigour the question of who benefits from an easing, who bears a tightening, at what moment and through which channel.

This methodological architecture is advanced; it is not yet a general causal estimation. The reconciled reference case establishes accounting consistency. The coefficients, counterfactuals, interactions, thresholds and distributions must be estimated, subjected to sensitivity analysis, opened and replicated. To empirical partners, the scientific offer is clear: here is a protocol explicit enough to be executed, contested and improved together. The value of the programme will depend on its capacity to publish also the null results, the unidentified channels and the cases where external attribution becomes weak.

5. Prevention: shifting accountability upstream without governing by forecast

The Preventive Accountability Loop extends the chain to the moment when the harm can still be reduced. It organises anticipation, detection, qualification, notification, reasoned response, anticipatory action and learning. It responds to the problem of cascades: several rational decisions may alter one another's constraints and produce a systemic consequence that no one has explicitly chosen.

This loop does not authorise a scientific authority to govern. It requires only that material and reasonably foreseeable risks can be examined in time. The decision-maker retains their mandate; the alert retains its uncertainties; false positives, false negatives and self-fulfilling effects are assessed. If a light information-sharing protocol produces the same value, if the alerts are not actionable or if they cause more harm than they avert, the loop must be reduced or abandoned.

6. Artificial intelligence and resilience: using and constraining

Artificial intelligence can broaden the capacity to measure, spot inconsistencies, explore scenarios and bring small administrations closer to large ones. It can also concentrate data, standardise categories, render errors opaque and create a dependence on a few suppliers. The framework therefore chooses neither technological optimism nor refusal of the tool. It imposes an authority matrix, an identifiable human validation, the plurality of models, auditability, the containment of errors, the right to an independent counter-assessment and the capacity to operate without AI.

The same doctrine holds for crisis. Speed must not come from an indefinite suspension of the rule, but from prepared procedures, explicit thresholds, pre-arranged financing, an expiry and oversight. A resilient architecture preserves, under pressure, the trace, personal responsibility and the avenue of redress.

7. Development and peace: distinct applications, distinct statuses

The application to Sevilla shows how the chain can become an infrastructure of actionability: making visible the stage of an initiative, the quality of its financing, the gates that remain to be passed, the responsibilities and the corrective loop. It is probably the most immediately pilotable application.

Preventive peace extends the framework to the way in which undocumented grievances, with no forum and no response, can feed mistrust. This proposal remains exploratory. Conflicts also arise from incompatible interests, from strategies, from coercion and from power relations that measurement does not resolve. The chain becomes an infrastructure of peace only if it improves the handling of grievances without producing surveillance, stigmatisation or escalation.

8. Law, consent and the limits of power

This book identifies graduated vehicles: methodological cooperation, internal policy, contract, legislation, treaty. This mapping does not amount to a validation of competence. Any binding measure must identify the legal basis, the competent authority, the procedural guarantees, the mechanism of incorporation, recognition, enforcement, immunities and the avenues of redress. Analogies with the prevention of transboundary harm do not create a general legal duty applicable to monetary policies.

Legitimacy does not result solely from the consent of States. Affected populations must be able to obtain access to information, to an independently funded counter-assessment, to reasons and to re-examination. Conversely, participation does not create a general veto absent from the applicable law. Dual representation — State and direct — must be organised without confusing their legitimacies.

9. Adoption: beginning with standalone value, not with the complete regime

A global architecture cannot wait for universal agreement. It must begin with what creates a value of its own: data protocols, provenance registers, comparable measurements, alerts in shadow mode, experimental ratings, shadow prices, advisory chambers, data governance contracts, re-examination mechanisms and pilot financing. Early entrants must receive capacity, information, legal certainty or financing that justifies their participation without turning the incentive into capture.

The pilot must compare three routes on the same case file: the existing process, a light federated architecture and the 7+3. It measures cost, delay, errors, revised decisions, quality of the interfaces, comprehension, redress, independence, performance without AI and the capacity to conclude correctly that there is no activation. The pilot must not render an organisation irreversible; it must make it possible to decide whether it deserves to exist.

10. What is established, specified, proposed and open

The document establishes that transboundary and intergenerational effects create an accountability problem precise enough to be studied. It presents internal descriptive results consistent with a functional asymmetry. It specifies a theory, principles, a candidate architecture, an attribution model and test protocols. It verifies by simulation the internal consistency of certain case-file passages.

It does not yet establish the exhaustiveness of the functions, the superiority of the 7+3, the general causality of the estimates, the effectiveness of prevention, universal legal compatibility, the full cost, resistance to capture, acceptance by the powerful or the effect on peace. These limits are not peripheral reservations. They define the work on which the change in the status of the project depends.

The reasonable political decision is not yet to approve a definitive global architecture. It is to approve a common method for testing it: to open the evidence, to compare the existing process, a light federated solution and the 7+3, then to incorporate only those functions that demonstrate a superior value at a proportionate cost. A useful international resolution would therefore first of all be a resolution of procedure, of pilot and of return before States; any eventual legal constraint would come afterwards, function by function and by consent (§12.7).

11. The collective validation programme

The next stage must be conducted by teams that have no interest in confirming the model. The corpora and codebooks must be opened; the coding replicated; the monetary programme executed

across several countries and cycles; the models, data and scripts published; the legal avenues examined by separate specialists; the architectures costed; the preventive loop tested in shadow mode; the AI prototype audited; the affected populations consulted; the negative results published.

The Humanity Compact will become more credible not when it has eliminated all objections, but when it has organised the conditions under which they can modify it. A mature institutional theory must be able to survive the disappearance of some of its institutions, the merging of its functions and the abandonment of its least-performing hypotheses.

12. From moral aspiration to a verifiable institutional obligation

The ambition of the project is not to moralise global decision-making, nor to ask decision-makers to answer for what no institution enables them to know. It is to stop entrusting the consideration of others to the personal quality of the decision-maker alone. A trustworthy architecture does not demand omniscience. It demands knowing what must be measured, declaring what remains uncertain, responding to reasonable alerts, giving reasons for consequences and accepting that affected persons may contest the path that led to the decision.

The Humanity Compact is neither a verdict against interdependence nor a promise of automatic justice. It is a proposal for an infrastructure of trust: for every displaced effect, a piece of evidence; for every reasonably visible risk, a contestable alert; for every power, a mandate and a limit; for every uncertainty, a trace; for every decision, a statement of reasons; for every challenge, a forum.

The core of the project must be able to survive the revision of its organisation chart. If a federated protocol, a three- or five-body architecture or existing institutions better protect the evidence, prevention, redress and independence, that solution must prevail. The success of the Humanity Compact is not measured by the retention of the number seven. It is measured by the capacity of the framework to identify the lightest solution that makes effects visible, risks anticipable, decisions explicable and errors correctable.

“A structure becomes human when it forgets neither those it does not see, nor the risks it could have seen, nor the errors it has still to correct.”

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Note. The theoretical and legal framing references cited or consulted for the framing appear in Annex C (complementary references). Works consulted but not cited in the body are grouped under 'Works consulted for context' at the end of the present section.

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Annex A — Register of evidence and publication status

Table A1 — Register of evidence and publication status

Result	Current status	Publication required	Publication threshold
UN review of 136 sources	Programme-derived	Inventory, codebook, legal classes, double-coded sample	Reproducible counts and documented disagreements
Sevilla functional mapping	Programme-derived; initial coding of the 130 initiatives (v0.2, 12 July 2026)	Update to 130 items, primary/secondary codes, log of ambiguities	Stable version with reference date
US\$19,000 billion synthesis	Exploratory programme estimate	Twenty-family workbook, sources, overlap checks, sensitivity	External replication before use as a headline figure
Tunisia contagion effect	Programme model and practitioner case study	Series, equations, coefficients, counterfactuals and code	Companion paper with robustness tests
Global extrapolation (not reported)	Programme extrapolation	Country coverage, weights, heterogeneity and uncertainty	Independent replication
Institutional prototypes	Working software prototypes	Repository, version, tests, threat model and demonstration cases	Reproducible deployment and user testing
Legal feasibility	Reasoned working hypotheses	Three specialised memoranda and a matrix of jurisdictions	External legal review
Cost and option value	Uncosted design hypothesis	Staffing, infrastructure and low/central/high budget	Pilot budget and comparison of transaction costs

Annex B — Minimum evaluation framework for pilot projects

A pilot project does not constitute evidence merely because it works. Before it is launched, it must record a baseline, a comparator, a target population, decision rights, success and failure thresholds, a data plan, an independent evaluator, an avenue of redress, a budget and an exit rule.

Five families of outcomes are mandatory: the quality of measurement (coverage, uncertainty, correction); procedural legitimacy (participation, reasoned decisions, redress); legal durability (challenge and compliance); operational performance (time, cost, error, safety); and distribution (who pays, who benefits, who is excluded).

The pilot project must publish its null and unfavourable results. Extension is justified only if the phase creates standalone value, if the next phase has a legal pathway to adoption, and if the harms or capacity burdens are remediable.

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'To prevent does not mean to predict with certainty; it means making indifference impossible in the face of a risk that has become reasonably visible.'

PART IV — FROM THE MODEL TO THE PILOT

This final part leads from the model to the decision: by what political economy the architecture could be adopted, what it yields under the stress tests and the objections, at what cost, and on what pilot it should be maintained, simplified or rejected.

Annex D — Recent items of evidence in support of the architecture

This annex lists recent items of primary-source evidence (2024-2026) that postdate or refine the argument of the present work. Each item is attached to the functional pillar it supports and to the limit that prevents any over-interpretation. The full screening database — two hundred items covering twenty families, each accompanied by an explicit verification status — is held in a separate research notebook; only those references individually verified against the source are cited here, each being listed in full in the References.

Measurement (HuIB). Two developments confirm a convergence on the need for a permanent measurement institution that has yet to be created. The Secretary-General’s Independent High-Level Expert Group on Beyond GDP has proposed a compass of complementary indicators (United Nations, 2026), an acknowledgement at the highest level that no permanent scientific body discharges this function; and the FAO’s true cost accounting has put the hidden costs of agrifood systems at some twelve trillion dollars a year, of which some eight trillion are health-related (Food and Agriculture Organization, 2024) — a figure to be read as illustrative and non-additive, precisely the discipline that HuIB is designed to impose.

Rating (GIRA). Recent work shows that private rating decisions govern fiscal space: a late-2025 revision of the treatment of the callable capital of the multilateral development banks released, through a single methodological choice, a substantial volume of additional lending capacity (Cash, 2025), while a dedicated reform programme sets out how the rating function could be made accountable (Cash and Khan, 2024). It is this channel — and not a model to be admired — that the separation between rating and pricing effected by GIRA seeks to render contestable.

Pricing and equity (GFEA). The coordination pathway that the present work posits is now concretely on the table. A proposal for a coordinated minimum effective rate on ultra-high-net-worth individuals shows that a tax standard can begin with a coalition of the willing and a collector of last resort rather than with a universal treaty (Zucman, 2024); and a quantitative analysis of the fifteen per cent global minimum tax documents the extent to which its effective yield is diluted in practice (Hugger et al., 2024) — together, these works make the case for an equity authority whose function is distinct from pricing.

Border adjustment (BFM). A quantitative trade model using plant-level data shows that a well-designed carbon border adjustment can curb carbon leakage without disproportionately penalising low-income partners, but only under a specific design and largely for steel and aluminium (Clausing et al., 2025) — which is why the Border Fairness Mechanism must add what a border tax lacks: redistribution, consent and broader coverage.

Financing (GSF). The recent replenishment rounds of the main vertical funds have systematically fallen short of their target (Madan Keller et al., 2024) — an empirical confirmation that a purely financial mandate, detached from the rest of the accountability chain, cannot balance its budget without sacrificing either thematic rigour or geographical equity.

Spillover effects, revisited. Two 2025 studies refine the monetary spillover mechanism at the heart of Section 9: demand for safe assets and the global dollar cycle transmit United States conditions asymmetrically to emerging economies (Allen et al., 2025), and the intensity of that transmission runs through the role of the dollar (Acharya et al., 2025). These two works frame — without demonstrating it — the attribution discipline of the present work.

Adjudication (Court). The 2025 ICJ advisory opinion confirmed the existence in international law of binding reparation obligations (International Court of Justice, 2025), a reading confirmed by subsequent legal analysis (Foster, 2025); and the 2026 review of climate litigation shows sharply rising litigation demand (Grantham Research Institute on Climate Change and the Environment, 2026) — to be read as evidence of a demand for adjudication, not as a mechanical demonstration that a new court is necessary.

Democratic certification (IPDA) and AI. The Independent International Scientific Panel on Artificial Intelligence has moved from “established” status to its first published report (Independent International Scientific Panel on Artificial Intelligence, 2026), and the Secretary-

General’s advisory body has recommended distributed and complementary mechanisms rather than a single global regulator (United Nations High-Level Advisory Body on Artificial Intelligence, 2024) — a direct precedent for the single-mandate logic, provided that the present work does not claim that the United Nations endorses the 7+3. On the civic side, the analysis of global citizens’ assemblies identifies the addressee gap — an assembly with no named institutional addressee and no obligation to respond remains purely consultative (Democracy International and Democracy Without Borders, 2025) — to which the present work responds with three rules: a named addressee, a reasoned response, a public deadline.

Theory of the architecture. Regime-complexity analysis presents the 7+3 as an architecture designed to manage interface conflicts — separate mandates, collision rules, arbitration — rather than as a super-agency (Kreuder-Sonnen, Schmotz and Zürn, 2025). Combined with the literature on orchestration in development governance (Cormier, Heinzl and Reinsberg, 2024) and on the accountability of global governance (Lall, 2025), it supplies the vocabulary of delegation and accountability that the argument requires.

A useful counter-example. Finally, the 2026 decision of the World Bank Group to integrate its independent accountability mechanisms (World Bank Group, 2026) constitutes both a precedent of reform by incorporation and a warning: the present work distinguishes the administrative integration of neighbouring procedures from the concentration of incompatible functions against which its principle of “one institution per function” warns.

Table D1 — Recent items of evidence, attached to the functional chain and to their limit of interpretation

Evidence (2024–2026)	Pillar / section	Limit to be observed
Beyond-GDP compass (United Nations, 2026); FAO hidden costs (Food and Agriculture Organization, 2024)	HuIB — §2, §5.2	Illustrative, not additive; no double counting.
Callable capital review (Cash, 2025); rating reform (Cash and Khan, 2024)	GIRA — §5.3	The channel, not a model to be admired.
UHNWI tax proposal (Zucman, 2024); dilution of the minimum tax (Hugger et al., 2024)	GFEA — §2.3, §5.4	Proposals/evidence, not adopted norms.
Global effects of the CBAM (Clausing et al., 2025)	BFM — §5.5	Essentially steel/aluminium; design-dependent.
Replenishment shortfalls (Madan Keller et al., 2024)	GSF — §5.6	The exclusively financial mandate is the diagnosis, not the remedy.
Dollar-cycle spillover effects (Allen et al., 2025; Acharya et al., 2025)	§9	Frames attribution, does not demonstrate it.
ICJ advisory opinion (2025) and its analysis (Foster, 2025); litigation overview (Grantham, 2026)	Court — §5.8	Demand for adjudication, not proof that a court is necessary.
AI panel report (2026); Governing AI for Humanity (2024)	IPDA — §5.7, §7	Precedent for single mandates; the UN does not endorse the 7+3.
Global citizens’ assemblies (Democracy Int’l & DWB, 2025)	Instruments — §6	Advisory unless there is an addressee + a duty to respond.
Regime complexity (Kreuder-Sonnen et al., 2025); orchestration (Cormier et al., 2024); accountability (Lall, 2025)	§4, §13	Analytical framework, not a validation.
Integration of accountability within the WBG (World Bank Group, 2026)	§13	Administrative integration ≠ concentration of incompatible functions.

Annex E — Qualitative comparison of the candidate architectures

This annex presents a provisional multi-criteria comparison of four candidate architectures. It is an initial author's pre-test, not an independent evaluation: its weightings are declared and its scores are illustrative. It is presented here so that the body of the text may advance the argument without giving the impression that it is itself rating its own design; an external rating exercise is identified as future work.

Table E1 — Provisional comparison of four institutional architectures

Candidate	Exhaustiveness	Separation	Consent	Contestation	Implementation	Capture	Economy	Containment
Three integrated bodies	medium-strong	limited	medium	medium	medium-strong	limited	strong	limited
Five-body architecture	strong	medium	medium	medium-strong	medium	medium	medium	medium
Seven institutions + three instruments	strong	strong	medium	strong	medium	medium	limited	strong
Orchestration by incumbents alone	medium	limited	medium	limited	strong	limited	strong	medium

Annex F — Formal accounting decomposition and bounded partial attribution framework

Status and scope. This annex formalises a transparent accounting decomposition and a bounded partial attribution framework for the cross-border spillovers of monetary policy. It produces no new estimate and does not, on its own, permit the identification of a causal policy shock, the establishment of a welfare loss, the determination of legal liability or the justification of a financial consequence. It remains at rungs 1 and 2 of the epistemic ladder used in this document — accounting incidence and plausibly bounded attribution. Rung 3, identified causality, falls under the complementary empirical protocol of Annex G. The purpose here is narrower and more demanding than a calculation for display: every input, allocation, exclusion, counterfactual and stopping rule must be inspectable and refutable line by line.

The framework corrects four weaknesses that affect simpler identities. First, a counterfactual is a vector of jointly coherent paths, and not the simple alternative path of a policy rate. Second, an exposure measured after the shock may be endogenous and must be distinguished from an exposure genuinely prior to the shock. Third, overlaps are resolved at the level of primitive economic components, and not by an opaque ex post subtraction. Fourth, costs and offsets are first reported by affected agent; a gain accruing to a central bank, a firm or a household does not automatically offset a loss borne by another agent.

Two provisions are added in this revision. A graduated compliance regime (§F.15) defines a minimal configuration under which the framework remains executable by jurisdictions with limited data and limited analytical capacity, so that rigour does not become paralysis. A transitional provision (§F.16) states explicitly the status of the magnitudes reported in Section 9 of the body of the text, computed under the earlier version of this annex and which do not yet satisfy the constitutive rules set out below.

F.1 Units of analysis, sets and indices

Let i index a recipient country, j a source monetary jurisdiction, h an affected agent or institutional sector, m a transmission mechanism, k a primitive economic component, and t a period of the cycle, $t = 1, \dots, T$. The set of affected agents H must, at a minimum, distinguish the sovereign, the central bank, financial institutions, non-financial corporations, households and, where the data permit, subnational authorities and vulnerable population groups.

$$M = M(A) \cup M(B) \cup M(C) \cup M(O) \quad (F-1)$$

M is the set of the fifteen mechanisms of Table 24. $M(A) = \{A_1, \dots, A_7\}$ groups the monetary and financial channels; $M(B) = \{B_1, B_2\}$ the imported price shocks; $M(C) = \{C_1, C_2, C_3\}$ the real-economy channels; and $M(O) = \{O_1, O_2, O_3\}$ the contemporaneous offsets. The memo item for the revaluation of the debt stock, denoted S , lies outside M and enters no cash-flow sum.

Each mechanism receives ex ante a sign $s_m \in \{+1, -1\}$: $+1$ for an adverse incidence, -1 for an offset. The sign is fixed by the taxonomy before any measurement and cannot be changed to improve a result. Pre-commitment on signs nevertheless presupposes that the sign is theoretically unambiguous. Where theory admits both directions, the mechanism must be split into primitive components of opposite signs rather than endowed with a net sign by decree. The tourism channel C_3 is the case in point: the income effect of tightening at the centre (fewer departures) is adverse, while the relative-price effect of depreciation (a cheaper destination) is favourable. C_3 is therefore carried as two primitive components, C_3 -income (sign $+1$) and C_3 -price (sign -1), each measured under §F.3 and allocated under §F.6; the net direction is an empirical result, not a taxonomic assumption.

Table F1 — Core notation and interpretation

Symbol	Meaning	Rule of interpretation
i, j	Recipient country; source monetary jurisdiction	Attribution is bilateral or source-specific before any multi-source consolidation.
$h \in H$	Affected agent or institutional sector	The distribution comes first; the national aggregate comes second.
$m \in M$	Transmission mechanism	Mechanisms are reporting channels, not necessarily independent causal primitives.
$k \in K$	Primitive economic component	Each primitive component is counted only once in the aggregate.
$c \in \Gamma$	Admissible counterfactual	No incidence is defined without a declared and internally consistent counterfactual.
$\theta \in \Theta$	Measurement and behavioural parameters	Uncertainty extends beyond the attribution coefficients alone.
$\alpha \in \Phi_{ij}(c)$	Jointly feasible attribution vector	The coefficients are jointly constrained, not chosen independently mechanism by mechanism; the restrictions defining Φ are pre-registered (§F.5).
d_{iht}	Currency, price-base and, where applicable, discounting factor	All amounts must be expressed in a common unit and at a common date.

F.2 The counterfactual as a coherent vector of paths

Every magnitude is defined relative to an admissible counterfactual $c \in \Gamma$. The counterfactual cannot be reduced to a policy-rate path, since each mechanism depends on a jointly determined set of prices, quantities and expectations. Let $z_t(c)$ be the counterfactual state vector:

$$z_t(c) = \{ i_{j,t}(c), y_{j,t}^{rf}(c), e_{i,t}(c), risk_t(c), y_{j,t}(c), p(com)_t(c), q_t(c), \dots \} \quad (F-2)$$

The vector may include the source policy rate, the risk-free yield curve, the exchange rate of the recipient country, global risk appetite, the output of the source jurisdiction, commodity prices and other variables specific to each mechanism. The paths must be generated by an explicit model, a reaction function, a market expectations path, a narrative scenario or an identified empirical design; a counterfactual price is a model output, never an observation. Membership of Γ is itself constrained: an admissible counterfactual must describe a policy path that the source jurisdiction could lawfully and plausibly have followed given its mandate and the information available at the time. Holding policy rates at their end-2021 level, denoted c_0 in the body of the text, is admissible as a polar benchmark; it is not an upper bound by definition, and its position within the range is an empirical question. Where the body of the document characterises c_0 as an upper-bound choice, the present annex supersedes that characterisation.

At least three counterfactuals must normally be reported: (i) c_0 , a constant-rate benchmark; (ii) c^N , a neutral-rate or gradual-normalisation path; and (iii) c^R , a rule-based or market-expectations path. No scenario may be reported alone, save under a pre-registered and justified exclusion. Under the minimal configuration of §F.15, two counterfactuals — one polar, the other a plausible policy path — constitute the floor.

F.3 Mechanism-specific incidence and exposure timing

A single “base $\times$ price gap” formula is too restrictive for the fifteen mechanisms; in particular, it cannot represent quantity rationing, where lenders restrict volumes rather than reprice. The generic gross incidence is therefore mechanism-specific:

$$\Delta\tilde{X}(\text{fix})_{ijhmt}(c) = g_m(E^0_{ijhm}, z_t(\text{obs}), z_t(c), \theta_m) \quad (\text{F-3})$$

$$\Delta\tilde{X}(\text{dyn})_{ijhmt}(c) = g_m(E(\text{obs})_{ijhm,t-1}, z_t(\text{obs}), z_t(c), \theta_m) \quad (\text{F-4})$$

g_m is the mechanism-specific measurement function. E^0 is the exposure fixed before the identified shock or before its credible anticipation; $E(\text{obs})_{t-1}$ is the exposure actually observed before period t . Fixed-exposure measurement is the preferred basis for attribution, because it avoids treating a post-shock adjustment as though it were predetermined. Dynamic measurement is also informative, but it describes an incidence realised after adaptation and must be reported separately.

For $t > 1$, $E(\text{obs})_{t-1}$ may already reflect refinancings, reserve depletion, fiscal adjustment, capital controls or other responses caused in part by the shock. The time lag does not, on its own, make the exposure exogenous. Where the shock alters the exposure base, the analyst must either model the feedback, or instrument the exposure, or freeze the base at E^0 , or report both calculations with an explicit decomposition of adaptation effects.

The familiar multiplicative form remains valid as a special case. The floating-rate surcharge A2 may be measured as verified floating-rate principal, multiplied by the contractual reference-rate gap and the accrued fraction. The exchange-rate surcharge A1 may be measured on the foreign-currency debt service actually paid during the period, and not on the total stock outstanding. The real-economy channels C1–C3 generally require elasticities, local projections or structural functions rather than a simple price gap; where credit rationing is material, g_m operates jointly on quantities and spreads.

F.4 Attribution coefficients and structural restrictions

Let $\alpha_{ijm}(c)$ be the fraction of allocated accounting incidence that may plausibly be associated with the monetary policy shock of the source jurisdiction under counterfactual c . Attribution is bounded and joint:

$$\alpha_{ij}(c) = (\alpha_{ijm}(c) : m \in M) \in \Phi_{ij}(c) \subseteq [0,1] \times \dots \times [0,1] \quad (\text{F-5})$$

$\Phi_{ij}(c)$ is the set of jointly feasible attribution vectors. It contains the mechanism-specific bounds, the cross-mechanism restrictions, common-shock coherence, the sign restrictions and any constraint induced by the empirical design. The bounds are bounds of documented judgement or of partial identification (Manski, 1990) so long as they are not estimated; they are not confidence intervals.

The risk-free refinancing channel A3 must be decomposed before any coefficient is set at unity:

$$\Delta y^{\text{rf}} = \Delta y(\text{policy}) + \Delta y(\text{term}) + \Delta y(\text{expectations}) + \Delta y(\text{liquidity}) + \Delta y(\text{residual}) \quad (\text{F-6})$$

$$\alpha(\text{A3, policy}) = 1; \quad 0 \leq \alpha(\text{A3, other}) < 1 \text{ unless separately identified} \quad (\text{F-7})$$

Unity applies only to the component identified as a policy shock or surprise, not to the total observed change in the yield curve. The floating-rate channel A2 is the mechanism that can approach full attribution through contractual indexation, subject to verification of reset dates, reference-rate clauses, caps, floors, hedges and arrears. An a priori defensible range is 0.90–1.00 for the mechanically reset component; it is the data, not the label, that determine whether the upper bound is reached.

One channel requires a restriction that earlier versions left implicit. The domestic crowding-out channel A7 records the cost of the recipient central bank raising its own policy rate. This response mixes an element of external constraint — the imported tightening the bank cannot escape — and an element of domestic discretion — the stance it chooses within that constraint. The identity cannot separate the two; the separation is an attribution judgement and must reside, visibly, in $\alpha(\text{A7})$. The baseline restriction is therefore an interior interval whose upper bound is strictly below one, with the reasoning for the decision — including the counterfactual

domestic reaction function retained — documented in the attribution register (§F.14). Treating the entirety of the domestic rate response as externally caused is not admissible.

Table F2 — Structural attribution restrictions

Channel or component	Baseline restriction	Rationale and permitted extension
A2 — verified contractual rate reset	$0.90 \leq \alpha \leq 1.00$	Quasi-mechanical only after verification of clauses, dates, caps, floors, hedges and payment status.
A3 — identified policy component	$\alpha = 1$	Only the risk-free curve component identified as policy; not the total observed change in yield.
A3 — term, expectations, liquidity, residual	$0 \leq \alpha < 1$	Included only in so far as they are separately identified and jointly consistent with the shock.
A5 — pre-existing idiosyncratic premium	$\alpha = 0$ in the conservative baseline	A shock-induced amplification, separately identified, may be introduced as a distinct primitive component, not merged into the pre-existing premium.
A7 — domestic crowding-out	$0 < \alpha^- \leq \alpha \leq \alpha^+ < 1$	The domestic rate response combines external constraint and domestic discretion; full attribution is inadmissible. The counterfactual domestic reaction function adopted must appear in the attribution register.
B1–B2 — originating supply shocks	$\alpha = 0$	The grain or energy supply shock is not caused by foreign monetary tightening. Transmission through the exchange rate or through financing is allocated to its own primitive component and counted elsewhere, once only.
C3 — split into C3-income (+1) and C3-price (–1)	Interior bounds on each component	The sign of the aggregate tourism channel is theoretically ambiguous; the two opposing components are measured separately under §F.3 and §F.6, and the net direction is an empirical result.
Offsets O1–O3	Same evidentiary protocol as for costs	No presumption that gains are fully attributable; no standard of proof weakened or strengthened on the ground that the sign is favourable.

F.5 Symmetry of proof, joint feasibility and pre-registration of Φ

Costs and offsets must be constructed from the same family of counterfactuals, the same shock definition, the same exposure-timing rule and the same quality threshold. Symmetry means equality of protocol, not equality of numerical coefficients. An income gain on reserves and a debt-service cost may have different attribution bounds, because their contractual and behavioural mechanisms differ.

For a central estimate or a named scenario, all coefficients must belong to one and the same jointly coherent vector of $\Phi_{ij}(c)$. For sensitivity extremes, adverse channels may be low when offsets are high, or the reverse, only if that combination is feasible under the common shock and the cross-mechanism restrictions. Selecting every adverse coefficient at its maximum and every offset at its minimum is not admissible where the same shock, the same exchange-rate path or the same global risk factor links them.

The joint set Φ disciplines cherry-picking, but it also displaces judgement: the cross-mechanism restrictions that define Φ carry as many researcher degrees of freedom as the coefficients themselves. The restrictions constitutive of $\Phi_{ij}(c)$ — bounds, equalities, monotonicities and common-factor constraints — must therefore be deposited in the attribution register and time-stamped before any aggregate is computed. A restriction added, relaxed or reweighted after a

first computation must be recorded as a revision, the pre-revision result being preserved. An unregistered Φ is deemed absent, and §F.13 then blocks the envelope of extremes.

F.6 Primitive components and elimination of double counting

Transmission mechanisms are useful reporting channels, but they are not necessarily independent. A single exchange-rate movement may affect debt service, migrants' remittances and the memo item; a single reference-rate shock may affect floating-rate debt and refinancing. Pairwise overlap deductions become unstable as soon as three or more channels share the same determinant. The preferred method therefore allocates primitive economic components once only, before aggregation.

Let $D_{ijhkt}(c)$ be the monetary value of primitive component k for agent h in period t , and ω_{mk} the published allocation share of component k to reporting mechanism m :

$$0 \leq \omega_{mk} \leq 1, \text{ and } \sum(m \in M(k)) \omega_{mk} = 1 \quad (\text{F-8})$$

$$\Delta X_{ijhmt}(c) = \sum(k \in K_m) \omega_{mk} \cdot D_{ijhkt}(c) \quad (\text{F-9})$$

$\Delta \tilde{X}$ remains the gross per-channel exposure, published for transparency; ΔX is the overlap-net amount used in aggregation. Every primitive component must have a unique identifier, a source, a sign, a unit, an owner, an allocation rule and a version. The allocation weights may place the component entirely within one mechanism or spread it across several, but they must sum to one. The debt-stock memo item may share a primitive exchange-rate determinant with A1 or O2, while remaining outside the cash-flow aggregate.

A pairwise “seam” correction, inherited from the earlier version, may be reported as a robustness test, but must not be the principal estimator. If it is used, all pairwise and higher-order overlaps, their signs and their uncertainty must be published. An unpublished overlap adjustment renders the identity unverifiable.

F.7 Offsets, beneficiaries and distributive non-equivalence

Offsets enter once only, contemporaneously with the shock and under the same evidentiary protocol as costs. A capital inflow from the earlier easing phase is not set against a later reversal, in particular where it increased leverage or foreign-currency exposure. Full-cycle analysis must report earlier gains and later costs by beneficiary and by date, rather than presume intertemporal offsetting.

The primary object is the per-agent vector. An offset accruing to agent ℓ may reduce a loss borne by agent h only to the extent that an actual or legally committed transfer is documented. Let $T(\ell \rightarrow h, t) \in [0,1]$ be the share of a gain accruing to ℓ transferred to h in period t . In the absence of transfer data, T is set to zero.

$$O^*_{ijhmt}(c) = (1 - \sum_{r \neq h} T(h \rightarrow r, t)) \cdot O_{ijhmt}(c) + \sum_{\ell \neq h} T(\ell \rightarrow h, t) \cdot O_{ij\ell mt}(c) \quad (\text{F-10})$$

The transfer matrix must not create resources: for each originating agent ℓ and each period t , the shares allocated to other agents cannot exceed the documented transferable gain. Without a documented link, an increased return on central bank reserves offsets neither households facing unemployment, nor firms facing credit contraction, nor the sovereign facing a heavier debt service. This rule prevents a national net from concealing uncompensated distributive losses. The transferred share is deducted from the initial beneficiary, so that consolidation conserves resources ($\sum_h O^* = \sum_h O$).

One consequence of the $T = 0$ default must be stated rather than discovered. Because undocumented gains no longer offset the losses of other agents, the accounting consolidation $\sum_h N_{ijh}$ under this framework is, mechanically, weakly greater than a national net computed under the earlier version of this annex, in which offsets reduced the aggregate regardless of the

beneficiary. The difference is not a revision of the facts; it is the price of refusing to offset a loss with a gain that never reached the party bearing it. Both figures may be presented, labelled respectively “distributive consolidation” and “legacy national net (robustness)”.

F.8 Common currency, price base and time

All amounts must be expressed in a single reporting currency, a single price base and at a single reference date. Let d_{iht} be the factor converting the period- t nominal amount borne by agent h into the declared unit:

$$d_{iht} = FX(i, t \rightarrow b) \cdot [P(b, o) / P(b, t)] \cdot \delta_h(t, t_o) \quad (F-11)$$

FX converts into reporting currency b ; $P(b, o)/P(b, t)$ converts into the chosen real price base; $\delta_h(t, t_o)$ is the declared intertemporal factor, equal to 1 for undiscounted real flows and, where discounting is justified, to $1/(1+r_h)$ raised to the number of periods separating t_o from t . Nominal and real amounts, local currency and foreign currency, discounted and undiscounted totals must never be mixed within a single aggregate.

Two coherent methods are permitted, one only per result: (a) conversion into the reporting currency at each period's rate, then deflation by the reporting-currency index; (b) deflation in local currency, then conversion at the base-year rate. Mixing the recipient country's price index and that of the reporting currency within a single ratio is prohibited without an explicit parity model. Equation (F-11) applies method (a).

F.9 Adverse incidence, offsets and net balance by agent

For a feasible parameter vector (α, θ) and a counterfactual c , we define attributable adverse incidence C , attributable offsets O and the net balance N for each affected agent:

$$C_{ijh}(c, \alpha, \theta) = \sum_t d_{iht} \cdot \sum(m : s_m = +1) \alpha_{ijm}(c) \cdot \Delta X_{ijhmt}(c, \theta) \quad (F-12)$$

$$O_{ijh}(c, \alpha, \theta) = \sum_t d_{iht} \cdot \sum(m : s_m = -1) \alpha_{ijm}(c) \cdot O^*_{ijhmt}(c, \theta) \quad (F-13)$$

$$N_{ijh}(c, \alpha, \theta) = C_{ijh}(c, \alpha, \theta) - O_{ijh}(c, \alpha, \theta) \quad (F-14)$$

The primary result is the distributive vector $N_{ij}(c) = (N_{ijh}(c) : h \in H)$. A consolidated total may be reported in the form $\sum_h N_{ijh}$, but it must be labelled an accounting consolidation, not a welfare measure. A welfare aggregate requires explicit social weights, marginal utilities, incidence assumptions and a treatment of non-monetary damages; this annex provides none of them.

Where several source jurisdictions contribute to the same global cycle, the bilateral results must be reported before consolidation. Interactions between sources — simultaneous tightening by the Federal Reserve, the European Central Bank and other central banks — require a joint shock model; summing separately estimated bilateral effects may double count the common global component.

F.10 Bounds by constrained optimisation, not by independent selection of extremes

Uncertainty arises from the attribution coefficients, the measurement parameters, the allocation weights, the exposure timing and the counterfactual. Let $\Theta(c)$ be the admissible set of measurement parameters and $\Phi_{ij}(c)$ the joint attribution set. The per-scenario bounds are written:

$$N^-_{ijh}(c) = \min \{ N_{ijh}(c, \alpha, \theta) : \alpha \in \Phi_{ij}(c), \theta \in \Theta(c) \} \quad (F-15)$$

$$N^+_{ijh}(c) = \max \{ N_{ijh}(c, \alpha, \theta) : \alpha \in \Phi_{ij}(c), \theta \in \Theta(c) \} \quad (F-16)$$

These are partial-identification or sensitivity bounds, not confidence intervals. A probabilistic interval may be reported only if sampling uncertainty, model uncertainty and the probability

distribution of the relevant parameters are explicitly estimated. The preferred output is a matrix of bounds by counterfactual, by agent and by mechanism. A global envelope over $c \in \Gamma$ may be added, but it must not replace the per-scenario results, since it masks the assumption that produces each extreme:

$$N_{ijh}^- = \min \{ N_{ijh}^-(c) : c \in \Gamma \}, \quad N_{ijh}^+ = \max \{ N_{ijh}^+(c) : c \in \Gamma \} \quad (\text{F-17})$$

F.11 Gross adverse incidence and corrected ratios

A denominator described as “gross damage” must exclude offsets and unresolved overlaps. We define overlap-net gross adverse incidence G , the bounded attributable share κ and the net incidence ratio ι :

$$G_{ijh}(c, \theta) = \sum_t d_{iht} \cdot \sum(m : s_m = +1) \Delta X_{ijhmt}(c, \theta) \quad (\text{F-18})$$

$$\kappa_{ijh}(c) = C_{ijh}(c) / G_{ijh}(c), \quad \iota_{ijh}(c) = N_{ijh}(c) / G_{ijh}(c) \quad (\text{F-19})$$

None of these ratios is a causal probability, a percentage of legal liability or a share of welfare loss. ι may be negative if documented offsets exceed attributable adverse incidence. No ratio may be published until the shock, the population, the time window, the price base, the allocation of primitive components and the denominator are all fixed and reproducible.

F.12 The debt-stock memo item

The exchange-rate revaluation of the external debt stock S is a balance-sheet exposure, not a cash flow of the period. It is reported separately:

$$S_{ijht}(c) = D(\text{FX})_{iht,t-1} \cdot [e_{i,t}(\text{obs}) - e_{i,t}(c)] \quad (\text{F-20})$$

S may affect solvency indicators, collateral constraints, ratings and future refinancing, but these later cash-flow effects enter through their own mechanisms and primitive components. S is never added to C , O , N or G . If a fraction of the stock revaluation is realised through amortisation during the period, that realised flow falls under $A1$ and is deducted from the memo item for the same period.

F.13 Decision, publication and stopping rules

The identity is designed to stop as much as to compute. The following rules are constitutive, not optional caveats:

- No counterfactual, no figure: every line must identify c and the model generating $z_t(c)$.
- No pre-shock or explicitly modelled exposure, no causal interpretation: dynamic realised incidence may nevertheless be reported descriptively.
- No allocation into primitive components, no aggregate: an unresolved overlap does not disappear through residual deduction.
- No identified beneficiary or transfer, no distributive offset: gains and losses remain separated by agent.
- No pre-registered joint attribution set, no envelope of extremes: independent cherry-picking of bounds is prohibited, and an unregistered Φ is deemed absent.
- No common unit and date, no intertemporal sum.
- No identified shock and robustness tests, no rung 3 causal claim.
- No bridge to welfare, no statement of welfare loss; no applicable legal obligation and standard of causation, no statement of legal liability.
- No pricing at rungs 1 or 2: an accounting incidence, even plausibly attributed, does not by itself justify either compensation or a levy.

F.14 Minimum reproducibility package

A result derived from this framework becomes independently inspectable only when the following items are deposited with persistent identifiers and version control. The publication package is part of the method, because each institutional link depends on the provenance of the preceding one.

Table F3 — Minimum publication package

Element	Minimum content
Shock and counterfactuals file	Shock definition; event window; $z_t(c)$ for each $c \in \Gamma$; model or narrative used; version and date.
Exposure file	Pre-shock E^0 ; dynamic $E(\text{obs})_{t-1}$; contractual clauses; maturities; currencies; sector and beneficiary; data provenance.
Mechanism functions	Equations g_m , units, parameters, lags, signs and correspondence with Table 24.
Register of primitive components	Unique identifiers; values D_k ; allocation weights ω_{mk} ; overlap audit; links to the memo item.
Attribution register	Bounds, restrictions, evidence grade, reasons for decisions, dissenting opinions, composition and pre-registration trace of $\Phi_{ij}(c)$, including the counterfactual domestic reaction function adopted for A7.
Distribution and transfers file	Agent categories; bearer of the incidence; beneficiary of the offsets; documented transfer shares T ; consolidation rule.
Uncertainty and sensitivity	$\Theta(c)$, scenario matrix, constrained minima and maxima, placebo results and alternative specifications.
Code and audit trail	Executable code, environment, random seeds where applicable, tests, change log, data dictionary and independent replication report.

F.15 Graduated compliance: the minimal configuration

Full compliance with §F.1–§F.14 is a research programme, not an afternoon's calculation. If the framework can be satisfied only by jurisdictions endowed with deep data and strong modelling capacity, it betrays the architecture it serves: the measurement layer is meant to be usable, at entry level, by the administrations most exposed to the spillovers it measures. Two configurations are therefore defined. Neither relaxes the stopping rules of §F.13; the minimal configuration restricts the scope, it does not lower the standard of proof.

Configuration M (minimal, pilot level). Two counterfactuals — a polar benchmark and a plausible policy path, at least one of which may be narrative provided that its assumptions are written down. Multiplicative g_m forms permitted for the financial channels where the mechanism is contractually mechanical, with written justification; real-economy channels reported descriptively (dynamic incidence), without attribution, if no elasticity of sufficient quality is available. Allocation into primitive components required only for material overlaps beyond a declared threshold (for example, 5% of gross adverse incidence), the others being published as unresolved. Agent breakdown limited to the sovereign, the central bank and a consolidated private sector. The outputs are labelled “Configuration M” and may serve for measurement, publication and scenario design; they cannot ground any financial consequence.

Configuration F (full, regime level). The framework in full: three counterfactuals with modelled $z_t(c)$, mechanism-specific g_m functions, a complete register of primitive components, the complete set of agents H , a documented transfer matrix, a pre-registered Φ and the full publication package of Table F3. Only Configuration F outputs may be transmitted to the

qualification and pricing layers of the chain, and only after execution of the rung 3 programme of Annex G.

The configuration used must be declared on the first page of any result. The move from M to F is a planned trajectory, not a concession: the pilot pathway of Section 12 assumes that the first participants operate under Configuration M and that the support arrangements of the architecture finance the transition.

F.16 Transitional provision: status of the Section 9 magnitudes

The magnitudes reported in the body of this document — in particular the Tunisian monetary core of €0.76–1 billion net and the ≈€4.5 billion gross, all causes — were computed under the earlier version of this annex: a national aggregate, a single dominant counterfactual described as an upper bound, a pairwise seam correction, and the absence of a register of primitive components, of an agent breakdown and of a pre-registered Φ . Measured against the constitutive rules of §F.13 as they are now stated, these figures do not constitute verifiable aggregates. They are consequently requalified as follows: they are disciplined illustrations under the legacy framework, retained in the body of the text to make the anatomy of Section 9 legible, and flagged wherever they appear by a cross-reference to the present provision. They ground no claim beyond illustration. Their recomputation under Configuration M is the first deliverable of the empirical programme of this report (Annex I; international extension, Annex J); the convergence or divergence between the legacy figures and the Configuration M results will itself be reported. This provision explicitly resolves the inconsistency that would otherwise exist between the body of the text and its own annex; the silent coexistence of the two standards would offer the critics of the architecture precisely the weapon this annex is intended to take from them.

F.17 Worked example: mechanism A2, sovereign agent

A single worked line shows the framework at human scale. Consider the floating-rate surcharge A2 for the sovereign ($h = \text{sov}$) of recipient country i , vis-à-vis source jurisdiction j , in year t .

Exposure. According to the debt register, verified external floating-rate principal before the shock is $E^0 = 2.0$ billion (reporting currency), entirely indexed to a single reference rate, with reset dates and the absence of caps and hedges verified in the exposure file. The pre-shock timing satisfies §F.3; no dynamic adjustment is necessary for $t = 1$.

Counterfactuals. Under c_0 (constant-rate benchmark), the reference rate is 0.5%; under c^N (gradual normalisation), 2.0%; the observed rate is 5.5%. The gaps are therefore 5.0 and 3.5 points. Both paths, and the model that generates them, are deposited in the shock file.

Incidence. With a full-year accrual, gross incidence is $\Delta\tilde{X} = 2.0 \times 5.0\% = 100$ million under c_0 , and 70 million under c^N . There is no overlap with A3 for this component — the primitive component “reference-rate gap on verified floating-rate principal” is allocated $\omega(A2,k) = 1$ — so $\Delta X = \Delta\tilde{X}$.

Attribution. Table F2 gives the verified reset range $\alpha \in [0.90, 1.00]$. The attribution register records why the lower bound is not 1: a minor tranche whose reset clause is disputed.

Result. The A2 line for the sovereign is 90–100 million under c_0 and 63–70 million under c^N , in the declared unit of §F.8, reported by counterfactual and never merged into a single figure. No offset is deducted at this stage (§F.7), no causal claim attaches to it (§F.13), and it prices nothing. The full calculation repeats this discipline for every mechanism, every agent and every counterfactual, under the joint restrictions of Φ .

F.18 Epistemic status and bridge to Annex G

Equations (F-1)–(F-20) discipline the accounting and the bounds; they do not validate the inputs. Three objects remain beyond the reach of this annex. First, the values and joint restrictions of α require independent estimation or a defensible partial-identification design. Second, the functions g_m , the primitive components D_k , the allocation weights ω_{mk} and the transfer shares T require published data and an audit. Third, causal identification requires an identified monetary policy shock, exposures fixed before the shock or instrumented, multiple counterfactuals, interactions between channels, placebo tests and heterogeneity by exchange-rate regime, capital controls, debt structure and policy credibility.

Annex G provides the empirical bridge: high-frequency, narrative or external-instrument monetary shocks; local projections or panel designs interacted with predetermined exposures; explicit cross terms exchange rate $\times$ rates $\times$ refinancing; placebo and pre-trend tests; state dependence; and a bridge from accounting incidence to output, distribution and welfare. Until that work is completed and replicated, the magnitudes produced here remain an accounting incidence with bounded partial attribution. They may inform measurement and scenario design; they cannot, on their own, establish fault, legal liability, compensation or price.

Annex G — Protocol and empirical diagnostic

This annex establishes the reproducible protocol and an identification diagnostic; it reports no causal estimate. Such an estimate remains conditional on access to the sovereign debt register — foreign-currency share and contractual flows — and to high-frequency market series, not yet assembled at this stage.

G.1 Purpose and linkage. The body of the report (§9.5, §9.6, §9.7) explicitly defers the empirical demonstration: monetary policy spillover is established there as the least priced link of the accountability chain, and its eventual correction can be grounded only after attributing the incidence to an identified shock, separating the transfer from the welfare loss, and neutralising the offsets. The present annex is that vehicle. Its contribution is not a global figure — which the report explicitly withdraws — but a disciplined attribution procedure, applied to a case where the contractual data may, in time, exist: Tunisia, treated as a case nested within a regional panel of sixteen countries (Ugazio & Xin, 2024). The full international extension — comparative panel and census of the 44 least developed countries — is the subject of Annex J of this report; the present annex constitutes its identification core, executed on the regional panel.

G.2 Data and feasibility audit. The panel brings together sixteen countries of the Middle East and Central Asia (Ugazio & Xin, 2024, IMF WP 24/14), including Tunisia by name. Public coverage (World Bank interfaces, IDS and WDI) reaches 95 to 100% for Tunisia on structural exposure — debt, debt service, reserves, investment, remittances, exports, direct investment — but at annual frequency. Two structural gaps remain: the foreign-currency share of the debt (the weight of mechanisms A1 and A2) and concessional or multilateral debt (the development finance channel) are not public, and fall under the Ministry of Finance register and OECD-DAC data; the future service tables (QEDS Tables 3-4) are unavailable for Tunisia. The stratification takes account of the fact that the six Gulf exporters report no debt under IDS: the panel is stratified — sixteen countries for the causal estimation, ten debtors for the cash-flow mechanisms A1 to A7, the Gulf being null by construction on those mechanisms. One framing fact, descriptive and non-causal, emerges from this audit: Tunisia's Guidotti ratio stands at 0.59, the lowest in the panel — its reserves cover only 59% of its short-term external debt, a recipient profile of high refinancing vulnerability, consistent with the premise of the report.

G.3 Identification strategy. Monetary policy shocks are identified at high frequency: for the Federal Reserve, the decomposition of Jarociński & Karadi (2020), which separates the pure policy surprise from the information component; for the European Central Bank, the EA-MPD event database (Altavilla et al., 2019), whose factor rotation (target, timing, forward guidance, balance-sheet measures) remains to be executed. Exposure is measured in a predetermined manner (lagged one period) and winsorised. Estimation rests on panel local projections (Jordà, 2005; inference from Montiel Olea & Plagborg-Møller, 2021), in two equations — average response, then differential response interacting the shock with the exposure. The three registers of the report (cash flow; balance sheet as memo item; real and welfare) are never added together. Inference combines clustering and wild bootstrap, simultaneous confidence bands, false discovery rate control (Benjamini & Hochberg, 1995) and placebo tests.

G.4 Identification diagnostic. The annual reduced-form identification is run as a stress test. On a grid of thirty-six tests — two central banks, three exposure measures, two outcome variables, three horizons — seven pass false discovery rate control (at the 0.10 threshold). But the placebo test fails: a subsequent Federal Reserve shock (period $t+1$) “explains” growth in the present period, with a statistic of the order of -2.7 . In annual data, the persistence of policy cycles and that of exposure generate a spurious differential correlation that fixed effects do not absorb; the seven survivors are artefacts. The conclusion is clear, and it is

demonstrated rather than postulated: the annual reduced-form shortcut is invalid for causal inference, and high-frequency event identification — narrow windows around announcements, on the shocks already ingested — is not optional. The only regular raw signal, non-causal, is refinancing exposure measured by the short-term debt share. The value of this phase lies in the fact that a complete and disciplined pipeline — false discovery control, then placebo — rejects false positives instead of publishing them.

G.5 What remains to be established. Three dependencies condition the full causal estimation: high-frequency outcome variables (exchange rate and monthly sovereign spreads around announcements); access to the Ministry of Finance debt register for the foreign-currency share and the contractual flows (mechanisms A1 and A2 in cash flow); and finally the factor rotation of the EA-MPD database, the additional global controls (the oil price is already incorporated; the volatility index remains to be connected), the neutralisation of transfers and the bridge to welfare loss (Register III).

G.6 Reproducibility. The whole processing chain is version-controlled — from the availability audit to estimation, by way of shock ingestion, the exposure matrix, panel assembly and the local projections — and accompanied by a provenance register (eighteen dated series). Raw and confidential data remain outside the repository; the derived series and the outputs are preserved. The detail is set out in the research record of the report.

Annex H — Legal grid of the acts of the chain

This annex provides two legal qualification tools intended to discipline the analysis of any act of the architecture. They are analytical grids, not legal opinions: they indicate the questions to be asked and the categories to be distinguished, not the answers, which depend on the jurisdiction and the instrument under consideration.

H.1 The twelve-question test. Any act liable to have a legally significant effect, and any presentation of an act of the chain as binding, must be able to answer, in order:

1. Source. What is the norm invoked, what is its exact status, and which rule confers the competence or creates the obligation — treaty, constitutive instrument, empowered decision, statute, contract, custom or peremptory norm (§3.1.1)?
2. Binding act. By what act did the subject become bound — ratification, accession, membership, absence of opt-out, contractual clause, legislative incorporation or application of a general rule — and to whom does the obligation apply *ratione personae*?
3. Scope. To which facts does it apply *ratione materiae*, *temporis* and *loci*, and is the act in force, applicable and opposable at the relevant time?
4. Competence. Does the author of the act possess the necessary material, personal, territorial and temporal competence?
5. Procedure. Have the rules on voting, participation, notification, statement of reasons, adversarial process and publication been complied with?
6. Precision. Is the obligation sufficiently determinate for its addressee to know the conduct required or prohibited?
7. Causation. What is the causal link — scientific, economic, then legal — between the conduct and the alleged effect?
8. Breach. Is there a breach, or only lawful, uncompensated or inequitable harm — in which case SO-S6 routing applies outside S6 (§9.7)?
9. Standing and forum. Who has standing to act or to invoke responsibility, and before which forum?
10. Remedies. Which consequences are authorised — declaration, cessation, review, restitution, compensation, satisfaction, suspension, annulment, guarantees of non-repetition — and under which standard of proof?
11. Enforcement and conflicts. How is the decision recognised and enforced, having regard to immunities, public policy, the law of the seat, and its compatibility with the Charter of the United Nations, peremptory norms, applicable treaties, constitutions and third-party rights?
12. Reversibility. Which rules govern amendment, denunciation, withdrawal, the survival of obligations and the treatment of pending case files?

Stopping rule. If the source, the competence, the attachment or the applicability cannot be established, the act cannot be qualified as a legally binding obligation. It may remain a reference standard, a recommendation, a political commitment or an experimental protocol; its status is then displayed without ambiguity.

H.2 Legal nature of the seven functions. The qualification varies from one function of the chain to another; the table below gives the first-intention reading.

Table H1 — Legal nature, applicable law and review of the seven functions

Function	Possible nature of the act	Applicable law	Review
Measure	Scientific report / preparatory act	Data, evidence, adversarial process, confidentiality	Methodological review; procedural review
Rate	Expert opinion or administrative act, depending on incorporation	Reasons, consistency, non-discrimination, conflict of interest	Internal redress, then external review
Price	Tax, levy, adjustment, contractual clause or contribution	Legality, taxing power, base, proportionality, appropriation	Tax or administrative court, arbitration or internal mechanism
Adjust	Customs act, restriction, access condition or recognition	WTO, customs, origin, national treatment, most-favoured nation, procedure	National redress, inter-State WTO proceedings, treaty-based review
Finance	Fiduciary decision, grant, loan or guarantee	Eligibility, trust, safeguards, procurement, audit	Grievance mechanism, audit, judicial review
Certify	Accreditation or regulatory decision	Human rights, data, evidence, technical standard	Complaint, appeal, withdrawal or suspension
Adjudicate	Internal judgment, award, administrative decision or opinion	Jurisdiction, admissibility, independence, fair trial	Appeal, annulment, recognition or enforcement depending on the regime

Annex I — The Tunisian case file: evidentiary status, classification under Annex F and Configuration M trajectory

Case file, companion to §9.3, to Annex F and to Annex G

Status and scope. This annex consolidates in a single place everything the document asserts, and refuses to assert, about the Tunisian case of monetary spillovers. It is the case file provided for by the transitional provision of Annex F (§F.16): it fixes the evidentiary status of each figure, the classification of the case under the Annex F framework at the pre-Configuration M level, the reconciliation obligation that conditions any statement of convergence, and the programme of work leading to the Configuration M computation — the first deliverable of the empirical programme of this report (Annex I; international extension, Annex J). It produces no new estimate, identifies no causal effect, and establishes neither welfare loss, nor legal responsibility, nor price. All the magnitudes below are reported under a single inherited counterfactual, denoted c_V5 (policy rates held at their end-2021 level, of the c_0 family), in nominal Tunisian dinars cumulated over 2022–2025, without rebasing — a declared derogation from §F.8. Every figure in this annex is a programme scenario within the meaning of §F.16.

I.1 Why Tunisia, and the author's position

Tunisia is the recipient-country profile for which the fifteen-mechanism decomposition of Section 9 was specified: sovereign external debt predominantly denominated in foreign currency, a partially open capital account, structural dependence on energy and food imports, and the absence of a fiscal buffer. The case is chosen for the visibility of the broken interface, not for its severity, and Section 9 states the epistemic consequence: were this case to fall, the chain would lose a family, not its foundation.

Positional disclosure. The author served as Minister of Finance of the Republic of Tunisia at the outset of the Covid-19 crisis, and the case study concerns that same country. This proximity is a source of field knowledge and a legitimate ground for scrutiny: the reader is entitled to ask whether the choice of case, the counterfactual or the attribution bounds lean in favour of the recipient country. The annex answers by structure rather than by assurance. Every constraint that applies to this case works against inflation of the claim: the conservative zeros of Table F2 (A5, B1–B2 and the supply-origin component 5b), the strictly domestic restriction on A7, the sign convention of C3 — which requires carrying a favourable tourism component alongside the unfavourable one — the refusal of any offsetting between agents without a documented transfer, and the requirement that the joint attribution set be pre-registered. The decisive mitigation is nonetheless external: the computation protocol is designed to be executed and replicated by parties unconnected with the author, and the programme is already committed to a second recipient country, of a different profile, within a regional panel (Annex G), so that no conclusion rests on the author's country alone.

I.2 The evidentiary register

Three sets of figures exist for this case, and this annex is the place where the status of each is fixed, so that no reader can confuse them.

The programme workbook (V5). The programme's internal workbook decomposes the 2022–2025 tightening cycle into channels, applies national-level offsets and a global overlap discount, and arrives at an all-causes gross figure of about 15 billion TND ($\approx$ 4.5 billion euros) and a consolidated national net of 2.98–11.73 billion TND (central value 6.45). This consolidation offsets gains and losses across agents, which the Annex F framework does not permit; the workbook therefore serves as source material for the case, not as a result.

The monetary core of §9.3. The body of the document reports a strictly monetary core, net of offsets, of 0.76–1.0 billion euros. Under §F.16, this figure is a programme scenario retained in order to make the anatomy of Section 9 legible; it grounds no claim beyond illustration, and each of its occurrences in the body refers back to the present annex.

The classification under Annex F. The case file maps the workbook’s channels onto the Section 9 taxonomy, applies the exclusions and separations of Annex F, and reports the per-agent scenario ranges summarised in Table I1. This is a classification, not yet a computation proper to the framework: the underlying values are inherited from the workbook under the single counterfactual c_V5 , and the low/base/high bands are scenario bands, not constrained extrema over a pre-registered joint set.

Table I1 — The Tunisian figures by set and by status (millions of TND, cumulative 2022–2025, counterfactual c_V5 ; EUR at the indicative working rate of 3.35)

Quantity	Low	Base	High	Status (§F.16)
Gross imported cash-flow incidence, all causes	—	≈ 15,000	—	Programme output; the scope includes supply-originating shocks.
Monetary core of §9.3 (€ million)	760	—	1,000	Programme scenario; retained for readability; each occurrence refers to this annex.
Direct external cash-flow core (channels 1 + 3)	999	2,286	4,791	Scenario under Annex F classification (≈ €0.30–1.43 billion; base 0.68).
Extended Treasury incidence (1 + 3 + 4)	1,604	3,496	6,908	Scenario under Annex F classification (≈ €0.48–2.06 billion; base 1.04); attribution of A7 strictly interior.
Adverse private-sector incidence (5a + 6 + 7 + 8)	1,301	3,769	8,821	Scenario under Annex F classification; channel 5a parameterised (pass-through share 0.50, declared working hypothesis).
Extended accounting consolidation (Treasury + private)	2,905	7,265	15,729	Accounting consolidation in the sense of §F.9 — not a welfare measure; overlaps unaudited beyond 3/9 and 5/10.
Excluded supply-originating component (5b, $\alpha = 0$)	338	800	1,650	Reported for transparency; enters no attributable aggregate.
Distributive view, imported inflation (channel 10)	203	800	1,650	Disaggregation v; never added to channel 5a.

Quantity	Low	Base	High	Status (§F.16)
Memo item for revaluation of the debt stock (channel 2)	850	1,850	3,250	Balance-sheet item (§F.12); outside any flow total.
Potential offsets O1–O3, by initial beneficiary	967	2,442	4,744	Reported separately; no inter-agent deduction without a documented transfer ($T = 0$).
Favourable C3-price component (tourism, depreciation)	n.a.	n.a.	n.a.	Required by the C3 sign convention (Table F2); to be quantified before Configuration M.
Mechanical comparison (consolidation – offsets)	1,938	4,823	10,985	Inadmissible as a principal result; shown solely for comparison with the consolidated net.
Consolidated national net from the programme workbook	2,980	6,450	11,726	National consolidation convention, not permitted by Annex F; scope to be reconciled (I.5).

I.3 Mapping the channels under the Section 9 taxonomy

Table I2 summarises the mapping of the case’s channels onto the Section 9 taxonomy and the restrictions of Table F2. Three features of this mapping deserve attention: the essential-imports channel separates into a monetary exchange-rate pass-through component (5a) and an excluded supply-origin component (5b); the private credit channel belongs to the cross-border bank risk-taking family, distinct from the domestic crowding-out channel A7; and C3 is carried as an unfavourable income component and a favourable price component, its net direction being an empirical result.

Table I2 — Mapping of channels and applicable restrictions

Channel	Code	Content and principal bearer	Treatment and applicable restriction
1	A2	Interest on floating-rate external debt — Treasury	Direct cash-flow core. The quasi-mechanical band 0.90–1.00 of Table F2 cannot be claimed before verification of the contractual file (reset dates, caps, floors, hedges, arrears).
2	S	TND revaluation of external debt principal — Treasury balance sheet	Memo only (§F.12); never enters C, O, N or G.
3	A3+A4	Additional cost of new issuance and refinancing — Treasury	Included once; contains risk-free and spread components. $\alpha = 1$ will apply only to the identified policy component of A3 (§F.4); channel 9 is its decomposition, not an addition.
4	A7	Transmission to domestic debt interest — Treasury / taxpayers	Extended Treasury scenario only. Strictly interior attribution ($0 < \alpha^- \leq \alpha \leq \alpha^+ < 1$); the counterfactual domestic reaction function adopted must appear in the attribution register.

Channel	Code	Content and principal bearer	Treatment and applicable restriction
5a	B-FX	Essential import bill, exchange-rate transmission — State / firms / households	Monetary primitive component; share of total imports parameterised at 0.50 pending documentation by primitive components.
5b	B-supply	Essential import bill, world-price component — same bearers	$\alpha = 0$ (Table F2): originating supply shocks are not caused by foreign monetary tightening. Reported for transparency; excluded from any attributable aggregate.
6	C1 + C3-income	Loss of external demand: exports, industry, tourism income — firms / workers	Extended scenario only; exploratory macro incidence. The separation of C1 / C3-income remains to be established from the source data.
7	BS	Cross-border bank risk-taking and crowding-out of private credit — firms / households / banks	Extended scenario only; Bruno–Shin family, distinct from A7. Overlap with channel 4 (common domestic determinant, distinct agents) not yet audited.
8	C2	Capital flows, FDI and delayed financing — firms / workers / projects	Extended scenario only; plausible but weakly identified.
9	A4/A5	Risk premium, rating, market access — Treasury	Non-additive decomposition of channel 3; pre-existing idiosyncratic premium A5 set to zero in the conservative baseline.
10	v	Loss of purchasing power through imported inflation — households / workers	Distributive view (disaggregation v); overlaps channel 5a; never added.
11–13	O1–O3	Return on reserves (central bank); valuation of migrant remittances (recipient households); easing of commodity prices (State / importers / consumers)	Potential offsets by initial beneficiary; no deduction of other agents' losses without a documented or legally binding transfer (§F.10, conservative form).
14	C3-price	Tourism competitiveness gain linked to the depreciation — tourism firms / workers / local authorities	Favourable component required by the C3 sign convention; sign –1; to be quantified; reported separately, as are O1–O3.

I.4 What the framework requires of this case, and what it finds

Three consequences follow from the application of the Annex F framework to this case, and one substantive finding.

Distribution becomes primary. The result is a per-agent vector — Treasury, central bank, firms, households — and any figure summing several agents is labelled accounting consolidation (§F.9). Because undocumented gains no longer offset the losses of other agents ($T = 0$ by default), the accounting consolidation is mechanically slightly higher than a conventional national net at equal scope; the difference is not a revision of the facts, but the price of refusing to offset a loss by a gain that never reached the party bearing the loss.

The exclusions become visible. The supply-origin component of the import bill (5b: 338–1,650 million TND, base 800) is excluded from any attributable aggregate and displayed as such, rather than silently merged; the pre-existing idiosyncratic premium is held at zero; the revaluation of the debt stock remains a memo item.

Sensitivity becomes explicit. The private-sector scenario visibly depends on a declared working assumption — the exchange-rate pass-through share of the import bill, set at 0.50 pending documentation by primitive components. Any presentation must show the scenario at alternative shares (0.30 and 0.70 at a minimum) as long as the split remains undocumented.

The finding. Applied to this case, the framework does not widen the defensible claim; it narrows it and brackets it. The direct external cash-flow core (base $\approx$ 0.68 billion euros) lies below the monetary core of §9.3 (0.76–1.0 billion euros), and the extended Treasury incidence (base $\approx$ 1.04 billion euros) brackets it from above. A framework designed by a former Minister of Finance of the country under study, applied to that country, reduces the headline figure instead of inflating it — which is precisely the behaviour that the credibility of the architecture requires, and the substance of the statement of convergence or divergence that §F.16 obliges the programme to publish once the reconciliation of I.5 is closed.

I.5 The reconciliation obligation

The consolidated national net of the programme workbook (central value 6.45 billion TND $\approx$ 1.93 billion euros) and the monetary core of §9.3 (0.76–1.0 billion euros $\approx$ 2.55–3.35 billion TND) do not describe the same object, and until the difference is reconstructed line by line from the source data, any statement of convergence remains ambiguous. The reconciliation obeys a closure test: the candidate explanations — scope (all-causes net versus strictly monetary core), extended channels included in the consolidated net but outside the core, global overlap discount, non-monetary offsets, and the reconstruction bridge between the recomputed monetary core and the published core — must be quantified until their sum equals the measured gap (434 million TND at the low bound, 3,502 million at the central point, 8,376 million at the high bound). An unexplained residual would block the publication of any statement of convergence. This reconciliation has now been discharged (Table I3): the gap decomposes in full into ten quantified and sourced items from the case workbook, whose sum equals the gap at all three bounds — the closing residual is nil. The recomputed strictly monetary core ($\approx$ 0.9 billion euros) brackets the published core (0.76–1.0), so that the statement of convergence of §F.16 is established under the inherited counterfactual c_V5 . Two methodological reservations bound the reach of this result: the reconstruction bridge carries the bulk of the gap at the bounds — it falls to about 6% of the core at the central point — and the overlap discount remains treated as a global convention, its allocation into primitive components falling to Configuration M. The line-by-line detail and the closure test are held in the evidence file of the case.

Table I3 — Line-by-line reconciliation of the gap (millions of TND)

Item	Low	Base	High	Status
Consolidated national net V5 (net envelope)	2,980	6,450	11,726	V5 workbook “04 Canaux impact”
Published monetary core §9.3 (€0.76–1.0 bn)	2,546	2,948	3,350	Published value; indicative central value $\sim$ €0.88 bn (legacy illustration, not validated)
Gap to be explained (Net – published core)	434	3,502	8,376	Must be matched by the sum below
TND revaluation of principal (stock, non-cash)	850	1,850	3,250	Channel 2
Imports: supply origin ($\alpha = 0$)	338	800	1,650	Channel 5 (half)
EU external demand	416	1,164	2,495	Channel 6
Private credit / crowding-out	338	1,155	3,276	Channel 7
Capital flows / FDI	210	650	1,400	Channel 8

Item	Low	Base	High	Status
Risk premium / rating	90	400	1,250	Channel 9
Purchasing power / inflation (distributive)	203	800	1,650	Channel 10
– Non-monetary offsets (O2 + O3)	–428	–1,290	–2,800	Channels 12–13
– Overlap discount (V5 global convention)	–438	–2,223	–7,059	Primitive allocation → Configuration M
+ Reconstruction bridge (V5 core – published core)	–1,143	196	3,264	Earlier method / window / conversion
Sum of the quantified explanations	434	3,502	8,376	Closure test = gap
Closing residual	0	0	0	Satisfied at all three bounds

I.6 The Configuration M programme of work

The computation that discharges §F.16 is defined by Configuration M of Annex F (§F.15): identical stopping rules, restricted scope. Table I4 lists the deliverables and the data each of them requires. None of these steps presupposes any new theory; each is a task of data assembly and documentation.

Table I4 — Configuration M deliverables for the Tunisian case

Deliverable	Content	Critical data dependency
Second counterfactual, written	A gradual normalisation path c^N alongside the documented constant-rate benchmark; assumptions written down, even if narrative (§F.2).	None beyond documentation; this step unlocks all the others.
Pre-shock contractual exposure file (E ⁰)	Currency, fixed/floating share, index, reset dates, caps, floors, hedges, arrears; reconstructed cash payments.	Ministry of Finance debt register — the binding constraint on the whole programme (Annex G, G.2).
Register of primitive components (material overlaps)	Unique identifiers and allocation weights for overlaps above the declared 5% materiality threshold; audit of channels 6/7/8.	Programme source workbook, credit stock and export series.
Documented split of channel 5	Exchange-rate pass-through share estimated from price and exchange-rate series, replacing the working assumption of 0.50.	Import price indices; TND exchange-rate series.
Quantified split of C3	C3-income (adverse) separated from C1; C3-price (favourable) estimated from the arrivals–depreciation elasticity.	Tourism arrivals, receipts and price series.
Common unit and price base	All flows in real TND of a declared base year; year-by-year EUR conversion (§F.8 waiver lifted).	Annual deflator and exchange-rate series.
Closed reconciliation	Closure test of I.5 satisfied; statement of convergence or divergence drafted.	Programme source workbook.
Pre-registered joint set Φ	Time-stamped deposit of the cross-mechanism restrictions before the first constrained computation (§F.5).	None; a discipline, not a dataset.

Deliverable	Content	Critical data dependency
Publication package	The deposit of Table F3 at Configuration M scope, the configuration declared on the first page.	All of the above.

I.7 Bridge to Configuration F, to Annex G and to the pilot pathway

Configuration M outputs serve measurement, publication and scenario design; they can never trigger a financial consequence, and GFEA accepts no referral derived from them (§5.4). The move to regime level follows Annex G: identified Federal Reserve and ECB shocks with a joint model isolating the common global component; exposures fixed at E^0 or instrumented; the three families of counterfactuals; interactions between channels; placebo and pre-trend tests; and the inclusion of Tunisia as one case among others in a regional panel of recipient economies with heterogeneous exchange-rate regimes, capital controls and debt structures — the second-country commitment of Annex G (regional panel), which is also the structural answer to the positional disclosure of I.1. Within the adoption pathway of Section 12.5, the Tunisian case file is simultaneously a pilot candidate for a national HuIB platform operating, at entry, under Configuration M, with the architecture's assistance arrangements financing the move up to Configuration F.

I.8 What this case permits and forbids one to say

The stopping rules of §F.13, applied to this case file, produce the following communication discipline. It is permitted to say that an accounting scenario classified under Annex F, under a single inherited counterfactual, places the direct external cash-flow incidence borne by the Tunisian Treasury in a range of 1.0 to 4.8 billion TND (base 2.3), rising to 1.6–6.9 billion TND (base 3.5) when partially attributed domestic transmission is included; that potential gains for the central bank and for households in receipt of transfers exist on a comparable order of magnitude and are reported separately by beneficiary; and that the Annex F framework brackets, without confirming, the monetary core reported in §9.3. It is not permitted to say that foreign central banks cost Tunisia any amount whatsoever; that a welfare loss, a causal effect, a fault or a share of responsibility has been established; that the counterparts cancel the losses, or the losses the counterparts; nor that any of these figures grounds a price, a levy or a claim. This annex is the citation reference for the case: any use of the Tunisian figures elsewhere in the document or in derived communications conforms to the present section.

I.9 Limits specific to the case

Beyond the general limits of Section 14, five are specific to this case file. First, single-country evidence: nothing here generalises as long as the regional panel does not exist. Second, the author's position (I.1): mitigated by structure and by external replication, not eliminated. Third, the inherited counterfactual: every figure depends on c_V5 , whose polar character is declared but not yet bracketed by an alternative trajectory. Fourth, the unaudited overlaps between the extended private channels (6/7/8), which cap the evidentiary weight of the extended consolidation at the level of illustration. Fifth, the missing favourable component: as long as $C3$ -price is not quantified, the case file is asymmetric in the unfavourable direction by construction — a conservatism that must be declared rather than silently savoured, for it too is a bias.

Annex J — International extension protocol (comparative panel and the 44 LDCs)

of the accounting-incidence and partial-attribution framework for monetary externalities

Global comparative panel and application to the 44 least developed countries (LDCs)

Proposed methodology — Version 1.0

Status of sources and of the LDC list: 23 July 2026

Status: proposed research protocol. It does not yet contain causal results for the countries studied.

Executive summary — Annex J

Direct answer

Yes, the method can be extended to the comparator countries already identified and to all 44 LDCs. Universal coverage is realistic, however, only at the level of an atlas of exposure and bounded accounting incidence. Full causal and contractual attribution can be produced for each country only with detailed national data, institutional cooperation and strict stopping rules.

As at 23 July 2026, the United Nations list comprises 44 LDCs: 32 in Africa, 8 in Asia, 1 in the Caribbean and 3 in the Pacific.[1]

Bangladesh, the Lao People's Democratic Republic and Nepal remain included in the reference panel, even though their graduation from the category is scheduled for 24 November 2026. The panel must be frozen according to status at the start of the study period in order to avoid a break in comparability.[2]

The preliminary audit of the international data infrastructures leads to the following findings:

- 41 of the 44 LDCs have a country page in the World Bank's International Debt Statistics (IDS); Kiribati, South Sudan and Tuvalu do not appear in the country list displayed by IDS, which does not imply the absence of any data but requires alternative sources.[3]
- 18 LDCs appear in the QEDS-GDDS availability file updated on 30 April 2026; 13 of them have reported data at least up to the second quarter of 2024.[4]
- 23 of the 44 LDCs appear on the World Bank's FY26 list of fragile and conflict-affected situations: 14 in the "conflict" category and 9 in the "institutional and social fragility" category.[6]
- General macroeconomic data are more widely accessible than the contractual clauses required to measure floating-rate debt, reset dates, hedges and the ultimate identity of those bearing losses and gains.[5]

The recommended strategy is therefore a three-ring architecture:

9. Calibration and control ring: Tunisia, Morocco, Jordan, Kenya, South Africa, Chile and Indonesia.
10. Stress ring: Ghana, Pakistan, Sri Lanka, Nigeria and Egypt.
11. LDC census: standardised application to the 44 countries, with depth varying according to data quality.

Expected scientific outcome

The main output must not be a ranking of countries, nor a single global figure. It must be a set of reproducible national passports: prior exposures, incidences by mechanism, outcomes by agent, offsets not netted in the absence of a demonstrated transfer, intervals by counterfactual, and explicit qualification of what remains non-identifiable.

Structure of the protocol

1. Purpose, scope and levels of evidence
2. Research architecture: calibration, stress tests and LDC census
3. Unit of analysis, period and common taxonomy
4. Data architecture and provenance register
5. Identification of source-jurisdiction monetary shocks
6. Counterfactuals and predetermined exposure
7. Measurement by mechanism and elimination of double counting
8. Partial attribution, panel econometrics and heterogeneity
9. Distribution across agents, offsets and consolidation
10. Handling of missing data and stopping rules
11. Feasibility for the 44 LDCs and deployment in waves
12. Governance, replication and publication
13. Project organisation, schedule and deliverables
14. Limits, antithesis and rejection criteria

Annex J.A. Minimum data dictionary

Annex J.B. Preliminary feasibility matrix for the 44 LDCs

Annex J.C. Country passport template

J.1 Purpose, scope and levels of evidence

The purpose of the protocol is to extend the method of the new Annex F to a set of countries sufficiently diverse to test its external validity, and then to the whole set of LDCs. The extension must preserve the distinction between four objects that cannot be conflated:

- prior exposure to the shock;
- the accounting incidence observed relative to a counterfactual;
- the share plausibly attributable to an identified monetary shock;
- the qualification in terms of welfare, equity or legal responsibility.

The project normally stops at the first two levels for the universal census and crosses the third level only for countries satisfying the identification conditions. The fourth level falls to So–S6 qualification and to the corresponding institutions of this report; it is never mechanically deduced from an economic estimate.

J.1.1 Scale of permitted results

Table J1 — Scale of permitted results

Level	Output	Minimum condition	Permitted interpretation	Prohibited interpretation
L0	Data inventory	Sources and metadata catalogued	State of readiness	Any estimate
L1	Exposure passport	Identifiable pre-shock exposures	Vulnerability and plausible channels	Causality or liability
L2	Bounded accounting incidence	Counterfactuals, common units and non-duplicated components	Descriptive range by agent	Welfare loss
L3	Partial / causal attribution	Identified shock, predetermined exposures, tests and replication	Model-based attributable share	Fault or automatic compensation
L4	S0–S6 qualification	Distinct economic, distributive and legal analysis	Routing towards solidarity, correction or law	Automatic pricing

J.1.2 Comparative research question

The central question is the following: to what extent does one and the same global monetary tightening cycle produce different incidences according to the debt structure, the exchange-rate regime, financial openness, fiscal room, institutional credibility and the adaptive capacity of recipient countries?

The objective is therefore not merely to measure costs. It is to distinguish:

- the common component of the global shock;
- the exposure structure inherited before the shock;
- domestic amplifications;
- economic policy responses;
- contemporaneous gains and their beneficiaries;
- the elements that remain impossible to attribute.

J.2 Research architecture: calibration, stress tests and LDC census

J.2.1 Ring 1 — calibration and control panel

The first ring must comprise countries with relatively rich data and contrasting financial structures. It serves to validate the measurement functions, the non-double-counting rules, the counterfactuals and the econometric tests before any generalisation.

Table J2 — Calibration and control panel

Country	Methodological function	Public data	Causal complexity
Tunisia	Anchor case; external debt, domestic transmission and data already structured	Medium	High
Morocco	Maghreb comparator; different vulnerabilities and credibility	High	Medium

Country	Methodological function	Public data	Causal complexity
Jordan	Exchange-rate peg; transmission through rates, reserves and debt	High	Medium
Kenya	External refinancing, Eurobonds and domestic market	High	High
South Africa	Deep markets; control case with largely domestic debt	Very high	Medium
Chile	Advanced emerging-market control and statistical quality	Very high	Low to medium
Indonesia	Mixed exposure, domestic market and non-residents	Very high	Medium

J.2.2 Ring 2 — stress tests

The second ring brings together countries where external shocks combine with domestic crises, restructurings or regime changes. It verifies that the method is capable of refusing excessive attribution.

- Ghana: restructuring and strong interaction between fiscal policy, the exchange rate and debt;
- Pakistan: external constraints, energy, the IMF and multilateral debt;
- Sri Lanka: default and restructuring, a case in which the simple counterfactual breaks down;
- Nigeria: oil, exchange-rate reforms and domestic monetary financing;
- Egypt: devaluations, large financing needs and a multiplicity of simultaneous shocks.

J.2.3 Ring 3 — census of the 44 LDCs

The third ring aims at universal coverage, but with differentiated products. All countries receive a data and exposure passport. Only countries crossing the quality thresholds produce accounting-incidence ranges; only those with sufficiently granular data and an identifiable shock reach in-depth causal analysis.

Non-exclusion principle

The absence of data must not exclude an LDC from the project. It becomes an institutional result in its own right: the passport records the missing data, the likely holders, the possible substitutes, the margins of uncertainty and the capacity programme required. The absence of data does, on the other hand, prohibit manufacturing a figure by opaque extrapolation.

J.3 Unit of analysis, period and common taxonomy

J.3.1 Indices and unit of observation

The protocol takes up the architecture of Annex F, correcting the consolidation of transfers and the currency conversion. The indices are: recipient country i , source monetary jurisdiction j , affected agent h , mechanism m , primitive economic component k , period t and counterfactual c .

$$\Delta X_{ijhmt}(c) = \sum_k \omega_{mk} \cdot D_{ijkct}(c)$$

(1)

The primitive component is the unit of aggregation. One and the same determinant — for instance the exchange-rate movement — may feed several reporting mechanisms, but its monetary value is counted only once.

J.3.2 Study period

The recommended main window is 2019–2025:

- 2019–2021 to measure prior exposures and trends;
- 2022–2024 for the core of the tightening cycle;
- 2025 for delayed effects, refinancings and first normalisations;
- longer windows are used to estimate elasticities and to check pre-trends.

For countries in conflict, default or restructuring, the window must be segmented into regimes. An average over the whole period would be misleading if the economic mechanism changes in nature.

J.3.3 Common taxonomy of mechanisms

The fifteen mechanisms of this report remain the reporting channels: A1–A7 for the monetary and financial channels; B1–B2 for imported prices; C1–C3 for the real economy; O1–O3 for contemporaneous offsets. The S item for the revaluation of the debt stock remains outside cash flows.

J.4 Data architecture and provenance register

J.4.1 Hierarchy of sources

Table J3 — Hierarchy of data sources

Priority	Examples	Use
Level 1 — national primary source	Ministry of Finance, debt office, central bank, statistical institute, regulators	Clauses, repayment schedules, holders and administrative data
Level 2 — harmonised international source	World Bank IDS/QEDS/WDI, IMF IFS/WEO/GFS/DSBB, BIS, UNCTAD, UN Comtrade	Comparability and gap-filling
Level 3 — creditor / market source	Official creditors, prospectuses, market platforms, multilateral agencies	Verification of terms and prices
Level 4 — derived estimate	Interpolation, model, proxy, range	Usable only with a label, a code and a sensitivity

J.4.2 Mandatory provenance register

Each data item must have a stable identifier and the following fields:

- country, source institution, URL or reference, date of extraction and version;
- unit, currency, price base, frequency, coverage and revision method;
- status: observed, reported, reconstructed, imputed or simulated;
- start and end date, series break and metadata quality;
- economic agent initially affected;
- primitive component, reporting mechanism and allocation rule;
- licence, confidentiality and possibility of publication.

J.4.3 Data readiness score

A data readiness score (DRS) is computed before any estimation. It measures neither the quality of economic policy nor the governance of the country; it measures only the capacity of the case file to support a given level of evidence.

Table J4 — Data readiness score grid

Dimension	Points	Criterion
Debt and debt service	25	Currency, rate, maturity, service, creditor, floating/fixed rate
Money, exchange rate and reserves	15	Rates, exchange rate, reserves, interventions, regime
Trade and the real economy	15	Exports, imports, tourism, FDI, activity
Distribution by agent	15	Treasury, central bank, banks, firms, households
Timeliness and frequency	10	Quarterly/monthly, publication lag
Metadata and traceability	10	Methods, revisions, sources and versions
Breaks and conflicts	10	Capacity to segment regimes and document breaks

Proposed thresholds: DRS < 40: LO–L1; 40–59: cautious L2; 60–74: robust L2 / L3 preparation; 75 and above: candidate for L3, subject to shock identification and contractual cooperation.

J.5 Identification of source-jurisdiction monetary shocks

J.5.1 From the scalar shock to the multidimensional vector

To represent a tightening cycle by a scalar in basis points amounts to assuming that all the impulses of a central bank are transmitted through the same channel, with the same horizon and the same signature. The assumption is false: a policy-rate surprise, a revision of the expected path, new information revealed about the economy, a balance-sheet reduction and a withdrawal of refinancing operations reach neither the same segments of the curve, nor the same agents, nor the same lags.

$$S(j,t) = [S_level , S_path , S_information , S_balance_sheet , S_liquidity , S_operational , S_backstop]$$

Why enrich the upstream rather than the downstream. Adding transmission mechanisms would make the register of primitive components, the overlaps to be audited and the risks of double counting grow combinatorially. Enriching the shock vector leaves the taxonomy intact and turns the addition into a gain in identification: each additional impulse supplies a distinct prediction across mechanisms already defined. That is the difference between making a model more complex and constraining it further.

J.5.2 The seven components

The backstop component calls for a remark: it is the only one whose expected effect is of opposite sign to the others. An active swap line attenuates transmission; its absence or its withdrawal aggravates it. It therefore enters the vector in the role of a modulator, and not of an additional adverse shock — to conflate it with the other six would invert its interpretation.

Table J5 — The seven components of the shock vector

Component	Content	Reference measure	Dominant horizon
Level	Surprise on the current policy rate	Unexpected change around the announcement	Immediate
Path	Revision of the expected future path, forward guidance	Surprise on the intermediate maturities of the curve	Short to medium

Component	Content	Reference measure	Dominant horizon
Information	New information revealed by the central bank about the state of the economy	Component identified by sign restriction (§4)	Immediate, then persistent
Balance sheet	Purchases, reinvestments, run-off and portfolio composition	Duration removed, weighted and convexity-adjusted	Medium to long
Liquidity	Withdrawal or modification of longer-term refinancing operations	Outstanding amounts and residual maturity of the operations	Medium
Operational	Remuneration of reserves, corridor, standing facilities, collateral and haircuts	Corridor spreads, remuneration rates, haircut schedule	Varies with the instrument
Backstop	Activation or withdrawal of swap lines and international liquidity facilities	Existence, amount and conditions of access	Discrete, insurance effect

J.5.3 Signature matrix: the identification gain

The main benefit of the enrichment is not to measure more things. It is that each component possesses a predictable signature across the transmission mechanisms already defined, so that the whole forms an overdetermined system of restrictions. A seven-component vector applied to some fifteen mechanisms produces far more signed predictions than free parameters — which makes the construction refutable rather than merely richer. This multidimensional identification strategy extends the decomposition of monetary policy shocks (Gürkaynak, Sack and Swanson, 2005; Swanson, 2021).

Table J6 — Expected signatures and status of the restriction

Component	Mechanisms expected to be sensitive	Mechanisms expected to be insensitive	Status
Level	Floating-rate debt, remuneration of reserves	Long-term refinancing, deferred portfolio flows	Strong: insensitivity of indexed debt invalidates the measure
Path	Refinancing, emerging-market spread, portfolio flows	Debt already reset over the period	Strong
Information	Emerging-market spread, portfolio flows, external demand	Floating-rate debt, remuneration of reserves	Strong: this is the test that distinguishes policy from information
Balance sheet	Refinancing through the term premium, reallocation towards safe assets	Debt indexed to short-term references	Strong: maturity signature
Liquidity	Cross-border banking channel, private credit	Fixed-rate sovereign debt service	Medium
Operational	Money market conditions in the source jurisdiction, hedging cost	Real economy of the recipient country at short horizons	Weak: direction only
Backstop	Emerging-market spread, portfolio outflows — of opposite sign	Contractual debt already issued	Medium, sign reversed

J.5.4 Rank conditions and fallback scale

Moving from one impulse to seven over a single episode multiplies sevenfold the problem that the 2022–2025 window already poses. The protocol must therefore state, before estimation, under what conditions the decomposition is identifiable and what it does when it is not.

Table J7 — Identification conditions (rank)

Condition	Requirement declared in advance	Verification
Rank of the surprise matrix	Full rank over the announcement window retained	Singular value decomposition published
Number of events per factor	Declared floor of informative announcements per component	Count published before estimation
Collinearity between components	Condition number and partial R^2 below declared thresholds	Diagnostics published whatever the outcome
Separation of announcement / implementation	Announcement windows and implementation periods do not systematically overlap	Calendar published

Pre-registered fallback scale. If the conditions fail, the protocol does not relax its thresholds: it steps down one rung on a scale declared in advance. Seven components when all the conditions are satisfied; four in the event of partial failure, grouping level and path on the one hand, balance sheet and liquidity on the other, information and backstop remaining separate; two in the event of broad failure, separating only the price of money and the quantity of money; a single composite impulse as a last resort, with an explicit declaration that the decomposition is not identifiable for the episode. Each step down is published together with the diagnostics that motivated it. Choosing the rung after inspecting the estimates is expressly prohibited.

J.5.5 Information effect and factor rotation

The information component is the most important addition to the vector and the most demanding to identify. Its logic is the following: when a central bank tightens, it also reveals what it knows about the economy. Part of the market reaction — and therefore of the incidence in the recipient countries — reflects not policy but information about the state of the world. To attribute that part to policy would overstate the attributable effect; to ignore it would understate it.

Identifying restriction. The separation rests on the co-movement, around the announcement, between interest rates and the prices of risky assets. A pure policy tightening raises rates and depresses assets; a favourable information revelation raises both together. The sign restriction on this co-movement is what identifies the component; without it, a factor rotation produces orthogonal axes devoid of structural meaning. The protocol requires that the restriction be declared before estimation and that the sensitivity of the result to its relaxation be published. The corresponding high-frequency identification methods — the Jarociński & Karadi (2020) decomposition for the Federal Reserve, the EA-MPD database (Altavilla et al., 2019) for the ECB — are those of Annex G (§G.3).

The same requirement applies to the separation between level surprise and path surprise: the statistical orthogonality of two factors confers upon them no structural interpretation. The rotation adopted, its identifying restriction and its alternative must be documented. A decomposition whose interpretation depends on an untested choice of rotation is not identified.

J.5.6 Multi-source-jurisdiction model and exposure matrix

The LDCs are exposed to several monetary jurisdictions. A separate estimation for the Fed, the ECB, the Bank of England or others, then summed, may count a common global component twice. The protocol adopts a joint shock vector.

The shocks are identified by a combination of high-frequency surprises around announcements, narrative instruments, revisions of expected paths and global risk factors. Each method produces a separate series; their convergence and their divergences are published.

The relevance of a source jurisdiction varies according to: the currency of the debt, the invoicing currency of trade, the exchange-rate regime, the share of reserves, the creditors, the banking structure and the exposure of investors. The protocol does not use a single arbitrary weight; it produces a pre-shock exposure matrix.

J.5.7 Source-jurisdiction instruments and recipient responses

The instruments of the source-jurisdiction central bank belong to the shock vector; the responses of the recipient central bank never do. An increase in the domestic policy rate, foreign-exchange intervention, a drawdown on reserves, capital controls and macroprudential measures are response variables, to be treated as endogenous mediators, with instrumentation or sensitivity bounds, and not as additional impulses. To conflate them would amount to attributing to the source jurisdiction a decision taken by the recipient.

Conditional activation by regime. Some components have no channel in certain recipient countries: the balance-sheet component has no purchase on an economy without a liquid domestic bond market; the exchange-rate channel is structurally neutralised under a hard peg or dollarisation. Such components are explicitly deactivated in the passport of the country concerned, together with the reason, rather than estimated and reported as non-significant. Non-significance through the absence of a channel and non-significance through the absence of an effect are two different results and must be distinguished.

J.5.8 Prevention of double counting

Each component of the vector feeds primitive components allocated only once, with weights summing to one. Three overlaps specific to this enrichment must be audited explicitly: between path and balance sheet, which both act on intermediate maturities; between liquidity and operational, which both affect banking conditions; and between information and path, whose separation depends entirely on the sign restriction of §5.

Principal allocation and robustness. The principal allocation follows the structural ordering of the impulses — level, path, information, then execution through the balance sheet and liquidity — each component being measured conditionally on the preceding ones. The Shapley decomposition is retained as a robustness test and not as the principal allocation: it assumes a symmetry between contributions that structurally ordered shocks do not satisfy, and its combinatorial cost grows exponentially with the number of components. A large discrepancy between the structural allocation and the Shapley allocation is information to be published, not a reason to prefer the latter.

J.5.9 Composite index: strictly limited use

An aggregate index of effective tightening, gross or net of offsets, is useful for communication and for comparing episodes. It cannot serve as an input to an attribution estimate, for a simple reason: it glues back into a scalar what the vector has just separated, and its weightings then carry the whole normative content of the result. The protocol authorises its publication provided that the weightings are declared, that the sensitivity of the ranking to alternative weightings is published, and that the index appears in no regression whose output feeds a qualification or a calibration. The wording “instrument of communication, not of attribution” accompanies every publication of the index.

J.5.10 Priorities and graduated compliance

The vector is deployed by priorities and follows the graduated compliance of Annex F (§F.15): a mandatory core, an advanced module and jurisdictional modules, each activated according to the availability of the series and the identification conditions.

Table J8 — Component activation priorities

Level	Components	Activation condition
Mandatory core	Level, path, information, balance sheet, liquidity	Identifiable at high frequency for the main source jurisdictions; correspond to the tightening described in the corpus
Advanced module	Operational, backstop	Activated when the corridor, reserve remuneration, collateral and swap line series are available and dated
Jurisdictional modules	Reserve requirements, quantitative credit control, macroprudential measures, exchange rate, capital restrictions	Activated only if they actually form part of the monetary regime of the source jurisdiction studied over the period

Table J9 — Configurations M and F for the shock vector

	Configuration M — pilot	Configuration F — regime
Vector	Four components at least, according to the fallback scale	Seven components, rank conditions satisfied
Information effect	Separated if the sign restriction is verifiable; otherwise grouped with the path, with disclosure	Separated, restriction declared and sensitivity published
Signature matrix	Tested on the strong restrictions	Tested on all restrictions, weak ones included
Allocation	Structural	Structural, with Shapley as a robustness check
Outputs	Measurement and scenario design	Transmissible to qualification after replication

It changes the nature of the object measured: tightening ceases to be a number in basis points and becomes a set of impulses announced, anticipated, executed, offset and transmitted differently across recipients. It also changes the evidentiary regime, substituting for a free parameter a matrix of signed predictions that the data can contradict.

It changes nothing in what follows. The taxonomy of transmission mechanisms remains unchanged. The attainable level of evidence remains that of accounting incidence and bounded partial attribution: a better-specified vector does not cross the bridge to welfare. And the most likely conclusion for the 2022–2025 episode remains that some of the components will not be separately identifiable — which is precisely what the fallback scale is designed to make publishable rather than concealable.

J.6 Counterfactuals and predetermined exposure

J.6.1 Minimal family of counterfactuals

- co — rates held at their end-2021 level: a demanding scenario, but not an upper bound by definition;
- cN — gradual normalisation towards a neutral rate;
- cR — path based on a reaction rule or on market expectations;
- cS — scenario with an identical supply shock but different monetary tightening, in order to isolate monetary policy from energy and food.

Each counterfactual is a coherent vector of rates, risk-free curves, exchange rates, global activity, risk aversion and commodity prices. It is not acceptable to alter the policy rate while mechanically holding all the other observed variables.

J.6.2 Fixed exposure and dynamic exposure

$\Delta X(\text{fix})_{ijhmt}(c) = g_m(E^0_{ijhm}, z_t(\text{obs}), z_t(c), \theta_m)$	(4)
$\Delta X(\text{dyn})_{ijhmt}(c) = g_m(E(\text{obs})_{ijhmt-1}, z_t(\text{obs}), z_t(c), \theta_m)$	(5)

The fixed measure is the principal attribution result. The dynamic measure describes the incidence realised after adaptations. The gap between the two is informative about the cost or the benefit of national responses, without presuming that they were avoidable.

J.7 Measurement by mechanism and elimination of double counting

J.7.1 Specific functions

No single “base × price gap” formula is suitable for the fifteen mechanisms. The contractual debt channels may use flow identities; the real-economy channels require elasticities, local projections or structural models.

Table J10 — Measurement functions by channel

Channels	Object	Method / data	Rule
A1–A3	External debt, floating rate, refinancing	Contractual register, actual debt service, risk-free curve	Verified cash flows
A4–A7	Spreads, risk, exchange rate, domestic transmission	Markets, central banks, domestic debt, credit	Partial attribution and interactions
B1–B2	Food and energy	World prices, exchange rate, pass-through, subsidies	Separate the supply shock from monetary amplification
C1–C3	Trade, investment, tourism	Elasticities, local projections, global controls	Real incidence, often more uncertain
O1–O3	Reserves, remittances, commodities	Beneficiary and effective transfer	Present separately by agent

J.7.2 Register of primitive components

Each primitive component k receives an identifier, an amount, an agent, a source, a sign and an allocation. The sum of the allocation weights across mechanisms must be equal to 1.

$0 \leq \omega_{mk} \leq 1$ and $\sum_m \in M(k) \omega_{mk} = 1$	(6)
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Example: the rise in the local cost of an energy bill due to the exchange rate cannot be counted at once as an import bill, as household inflation and as a loss of purchasing power. It is a primitive component, broken down for reporting but aggregated only once.

J.8 Partial attribution, panel econometrics and heterogeneity

J.8.1 Bounded attribution

For each country, the attribution coefficients belong to a joint set of admissible values. The bounds are not chosen independently when the same exchange-rate, global-risk or interest-rate paths link several mechanisms.

$\alpha_{ij}(c) \in \Phi_{ij}(c) \subset [0,1]^M$	(7)
$N^-_{ijh}(c) = \min N_{ijh}(c, \alpha, \theta) ; N^+_{ijh}(c) = \max N_{ijh}(c, \alpha, \theta)$	(8)

J.8.2 Panel local projections

The common empirical protocol may use local projections with country and time fixed effects, interacted with the predetermined exposures:

$\Delta Y_{i,t+h} = \beta_h \cdot S_i \cdot E_{i,t-1} + \gamma_h \cdot S_i \cdot R_i + \mu_i + \tau_t + X_{it}' \delta_h + \varepsilon_{i,t+h}$	(9)
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R_i represents the structural characteristics: exchange-rate regime, capital controls, share of foreign-currency debt, credibility, level of reserves, market access and import dependence. Average coefficients are transferred to an LDC only if the transportability assumptions are explicit and tested.

J.8.3 Partial pooling

Countries with weak data may benefit from partial pooling of the parameters, but never from a mechanical transfer of results. A hierarchical structure can reduce instability while allowing the effects to vary by region, regime and debt structure.

$\beta_{ih} \sim \text{Normal}(\beta_{\text{group},h}, \sigma^2_{\text{group},h})$	(10)
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The national result must present separately the component estimated from the country's own data and the component derived from pooling. An estimate dominated by the group is labelled as such.

J.8.4 Mandatory tests

- pre-trends and temporal placebos;
- fictitious shocks over periods with no announcement;
- sensitivity to counterfactuals and to windows;
- interactions of rates $\times$ exchange rate $\times$ refinancing;
- regime breaks, defaults and restructurings;
- successive exclusion of influential countries;
- fixed-exposure / dynamic-exposure comparison;
- replication by a second team and a log of all decisions.

J.9 Distribution across agents, offsets and consolidation

J.9.1 Partition of agents

The categories must be mutually exclusive: the State, the central bank, banks, non-financial corporations, households and local authorities. Vulnerability, income, gender, region or generation are dimensions of breakdown, not additional agents that can be added together.

J.9.2 Corrected transfer matrix

A gain accruing to one agent offsets another agent only if an observed or legally committed transfer is documented. The formula must deduct the transferred share from the initial beneficiary so as not to create resources:

$O^*_h = (1 - \sum_r T_{h \rightarrow r}) \cdot O_h + \sum_l T_{l \rightarrow h} \cdot O_l$	(11)
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Without transfer data, $T = 0$. The return on reserves, the valuation of remittances and the fall in certain global prices are therefore published separately by beneficiary.

J.9.3 Common unit and time

Two coherent methods are authorised, but only one must be applied within a given result:

- conversion into the reference currency at the rate of each period, then deflation in the reference currency;
- deflation in local currency, then conversion at the base-year exchange rate.

The protocol prohibits mixing the price index of the recipient country in the denominator with that of the reference currency in the numerator without an explicit parity model.

J.9.4 Three non-additive registers

- A — market and budgetary costs: cash flows, margins, credit and output losses;
- B — welfare losses: health, employment, poverty and public services, measured separately;
- C — transfers between agents or jurisdictions: distributive losses whose global total may be nil.

An LDC total must never add A, B and C together. The global protocol publishes three distinct aggregates and retains the national distributive vector as the primary result.

J.10 Handling of missing data and stopping rules

J.10.1 Hierarchy for the treatment of gaps

1. search for the primary national source;
2. cross-checking with IDS, QEDS, the IMF, the BIS and creditor sources;
3. construction of a physical or accounting bound;
4. regional proxy only if transportability is demonstrated;
5. partial pooling with the country's own contribution made explicit;
6. abstention from quantifying if the interval remains uninformative.

J.10.2 Stopping rules

Table J11 — Stopping rules by missing condition

Missing condition	Prohibited conclusion
No coherent counterfactual	No incidence amount
No pre-shock or modelled exposure	No causal interpretation
No primitive components	No aggregate
No beneficiary or transfer	No distributive offsetting
No identified shock and tests	No L3 level
No welfare bridge	No welfare loss
No legal basis	No liability and no price

J.11 Feasibility for the 44 LDCs and deployment in waves

J.11.1 Feasibility verdict

Feasible, but at variable depth

For the 44 LDCs, an L0–L1 census is feasible. L2 accounting incidence is probably feasible for a majority, but with intervals of uneven quality. L3 attribution cannot be promised universally: it will depend on the contractual register, the frequency of the series, the identification of the shock, regime breaks and the cooperation of the authorities.

International coverage is more favourable than a pessimistic reading might suggest: IDS provides complete annual data on the external debt stocks and flows of reporting countries, while QEDS provides, for participants, quarterly breakdowns by sector, maturity, instrument and currency.[3][4]

However, participation in QEDS is voluntary, and the e-GDDS remains less demanding than the SDDS. The IMF stresses that fragile States are over-represented among the countries not yet publishing through a National Summary Data Page.[5]

J.11.2 Proposed waves

Table J12 — Deployment waves for the 44 LDCs

Wave	Number	Countries	Rationale
Wave A — data pilot	11 countries	Bangladesh, Cambodia, Djibouti, Kiribati, Liberia, Madagascar, Nepal, Rwanda, Sierra Leone, Solomon Islands, Uganda	Recent or near-recent QEDS; regional and size diversity
Wave B — structured extension	15 countries	Angola, Benin, Burkina Faso, Ethiopia, Gambia, Guinea, Lao PDR, Lesotho, Malawi, Mauritania, Mozambique, Senegal, Tanzania, Togo, Zambia	IDS and national sources; further audit required
Wave C — constrained contexts	18 countries	Afghanistan, Burundi, CAR, Chad, Comoros, DRC, Eritrea, Guinea-Bissau, Haiti, Mali, Myanmar, Niger, Somalia, South Sudan, Sudan, Timor-Leste, Tuvalu, Yemen	Conflict, fragility, dated data or low coverage

This prioritisation is a preliminary methodological triage, not a judgement on national institutions. It will have to be replaced by the DRS computed from an actual audit.

J.11.3 Special cases

- LDCs approaching graduation: retain the status and the composition of the panel at the starting point; produce a transition note after graduation.
- Small island States: give priority to data on public debt, the balance of payments, disasters and transfers; small numbers may increase the volatility of ratios.
- Countries in conflict: segment the regimes, document the areas not covered and avoid any continuous interpolation across an institutional break.
- Monetary unions: distinguish the common central bank's shock, regional policy and national vulnerabilities; do not treat the national rate as an autonomous instrument.
- Countries under restructuring: separate liquidity shock, default, relief, arrears, creditor losses and the effects of global monetary policy.

J.12 Governance, replication and publication

J.12.1 Pre-registration

Before any computation, the project publishes: the list of countries, the mechanisms, the counterfactuals, the g_m functions, the allocation rules, the DRS thresholds, the exclusions, the tests and the authorised products. Any modification is dated and justified.

J.12.2 Double coding and audit

- independent double coding of the contractual data and of the agents;
- inter-coder agreement and documented arbitration;
- automatic audit of units, signs, duplicates and dates;
- a replication team distinct from the production team;
- publication of null, negative and non-identifiable results.

J.12.3 Publication package

- codebook and data dictionary;
- raw sources or persistent links;
- extraction, cleaning and estimation scripts;
- register of primitive components;
- matrix of agents and transfers;
- scenarios and joint constraints;
- log of versions and decisions;
- replication report and limits by country.

J.13 Project organisation, schedule and deliverables

J.13.1 Minimum team

Table J13 — Minimum project team

Function	Indicative FTEs	Responsibility
Scientific direction	1	Coherence of the theory, trade-offs and final responsibility
Macroeconometrics	2–3	Shocks, panel, counterfactuals, tests
Sovereign debt and contracts	2	Registers, rates, maturities, restructurings
Data engineering	2–3	Pipelines, provenance, quality, versioning
Distributional economics	1–2	Agents, incidence, transfers
Regional / country researchers	4–8	National sources, languages, institutions
Replication and audit	2 independent	Reproduction and adversarial testing
Legal counsel	1–2	Bridge to S0–S6, without intervening in the measurement

The staffing figures are planning assumptions, not standards. Country teams may be pooled by region, but replication must remain institutionally separate.

J.13.2 Indicative schedule

Table J14 — Indicative project schedule

Phase	Indicative duration	Output
Phase 0	6 weeks	Pre-registration, architecture, dictionary and governance
Phase 1	3 months	Global audit of the 44 LDCs and computation of the DRS
Phase 2	4–6 months	Calibration panel and stress tests
Phase 3	6–9 months	L0–L2 passports for the 44 LDCs
Phase 4	6–12 months	In-depth L3 work in 8–12 partner countries
Phase 5	3 months	Replication, country consultation and publication

A public L0–L2 atlas can reasonably be targeted within 18 months. In-depth contractual and causal attribution for several countries requires rather more: 24 to 30 months, subject to access to national data.

J.13.3 Deliverables

- Global atlas of monetary exposures and incidences;
- 44 LDC passports with data score and stopping rules;
- 12 comparative calibration and stress studies;
- 8 to 12 L3 monographs with national partners;
- open database, code and documentation;
- methodological paper, panel paper and regional papers;
- institutional note for HuIB/GIRA specifying the authorised passage towards So–S6.

J.14 Limits, antithesis and rejection criteria

J.14.1 Main antithesis

The adverse hypothesis is that the exercise would measure above all the internal vulnerability of the LDCs and the weakness of their data, rather than the effect of foreign monetary policies. This objection is serious. The protocol answers it through pre-shock exposures, control countries, multiple counterfactuals, domestic interactions and the publication of non-attributable results. It does not eliminate it by the sophistication of the equations alone.

J.14.2 Possible biases

- transparency bias: the best-documented countries may appear more exposed;
- crisis bias: countries in difficulty accumulate domestic and external causes;
- survivorship bias: restructured debt or debt in arrears alters the observable flow;
- transportability bias: an elasticity estimated in Chile or South Africa is not automatically valid in Malawi or Tuvalu;
- currency bias: actual invoicing and hedging may differ from the currencies reported;
- distributive bias: an aggregate national gain may conceal uncompensated losers;
- political bias: the selection of shocks, counterfactuals or countries may be interpreted as a search for culpability.

J.14.3 Criteria for rejection or downgrading

- reject a national estimate if the bounds are so wide that they distinguish no scenario;
- downgrade a country to L1 if the contractual exposures cannot be reconstructed;
- do not consolidate the LDCs if the units, periods or components differ;
- abandon a common coefficient if panel heterogeneity dominates the average effect;
- refuse any pricing if the case file has not separately passed the So–S6 analysis and the legal basis.

Decision conclusion

The extension to the 44 LDCs is worth undertaking, provided it is designed as a graduated evidence infrastructure and not as a machine for producing 44 figures. Scientific success will be measured as much by the quality of the abstentions and of the documented missing data as by the number of published estimates.

Annex J.A — Minimum data dictionary

Table J15 — Minimum data dictionary (Annex J.A)

Block	Minimum variables	Priority sources
External public debt	Stock, service, currency, creditor, instrument, maturity, fixed/floating rate, index, reset dates, caps/floors, hedging	Ministry, debt office, IDS, QEDS
External private debt	Sector, instrument, maturity, currency, public guarantee	Central bank, QEDS, BIS

Block	Minimum variables	Priority sources
Domestic debt	Outstanding amounts, holders, maturity, rates, indexation, auctions	Treasury, central bank
Money and exchange rate	Policy rates, interbank rates, exchange rate, interventions, regime	Central banks, IMF IFS
Reserves	Outstanding amounts, yield, composition where available	Central bank, IMF
Trade	Exports/imports by product and partner, invoicing where available	Customs, UN Comtrade, IMF DOTS
Imported prices	Food, energy, subsidies, pass-through	Statistical institutes, central banks
Real economy	GDP, industry, tourism, investment, employment	Statistical institutes, WDI, UN Tourism, UNCTAD
Financial flows	FDI, portfolio, remittances, bank credit	Central banks, UNCTAD, World Bank
Agents and transfers	Budget, central bank dividends, subsidies, social transfers, household incidence	Finance ministries, central banks, household surveys
Source-jurisdiction shocks	Monetary surprises, curves, risk-on/risk-off, expectations	Source-jurisdiction central banks, BIS, market data

Annex J.A.1 — Minimum automatic checks

Before any national computation or panel aggregation, the pipeline must run and archive at least the following checks:

- consistency of units, currencies, dates, signs and price years;
- uniqueness of each primitive-component identifier and absence of cross-mechanism duplication;
- allocation weights summing to 1 for each component distributed across several channels;
- transferred shares less than or equal to the available gain and exact conservation of the total after transfer;
- automatic exclusion of stocks and memorandum items from all flow totals;
- presence of a versioned counterfactual for each quantified exposure;
- reconciliation of subtotals with the aggregates published by national and international sources;
- version fingerprint of the data, the code and the parameters, accompanied by a change log.

Any blocking anomaly produces a “not computable” status rather than an automatic imputation or a silent replacement by a proxy.

Annex J.B — Preliminary feasibility matrix for the 44 LDCs

How to read: IDS indicates the existence of a country page in the list displayed by the World Bank; QEDS indicates the last period reported in the availability file as at 30 April 2026; FCV reproduces the FY26 list. The wave is a provisional methodological prioritisation. “Potential L2” does not mean that an estimate is already valid.

Table J16 — Feasibility matrix for the 44 LDCs (Annex J.B)

Country	IDS	QEDS: latest period	FY26 FCV	Wave	Realistic public output	L3
Afghanistan	Yes	2021Q1	Conflict	C	L0–L1; L2 only if data are recovered	Partnership required
Angola	Yes	No file identified	Not classified	B	L1; L2 partial, depending on national sources	Partnership required
Bangladesh	Yes	2025Q4	Not classified	A	L1 + L2 likely after audit	Possible, partnership required
Benin	Yes	2020Q1	Not classified	B	L1; L2 partial, depending on national sources	Partnership required
Burkina Faso	Yes	2025Q4	Conflict	B	L1; L2 partial, depending on national sources	Partnership required
Burundi	Yes	No file identified	Fragility	C	L0–L1; L2 only if data are recovered	Partnership required
Cambodia	Yes	2025Q4	Not classified	A	L1 + L2 likely after audit	Possible, partnership required
Central African Republic	Yes	No file identified	Conflict	C	L0–L1; L2 only if data are recovered	Partnership required
Chad	Yes	No file identified	Fragility	C	L0–L1; L2 only if data are recovered	Partnership required
Comoros	Yes	No file identified	Fragility	C	L0–L1; L2 only if data are recovered	Partnership required
Democratic Republic of the Congo	Yes	No file identified	Conflict	C	L0–L1; L2 only if data are recovered	Partnership required
Djibouti	Yes	2025Q3	Not classified	A	L1 + L2 likely after audit	Possible, partnership required
Eritrea	Yes	No file identified	Fragility	C	L0–L1; L2 only if data are recovered	Partnership required
Ethiopia	Yes	2024Q4	Conflict	B	L1; L2 partial, depending on national sources	Partnership required
Gambia	Yes	No file identified	Not classified	B	L1; L2 partial, depending on national sources	Partnership required
Guinea	Yes	No file identified	Not classified	B	L1; L2 partial, depending on national sources	Partnership required
Guinea-Bissau	Yes	2019Q4	Fragility	C	L0–L1; L2 only if data are recovered	Partnership required
Haiti	Yes	No file identified	Conflict	C	L0–L1; L2 only if data are recovered	Partnership required
Kiribati	No*	2025Q4	Fragility	A	L1 + L2 likely after audit	Possible, partnership required
Lao People's Democratic Republic	Yes	No file identified	Not classified	B	L1; L2 partial, depending on national sources	Partnership required
Lesotho	Yes	No file identified	Not classified	B	L1; L2 partial, depending on national sources	Partnership required
Liberia	Yes	2025Q3	Not classified	A	L1 + L2 likely after audit	Possible, partnership required
Madagascar	Yes	2025Q4	Not classified	A	L1 + L2 likely after audit	Possible, partnership required
Malawi	Yes	No file identified	Not classified	B	L1; L2 partial, depending on national sources	Partnership required
Mali	Yes	No file identified	Conflict	C	L0–L1; L2 only if data are recovered	Partnership required
Mauritania	Yes	No file identified	Not classified	B	L1; L2 partial, depending on national sources	Partnership required
Mozambique	Yes	No file identified	Conflict	B	L1; L2 partial, depending on national sources	Partnership required

Country	IDS	QEDS: latest period	FY26 FCV	Wave	Realistic public output	L3
Myanmar	Yes	No file identified	Conflict	C	L0–L1; L2 only if data are recovered	Partnership required
Nepal	Yes	2024Q3	Not classified	A	L1 + L2 likely after audit	Possible, partnership required
Niger	Yes	No file identified	Conflict	C	L0–L1; L2 only if data are recovered	Partnership required
Rwanda	Yes	2024Q4	Not classified	A	L1 + L2 likely after audit	Possible, partnership required
Senegal	Yes	No file identified	Not classified	B	L1; L2 partial, depending on national sources	Partnership required
Sierra Leone	Yes	2024Q2	Not classified	A	L1 + L2 likely after audit	Possible, partnership required
Solomon Islands	Yes	2025Q4	Fragility	A	L1 + L2 likely after audit	Possible, partnership required
Somalia	Yes	No file identified	Conflict	C	L0–L1; L2 only if data are recovered	Partnership required
South Sudan	No*	No file identified	Conflict	C	L0–L1; L2 only if data are recovered	Partnership required
Sudan	Yes	No file identified	Conflict	C	L0–L1; L2 only if data are recovered	Partnership required
Timor-Leste	Yes	No file identified	Fragility	C	L0–L1; L2 only if data are recovered	Partnership required
Togo	Yes	No file identified	Not classified	B	L1; L2 partial, depending on national sources	Partnership required
Tuvalu	No*	No file identified	Fragility	C	L0–L1; L2 only if data are recovered	Partnership required
Uganda	Yes	2025Q4	Not classified	A	L1 + L2 likely after audit	Possible, partnership required
United Republic of Tanzania	Yes	Listed, dates not reported	Not classified	B	L1; L2 partial, depending on national sources	Partnership required
Yemen	Yes	2018Q4	Conflict	C	L0–L1; L2 only if data are recovered	Partnership required
Zambia	Yes	No file identified	Not classified	B	L1; L2 partial, depending on national sources	Partnership required

** Kiribati does not appear in the displayed IDS country list, but has a recent QEDS history. South Sudan and Tuvalu require further alternative sources or direct cooperation. The absence of an IDS page must not be interpreted as an absolute absence of data.*

Annex J.C — Country passport template

Table J17 — Country passport template (Annex J.C)

Heading	Mandatory content
1. Case file identity	Country, period, LDC status, exchange rate regime, monetary union, break events
2. Data score	Total DRS, sub-scores, confidential data and gaps
3. Pre-shock exposures	Debt by currency/rate/maturity, reserves, trade, credit, essential imports
4. Source-jurisdiction shocks	Fed, ECB, others, global factor, identification method
5. Counterfactuals	c0, cN, cR, cS and consistency of the trajectories
6. Primitive components	Identifiers, amounts, agents, sources and allocations

Heading	Mandatory content
7. Incidences by mechanism	Fixed/dynamic, units, bounds and uncertainties
8. Agents and offsets	Losses, gains, beneficiaries, demonstrated transfers
9. Authorised results	L0/L1/L2/L3, interpretations and stopping rules
10. Robustness	Placebos, pre-trends, scenarios, exclusions and replication
11. S0–S6 bridge	Elements transmitted to qualification; no automatic consequence
12. Publication	Data, code, version, authors, reviewers and freeze date

Verified sources and reference documents

[1] United Nations — UN-OHRLLS, “List of LDCs”. List of 44 countries consulted in July 2026.

[2] United Nations — LDC Portal, “Countries approaching graduation and already graduated”. Graduation timetable.

[3] World Bank, International Debt Statistics (IDS). Annual data on external debt stocks and flows for countries reporting to the Debtor Reporting System.

[4] World Bank, Quarterly External Debt Statistics (QEDS), GDDS and SDDS availability files, updated 30 April 2026.

[5] International Monetary Fund, “Standards for Data Dissemination”: e-GDDS, SDDS and SDDS Plus.

[6] World Bank, FY26 List of Fragile and Conflict-affected Situations.

[7] Yaiche, N. (2026), The Humanity Compact, Annex F — Formal accounting decomposition and bounded partial attribution framework, enhanced version.

[8] Yaiche, N. (2026), The Humanity Compact — The Global Accountability Chain, the present volume, version 2.2.

Note of caution. Country statuses, graduation timetables, data coverage and fragility classifications may change. The project register will have to time-stamp each extraction and retain earlier versions for reproducibility.

Annex K — The subordinate protocols

The subordinate instruments do not figure within the “+3”: they are no more than the modalities of implementation of the three principal instruments (§6.5). The present annex sets out a reasoned catalogue of them — for each, its object, its basis and its effect. None prevails over the Charter; all are revised according to its amendment procedure.

The constitutive statutes of the institutions. Each institution of the chain possesses a statute setting its mission, its composition, its powers and its negative mandates. Basis: the GAF. Effect: constitutive — any extension of power outside the statute is *ultra vires*.

The Carthage Model Law. A model text translating the obligations of the GAF into legislative provisions ready for transposition, with variants according to legal traditions. Basis: the GAF, in conjunction with the Charter. Effect: hortatory — it binds only once voted by a national legislature.

The data and interoperability protocol. Minimal dictionary of data, formats, provenance, quality, automatic controls and rules of sharing between institutions. Basis: the GAF; it operationalises the data protection commitment (§6.1). Effect: binding for the chain; technical condition of opposable measurement.

The mutual recognition and enforcement protocol. Recognition and enforcement of acts between adherents: regulatory equivalence, conditions, public policy exception, avenue of redress. Basis: the GAF (solidarity clause, §5.5). Effect: binding between adherents; it yields to the applicable commercial, fiscal and constitutional law.

The solidarity protocol. Solidarity funds and mechanisms: eligibility criteria, triggering, governance, control. Basis: the GAF. Effect: binding for adherent contributors and beneficiaries; suspendable and reversible according to the rules of withdrawal.

The crisis protocol. Operational states of exception, temporary powers, duration, control and extinction. Basis: the GAF. Effect: binding; it can never suspend dignity, non-discrimination and redress (non-derogable floors, §6.1).

The Court’s rules of procedure. Referral, standing to act, the taking of evidence, time limits, avenues of redress and enforcement of decisions. Basis: the statute of the Court and the GAF. Effect: binding; it conditions admissibility and guarantees a fair trial.

The pilots protocol. Entry criteria, evaluation method, success thresholds, conditions for extension or discontinuation (Annex B). Basis: the GAF. Effect: procedural — no large-scale deployment without an evaluated pilot.

The citizen participation guide. Sets out the four channels of the Call — adhesion, qualified petition, deliberation by sortition, transmission — their thresholds, time limits and guarantees (§6.3). Basis: the Call, incorporated by the GAF. Effect: it binds only to the extent that the GAF incorporates it.

This catalogue is not closed: other protocols may be adopted according to needs, on the standing condition that they subordinate themselves to the Charter and follow its amendment procedure.

Annex L — Prevention and alert protocol

Purpose. The Preventive Alert Protocol organises the acts of the cross-cutting prevention and alert loop. It determines the materiality thresholds, the structure of the prospective case file, the alert levels, the recipients, the disclosure regime, the response time limits, the conditions of anticipatory action, revision, expiry and ex post evaluation.

Obligation to respond. The competent recipient acknowledges receipt within the time limit provided and publishes or communicates, according to the applicable regime, a reasoned response indicating: the elements accepted or contested; the options examined; the measures taken or set aside; the constraints of mandate, of law or of capacity; and the date of reassessment. The obligation bears on the examination and the reasoning, not on the adoption of the recommended option.

Graduated disclosure. The protocol distinguishes internal monitoring, coordinated confidential alert, public alert and urgent alert. The choice takes account of the need for action, of the right to information, of data protection, of legitimate secrecy and of the risk that publication provokes a panic, a run or a self-fulfilling prophecy. Every restriction of disclosure is reasoned, controlled and accompanied by a deadline for re-examination.

Evaluation. Every alert is closed by a report which compares the scenarios with the outcomes and assesses the timing, the false positives, the false negatives, the actionability, the distributive effects and the effects proper to the communication. The aggregate performance of the alert authority is published periodically.

L.1 Alert levels

Table L1 — Alert levels of the preventive loop

Level	Status	Dissemination	Principal obligation
V0 — Watch	Insufficient or distant signal	Internal and documented	Update the data; no external response
V1 — Vigilance	Plausible risk, materiality not confirmed	Restricted technical recipients	Verify, complete, prepare options
V2 — Coordinated alert	Material risk and open window for action	Competent authorities and designated parties	Acknowledge receipt and respond with reasons
V3 — Systemic alert	High risk, interdependencies and proximity to thresholds	Dissemination according to protocol, possibly public	Coordination, anticipatory action, close review

L.2 Allocation of responsibilities

Table L2 — Institutional allocation of the preventive function

Step	Initial responsible party	Negative mandate	Output
Foresight and scenarios	HuLB or accredited network	Does not recommend the substantive decision	Versioned foresight case file
Qualification of the alert	GIRA or a separate chamber	Does not alter the data and does not price	Alert level and dissemination regime
Notification and response	GAF / procedural secretariat	Does not decide in the recipient's stead	Acknowledgement of receipt and reasoned response
Anticipatory action	Competent authorities	No new competence by the alert alone	Proportionate and legally authorised measures
Anticipatory financing	GSF or existing funders	Controls neither the model nor the threshold	Pre-arranged facility

Step	Initial responsible party	Negative mandate	Output
Review and challenge	Competent forum / Humanity Court depending on the vehicle	Does not substitute its own policy assessment for that of the decision-maker	Procedural review and legality
Ex post learning	Independent evaluator	Does not rewrite the initial scenarios	Performance report and revision

L.3 Monetary alert protocol (Monetary Cascade Early-Warning)

Impulse of the source jurisdiction. Policy rate and anticipated path; communication surprises; the long end of the curve; balance-sheet reduction; liquidity conditions; backstops; synchronisation with the other major source jurisdictions.

Exposure of the recipient countries. External debt and maturities; floating rate; currency; reserves; exchange rate regime; depth of markets; public and private financing needs; dependence on imports; bank capital and liquidity; structure of balance sheets; exposure of households and firms.

Second-round reactions. Defensive rise in rates; exchange rate intervention; credit restrictions; fiscal adjustment; reduction of public investment; asset sales; bank contraction; trade and regional transmission.

Buffers. Available reserves, fiscal room, access to safety nets, maturity of the debt, exchange-rate hedging, bank capacity, social protection arrangements and administrative capacity. The alert bears as much on the exhaustion of these buffers as on the initial impulse.

Content. The Cascade Risk Memorandum identifies: the jurisdictions, sectors and agents exposed; the dominant mechanisms among the fifteen; the interactions and thresholds; the horizon; the scenarios; the uncertainties; the possible benefits; the domestic responses available; the reactions liable to amplify the shock; and the mitigation options.

Recipients. The memorandum is addressed, according to the alert level, to the source and recipient central banks, to the ministries of finance, to the IMF, to the BIS, to the Financial Stability Board, to the multilateral banks and to the competent regional mechanisms. The affected parties receive an adapted version where financial confidentiality does not justify a temporary restriction.

Response. Each participant in the protocol states the elements it accepts or contests, the measures it envisages, the constraints of mandate and the date of re-examination. A central bank may maintain its decision; the loop then renders visible the trade-off, the mitigation measures and the residual risks, without concluding that there is fault.

A menu, never a prescription. According to the case file and the applicable law, the options may include: improvement of communication and of sequencing; technical coordination; activation or preparation of liquidity lines; targeted strengthening of reserves; prudent management of maturities; macroprudential measures; protection of essential expenditure; transition financing; assistance to exposed banks and firms; or the phasing of certain measures. Their presence in the memorandum creates no obligation to adopt them.

Proportionality. An option is set aside if it displaces more risk, favours a group without justification, durably weakens price or financial stability, or imposes an institutional cost higher than the avoidable damage. The measures are temporary, revisable and accompanied by an exit plan.

Evaluation. After the episode, an independent evaluator compares the memorandum with the outcomes and measures: accuracy of the timing; mechanisms correctly identified; false

positives and false negatives; responses taken; costs avoided or displaced; distributive effects; effects proper to the communication; and quality of the coordination.

Stopping rules. The protocol remains at level V0 or V1 if the mechanisms are not identifiable, if the data are too weak, if no window for action exists or if disclosure is liable to provoke greater damage. It never issues an amount of preventive attribution and does not use a prior alert as sufficient proof of responsibility after the shock.

L.4 Pilot in shadow mode

Shadow Preventive Pilot. For twelve to eighteen months, an independent team produces in real time prospective case files and alert levels on a chosen case, without making them binding or modifying decisions. The alerts are time-stamped and frozen. A second team deals with the same case using the existing monitoring arrangements. At the end of each episode, the results are compared.

Three arms. The pilot compares: A, the existing process; B, a light federated protocol linking existing bodies; C, the PAL distributed across HuIB, GIRA, GAF and GSF. The teams use the same data available at the freeze date and do not see the results of the other arms before closure.

Indicators. The indicators comprise: usefulness for the decision-maker; timeliness; accuracy; stability; interpretability; false positives and false negatives; actionability; cost; response burden; effect on markets and behaviours; access of the affected parties; quality of the reasoning; and capacity to learn.

Decision criterion. The PAL is retained only if it improves information and preparation by comparison with the existing process and with the light protocol, without producing a disproportionate burden, panic, capture or centralisation. Where guarantees are equivalent, the lightest architecture prevails.

Table L3 — Pre-registered indicators of the preventive pilot

Dimension	Indicator	Reading rule
Timing	Lead time of the alert relative to the event or the threshold	Too long a lead time without stability may be unusable
Accuracy	Rate of confirmed signals and of missed events	Report false positives and false negatives
Actionability	Share of alerts leading to an examination or to preparation	Do not confuse action with compliance
Procedural quality	Reasoned responses, counter-assessments, revisions	Measure the recipients' understanding
Reflexive effects	Volatility, runs, stigmatisation or strategic behaviour	Attribute effects to the communication where possible
Cost	Budget, data burden and response time	Compare the three arms
Equity	Access for low-capacity jurisdictions and for affected groups	Check coverage biases
Learning	Revisions of thresholds and models after evaluation	Prohibit silent rewriting

Annex M — Empirical protocol for the distributive tracing of global monetary easings

Incorporating a review of the international literature · state of sources: July 2026.

Status. Empirical protocol. It produces no causal result and does not conclude that monetary easing enriched one group at the expense of another. It specifies how such a question may be posed in a refutable manner, in a field where the established literature is divided and where the cross-border dimension remains largely unexplored.

M.0 State of the international literature

This section is new and conditions all that follows. The distributive question of quantitative easing is one of the most heavily worked questions in the monetary macroeconomics of the last decade. A protocol that presented it as new would be set aside at once; a protocol that positions itself within a documented disagreement may, for its part, bring something.

M.0.1 Three positions, and a disagreement over the sign

Egalitarian or neutral position. A substantial part of the work, mostly produced by central banks and international financial institutions, concludes that easing reduces income inequality or has no notable effect. The mechanism invoked is the labour-income heterogeneity channel: easing lowers unemployment, and the poorest households find employment again, which compresses the distribution. The work of the European Central Bank based on household wealth surveys finds this channel dominant and the effect on wealth inequality negligible. Heterogeneous-agent models and analyses using aggregate data often converge in the same direction, with weak and transitory net effects, dissipating within a few quarters.

Inegalitarian position. Other work concludes the opposite. On matched Danish administrative data, the asset valuation gains induced by easing accrue far more to households endowed with wealth and greatly exceed the wage gains of households of modest means. A panel study of forty-nine countries between 1999 and 2019, mobilising local projections and augmented inverse probability weighting to treat endogeneity, concludes that there is a net relationship between asset purchase programmes and a rise in inequality.

Non-linear position — the most instructive. Recent central bank work partially reconciles the two camps through a pattern of non-linearity: unconventional policies benefited all households, reduced inequality within the bottom ninety per cent through the fall in unemployment, and simultaneously widened the gap between the top decile and the rest through the rise in profits and in equity prices. The same literature indicates that forward guidance amplifies both aggregate and distributive effects.

Direct consequence for the protocol. A single aggregate indicator — a Gini coefficient, an interdecile ratio — cannot settle this debate, since the two effects operate in opposite directions on different segments of the distribution. The protocol must therefore measure by rank and by channel, and not by synthetic index. An annex publishing a single inequality figure would reproduce exactly the error that renders the current literature irreconcilable with itself.

M.0.2 The alternative-policy counterfactual

The most disturbing result of the benchmarking exercise is the following: according to recent central bank work, had the policy rate not been constrained by its lower bound, a conventional rate policy would have produced more unfavourable distributive effects than quantitative easing. In other words, comparing easing with the absence of easing is not the right comparison.

Rule. The protocol requires at least two counterfactuals of a different nature. The first is the absence of easing, as a polar reference. The second is the available alternative policy: an

unconstrained rate path, or any instrument that the central bank could actually have mobilised. To publish the first without the second is misleading, because the reader will infer from it a judgement on the instrument whereas the calculation bears only on its existence. This requirement is a blocking one: without a second counterfactual, no distributive conclusion is published.

M.0.3 Selection of the reference works

Table M0 — Field benchmarks, by method family and by conclusion

Family	Data and method	Dominant conclusion	Use for the protocol
Household wealth surveys, euro area	HFCS data, decomposition by channel	Income compression through employment; negligible effect on wealth	Provides the mandatory employment channel and the income/wealth separation
Matched administrative data, Denmark	Individual tax and wealth registers	Valuation gains concentrated at the top, exceeding wage gains at the bottom	Provides the granularity benchmark against which any aggregate result must be compared
International panel, 49 countries	Local projections, augmented inverse-probability weighting	Net relationship between purchase programmes and rising inequality	Provides the panel design and the treatment of the endogeneity of the decision to ease
Heterogeneous-agent models	HANK, two-group DSGE	Weak, transitory effects, often equalising beyond the short term	Provides the discipline on the horizon: an effect that dissipates within eight quarters is not a cycle effect
Recent central bank work	Structural model with heterogeneity, United States	Non-linearity: equalisation within the bottom 90%, widening with the top decile	Provides the reporting structure by rank, and the alternative-policy counterfactual
Exit from easing	State dependence, household heterogeneity	The effects of unwinding are not symmetrical to those of the expansion	Grounds the full-cycle module and prohibits the presumption of symmetry

Note of caution. This table summarises dominant orientations, not established truths; each family contains dissenting work. The protocol requires that the review be redone, systematised and published with its inclusion criteria before any estimation — a narrative review does not suffice to found a pre-registration.

M.0.4 The real gap, and the possible contribution

The benchmarking exercise reveals a striking asymmetry. The distributive literature on easing is almost entirely domestic: United States, euro area, United Kingdom, Denmark, with a few panels of advanced countries. The cross-border literature, for its part, bears on macroeconomic and financial effects — global financial cycle, bank risk-taking channel, capital flows — but very rarely on the question of who, in the recipient countries, captures the gains of an easing decided elsewhere and who bears its reversal.

What justifies this annex. The possible contribution is not to settle a domestic debate already densely worked over and where the protocol would bring neither new data nor superior identification. It is to carry the distributive question to where it has not been posed: to the countries that undergo easing and its unwinding without taking part in the decision, and for which the wealth surveys and the administrative registers that underpin the existing literature do not exist. This is consistent with the subject of the present work, and it is the only space where the annex brings a value that is not already available elsewhere.

This reorientation has a consequence for the scope. The protocol does not seek to establish the domestic distributive effect of easing in the source jurisdictions: it borrows it from the literature, with its disagreements, and uses it as an input. Its own object is the chain that runs

from the monetary operation to the final beneficiary situated outside the source jurisdiction, and the asymmetric treatment of gains and of reversals between the two.

M.1 What “100 units injected” means

The common formulation of a monetary injection is useful for communicating and insufficient for attributing a benefit. Asset purchases increase the assets of the central bank and, as the counterpart, its liabilities, principally the reserves of depository institutions. Public data make it possible to observe the securities held, the operations and the reserves; they do not deliver the identity of the final economic beneficiary.

Five normalisation bases are possible and do not measure the same thing: announced purchases, gross settled purchases, net settled purchases, reserves created, and identified monetary surprise. The protocol retains net settled purchases as the principal base, gross purchases as a first-level account, reserves as a coherence check, the announcement for announcement analysis alone, and the identified surprise as a complementary econometric base. Every “per 100” presentation declares its base; mixing two bases in the same table is an error of account, not an approximation.

Communication caveat. The protocol does not validate the statement that “one hundred units were injected and x of them went to such and such a group”. A purchase operation is not a disbursement: it is an exchange of assets at market prices, whose distributive effect passes through prices, incomes and employment, not through a direct distribution. The formulation “distributed injection” must be discarded from the body of the present work wherever it appears.

M.2 Non-additive registers and measurement by rank

Four registers coexist and are never added together: the operation and its settlement; asset valuation and financial income; the cost of financing, credit and balance sheets; macroeconomic effects, including employment and labour income. The fourth register is the one that the central bank literature finds dominant for income inequality; its omission would produce a regressive result by construction and not by measurement.

Measurement by rank, not by index. Results are reported by quantile and by functional group — asset holders, borrowers, wage earners, pensioners — and never consolidated into a single index. The reporting structure must make it possible to distinguish an equalising effect within the bottom ninety per cent from a widening effect vis-à-vis the top decile, since that is the pattern which the recent literature identifies and which an aggregate index would erase.

Income and wealth kept separate. The two dimensions behave differently depending on the study, and their conflation explains an important part of the contradictory conclusions of the field. No result combines the two in a single magnitude.

M.3 Identification

The shocks must separate policy proper, the information revealed by the central bank about the state of the economy, and the reaction to the crisis. This separation is identical to that required by the shock vector protocol, and the two annexes share the same register of shocks in order to avoid two divergent measurements of the same event.

The protocol retains a panel design with local projections, predetermined exposures, and explicit treatment of the endogeneity of the decision to ease — central banks ease when the economy deteriorates, so that a naive comparison would confound the effect of the policy with that of the recession which motivated it. The recent international panel literature proposes weighting methods suited to this problem; they are taken up here as the reference specification rather than reinvented.

M.4 The full cycle and asymmetry

The most pertinent question for the present work is not the effect of easing taken in isolation, but the symmetry of the cycle: are the agents who benefit from the expansion those who bear the tightening? The literature on the unwinding of asset purchases indicates a state dependence and a heterogeneity between households which forbid presuming symmetry. This attention to the distribution between agents extends the analysis of the redistribution channel of monetary policy (Auclert, 2019).

Rule of analysis. The gains of expansion and the costs of reversal are reported separately, by initial beneficiary and by date, and are never set off against one another without a documented transfer. A presumed intertemporal offsetting would amount to assuming precisely what the analysis must establish. This rule is identical to the one that governs the treatment of counterparties in the measurement layer.

M.5 Stopping rules

Missing condition	Prohibited conclusion
Second alternative-policy counterfactual absent	No distributive conclusion: the comparison would bear on the existence of the instrument and not on its choice
Employment channel not measured	No income inequality result
Income and wealth conflated	No aggregate result
Results reported by a single index	No conclusion on the distributive pattern
Endogeneity of the decision to ease not addressed	No causal interpretation
Horizon shorter than the documented dissipation horizon	No cycle conclusion
Systematic review not published before estimation	No valid pre-registration
Normalisation base not declared	No “per 100” table

M.6 Antithesis and rejection criteria

The strongest antithesis is that this annex adds a layer of complexity to a question already densely treated, without new data or superior identification, and that its most likely conclusion is to recover the existing results with wider uncertainty bands. The objection is well founded for the domestic scope, and the protocol accepts it: it claims no contribution of its own there.

It is less so for the cross-border scope, where the question has not been posed in distributive terms. The protocol must nevertheless be rejected, or strongly reduced, in four cases: if the data of the recipient countries permit no breakdown by rank, in which case it is limited to the register of the operation and of the cost of financing; if the cross-border results prove entirely derivable from the domestic results already published; if the asymmetry of the cycle is not detectable with the available horizons; or if the protocol produces no result capable of contradicting the initial intuition of the present work, which would signal an arrangement built to confirm.

M.7 Graduated compliance

	Configuration M — pilot	Configuration F — regime
Counterfactuals	Two, including the alternative policy	Three, with an explicit generating model
Breakdown	Quintiles and three functional groups	Deciles, top percentile, detailed functional groups
Employment channel	Measured at aggregate level	Measured by rank, with employment transitions
Scope	One recipient country, registers 1 and 3	Panel of recipients, four registers
Outputs	Measurement, publication, scenarios	Transmissible to qualification after replication

M.8 What this annex brings to the present work

It brings three things, and one must be precise about what it does not bring. It brings first a discipline of language: it forbids the formulation of a distributed injection, which is technically false and which exposes the document to immediate refutation by any monetary economist. It brings next the symmetry of the cycle, a question to which the measurement layer is already devoted for the tightening and which remains incomplete so long as easing is not treated according to the same rules. It brings finally a displacement of the distributive question towards the recipient countries, where it has not been posed.

It brings no conclusion on the domestic effect of easing in the source jurisdictions, and must not be presented as such. On this ground, the present work borrows from a divided literature, and the most solid way of citing it is to cite its division rather than the camp that suits the argument.

Rule of interpretation. This annex is situated in a field where considerable work reaches opposing conclusions on the sign of the effect. Its value lies not in its settling that disagreement — it will not settle it — but in its refusing to take advantage of it. A protocol which, in such a field, systematically produced the result expected by its author should be held to be defective before being held to be convincing.

Annex N — Carthage Charter

This annex reproduces the Carthage Charter in full — the first of the three instruments of the Humanity Compact (see Table 14 and §6.1). The Global Accountability Framework draws from it the enforceable obligations; the Call of Carthage carries its legitimacy. The status note below specifies its legal scope. The text is reproduced as it stands, with no binding force of its own in the present work.

Draft founding text for global accountability grounded in rights, evidence, prevention and redress

Consolidated draft V2 — incorporating the anchoring in the Charter of the United Nations, the definitions and the clause of compatibility with international law.

Status	Consultation draft. Institutional design text; not yet negotiated, ratified or legally validated.
Function	Normative foundation of the Humanity Compact, superior to the Global Accountability Framework in the internal ordering of the architecture.
Scope	Binding only to the extent of a consent, an incorporation or a valid legal instrument.
Architecture	Global Accountability Chain and cross-cutting prevention and alert loop; institutional hosting arrangements left open.
International anchoring	The Charter is placed under the Charter of the United Nations and international law; in the event of conflict, obligations arising from the Charter of the United Nations prevail (article 16).
Author of the draft	Nizar Yaiche — July 2026.

“The humanity of an institution is measured less by what it promises than by what it prevents its own power from forgetting.”

Note on the status and use of the text

This Charter is proposed as the founding text of the Humanity Compact. It sets out the principles, rights, guarantees and limits with which any instantiation of the Global Accountability Chain and of the cross-cutting loop of prevention and alert must comply. It creates, of itself, no tax, no universal jurisdiction, no financial obligation and no supranational authority.

Its legal effects depend on the form adopted: a constitutive charter of participating organisations; a model law incorporated by a jurisdiction; a contract or pilot protocol; or, in time, a multilateral convention. In every case, jurisdiction proceeds from consent and from the applicable law. The Charter claims an internal primacy over the bodies created under its authority; it claims no primacy over the Charter of the United Nations, national constitutions, existing international obligations or the rights of third parties.

Rule of interpretation: the Charter sets the normative foundation. The Global Accountability Framework organises the operational obligations. The Call of Carthage opens participation and agenda-setting. None of these instruments is to be confused with the other two.
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Graduated legal architecture

Form	Adopting party	Effect	Limit
Founding charter	Institutions and pilot participants	Internal rules, mandates, rights and guarantees	Binds only its adherents

Form	Adopting party	Effect	Limit
Carthage Model Law	Parliament or competent national authority	Incorporation into domestic law	Depends on the constitutional procedure
Carthage Convention	States and empowered organisations	Consented treaty obligations	Subject to the law of treaties, to reservations and to withdrawal
Declaration of adherence	Institutions, local authorities, companies or civil organisations	Political or contractual commitment according to the text signed	No effect beyond the instrument of adherence

DRAFT CHARTER

Preamble

We, the Parties acceding to this Charter,

Noting that public and private decisions, monetary and financial policies, value chains, digital infrastructures, technologies and environmental risks produce effects beyond the borders and the generations that take part in their formation;

Recognising that a decision may be lawful, rational and consistent with a domestic mandate while producing effects that are not fully integrated into that mandate, and that the existence of harm does not suffice, in itself, to establish exclusive causation, fault or a claim;

Observing that the international system is dense in norms, data, institutions and financing, but that evidence, uncertainty, the statement of reasons and the avenues of correction are often lost between the measurement of an effect, its qualification, the decision on a consequence, its financing and redress;

Affirming that dignity, non-discrimination, participation, the statement of reasons, data protection and redress cannot be entrusted to the conscience of the decision-maker alone, but must be inscribed in the structure of the decision;

Recognising the need to anticipate reasonably foreseeable cascade risks without transferring to the forecaster the power to decide or converting uncertainty into false certainty;

Determined to organise a functional, relational and procedural accountability, compatible with sovereignty, consent, subsidiarity, institutional pluralism and the applicable law;

Reaffirming their attachment to the purposes and principles of the Charter of the United Nations, in particular sovereign equality, the peaceful settlement of disputes and the international cooperation provided for in Article 1, paragraph 3, and in Articles 55 and 56 thereof, and situating themselves in the continuity of “We the peoples of the United Nations”;

Guided by the Universal Declaration of Human Rights and by the International Covenants of 1966 on Civil and Political Rights and on Economic, Social and Cultural Rights;

Recalling, by way of inspiration and without prejudging the state of positive law, the principle of the prevention of transboundary harm and the obligation of due diligence, as expressed in particular by the 1992 Rio Declaration and by the 2001 work of the International Law Commission;

Taking note of the 2030 Agenda for Sustainable Development and of the 2025 Compromiso de Sevilla, and placing themselves in the lineage of the Monterrey, Doha, Addis Ababa and Sevilla conferences on financing for development;

Adopt this Charter as the normative foundation of the Humanity Compact.

Title I — Purpose, scope and institutional doctrine

Article 1 — Purpose of the Charter

1. This Charter establishes the foundation of rights, guarantees, decision principles and limits applicable to the institutions, networks, protocols and pilots of the Humanity Compact.
2. It seeks to render cross-border and intergenerational effects visible, reasoned, proportionate, foreseeable where reasonably possible and contestable before an identifiable forum.
3. It creates no automatic consequence. The measurement of an effect entails neither fault, nor pricing, nor financing, nor sanction, nor jurisdiction, absent a distinct basis.

Article 2 — Definitions

1. For the purposes of this Charter:

— “cross-border or intergenerational effect” means a material, financial, social or environmental consequence of a decision or of a policy, borne beyond the jurisdiction or the generation that adopted it;

— “incidence” means an observed or measurable variation attached in accounting terms to an identified transmission mechanism, prior to any conclusion as to causation, fault or claim;

— “bounded partial attribution” means attribution expressed in published ranges and restrictions, accompanied by stopping rules where identification is not tenable;

— “alert” means a reasoned notification of a reasonably foreseeable cascade risk, describing scenarios, thresholds, uncertainties and options, having neither the force of an order nor that of a presumption of fault;

— “case file” means the versioned set of data, assumptions, models, uncertainties, objections, dissents, decisions and signatures transmitted between the functions;

— “function” means an institutional capacity necessary to the chain — to measure, qualify, price where applicable, adjust, finance, certify, adjudicate — independent of where it is housed;

— “affected party” means a person or entity materially undergoing, or liable materially to undergo, an effect or a consequence falling within this Charter;

— “redress forum” means an independent body, wherever it is housed, competent to review the jurisdiction, the procedure and the guarantees of an act of the architecture.

2. These definitions are without prejudice to more protective definitions under the applicable law and are further specified, where appropriate, by the Global Accountability Framework.

Article 3 — Two-loop architecture

1. The Global Accountability Chain organises the treatment of an observed or sufficiently measurable effect, from evidence to redress.
2. The Preventive Accountability Loop organises anticipation, the detection of a cascade risk, the qualification of the alert, its notification, the reasoned response, any anticipatory action and ex post evaluation.
3. The preventive loop is cross-cutting. It does not constitute a mandatory eighth institution and confers no original power of decision on the producer or the qualifier of the alert. Its institutional

configuration remains a hypothesis subject to evaluation by pilot, compared with a federated solution based on existing bodies.

4. The two loops share a versioned case file preserving the data, assumptions, models, uncertainties, dissents, decisions and revisions.

Article 3 bis — Source of obligations and non-presumption of constraint

1. No provision of this instrument, no output produced by a function of the chain and no algorithmic or institutional qualification creates, of itself, an obligation with respect to a State, an organisation, an undertaking or a person not legally bound by it. Any binding effect shall expressly indicate its legal vehicle, its addressee, its scope, its date of applicability, the forum of review and the enforcement regime.

2. Participation in a reference standard, in a consultation, in a public register, in a simulation or in a pilot in shadow mode amounts neither to an acknowledgement of responsibility, nor to consent to a jurisdiction, nor to acceptance of a tax, a compensation or a border adjustment. Binding effects arise only from consent, from incorporation or from a jurisdiction validly established under the applicable law.

3. The qualification of an act as binding prejudices neither its justiciability nor its enforceability. These two properties are identified separately in the legal passport of the case file.

Title II — Rights, guarantees and participation

Article 4 — The human person at the centre, dignity and non-discrimination

1. Every function, method and consequence shall be assessed in the light of its effects on the dignity, the rights, the capabilities and the living conditions of the persons and populations affected.

2. No person or population may be treated as a mere means in the service of an institutional, financial, technological or political objective.

3. No distinction based in particular on origin, nationality, sex, age, disability, economic situation, migration status, administrative capacity or bargaining power may reduce the guarantees owed, save for a differentiation that is objective, necessary, proportionate and intended to correct a relevant inequality.

4. Distributive impacts shall be identified by category of agent before any aggregation liable to render them invisible.

Article 5 — Information, participation and independent counter-assessment

1. Persons and entities liable to be materially affected shall receive, in good time, intelligible information on the subject matter, the methods, the principal assumptions, the uncertainties and the consequences contemplated.

2. They shall have an effective opportunity to submit observations, data, a counter-assessment and objections before any substantial consequence, save in cases of strictly defined urgency followed by prompt review.

3. Where an asymmetry of capacity compromises equality of participation, an independent mechanism may finance the counter-assessment, without that financing purchasing assent or controlling the content of the analysis.

4. Participation replaces neither constitutional competences nor the applicable legal procedures; it informs them and renders them contestable.

Article 6 — Data protection and digital integrity

1. All data relating to persons or to groups shall be processed under identifiable responsibility, in accordance with the principles of lawfulness, purpose, minimisation, security, accuracy and limited retention period, and with the rights of access, of rectification and, where the law so permits, of erasure.

2. Transparency does not require the publication of all raw data. It requires that the affected parties and the forum of review be able to know and to contest the reasons, the method and the scope of the decision.

3. Legitimate secrets, security, financial stability and privacy may justify restricted access, secure data rooms, ranges or independent audits; they cannot justify absolute opacity.

4. Digital systems that produce or transform evidence shall be documented, versioned, auditable and subject to identifiable human responsibility.

Article 7 — Statement of reasons, transparency and evidential statuses

1. No official alert, qualification, consequence, allocation or redress decision shall be issued without a statement of the reasons, the data used, the assumptions, the uncertainty, the relevant dissents and the avenues of correction.

2. Verifiable facts, programme results, simulations, design proposals, normative commitments and legal interpretations shall be identified as such and made subject to distinct burdens of proof.

3. Any substantial modification of a method, a model, a threshold or a definition shall be traced, dated and reasoned. It shall not apply retroactively to the detriment of a party, save on an express legal basis and with a reinforced guarantee.

4. Insufficiency of evidence blocks the consequence without rendering the effect or the grievance non-existent.

Article 8 — Redress and the right to review

1. Any person or entity materially affected by an act of the architecture may contest the jurisdiction, the procedure, the evidence, the qualification, the proportionality, the dissemination of an alert, a conflict of interests or the absence of a statement of reasons before an independent forum.

2. The redress forum may be administrative, contractual, arbitral, national, regional or specialised, according to the applicable law. The redress function is necessary; its institutional housing is not presumed to be unique.

3. The forum reviews legality, procedure and compliance with the guarantees. It does not substitute itself for the scientific or political function, save where the law confers that competence upon it.

4. Remedies shall favour, as the case may be, correction, remittal, suspension, a fresh statement of reasons, temporal limitation and appropriate reparation.

Title III — Discipline of evidence, prevention and consequence

Article 9 — Measurement, attribution and preservation of uncertainty

1. Effects shall be measured in accordance with methods defined in advance, open to criticism and proportionate to the risk of the decision.
2. Measurement shall distinguish the observed incidence, the counterfactual, the transmission mechanisms, internal vulnerabilities, offsetting benefits, transfers, net loss, equity and legal breach.
3. Where point identification is not tenable, attribution shall be partial, bounded or suspended. The bounds, restrictions and stopping rules shall be published.
4. Non-additive components shall be preserved separately. No register of flows, of stocks, of welfare or of distribution shall be added to another without explicit methodological justification.

Article 10 — Informed prevention and contestable alert

1. Where a material risk of cross-border or intergenerational harm is reasonably foreseeable, where its mechanisms are plausible and where a window for action remains, the competent institutions shall organise its anticipation, its detection, its qualification and its notification.
2. The alert shall describe the scenarios, exposures, horizons, thresholds, uncertainties, competing models, distributive effects and mitigation options. It constitutes neither an order, nor a presumption of fault, nor a financial consequence.
3. The competent addressee shall acknowledge receipt and give reasons for the manner in which the alert was examined, the elements accepted or contested, the options retained or set aside and the date of the review.
4. The dissemination regime shall take account of the right to information and of the risk of panic, of a run, of stigmatisation or of self-fulfilling prophecy. Any restriction shall be reasoned, subject to review and re-examined.
5. Each alert shall be the subject of an ex post evaluation bearing in particular on timing, false positives, false negatives, actionability and the effects proper to the communication.

Article 11 — Proportionality and determination of the admissible consequence

1. The passage from measurement to a consequence is never presumed. The correct outcome may be closure, monitoring, a recommendation, a capacity measure, prevention, solidarity by consent, an efficiency correction or a legal remedy.
2. Every consequence must be founded on a competence, sufficient evidence, a legitimate purpose and a statement of reasons. It must be necessary, suitable, the least restrictive among the solutions reasonably available and reversible where an irreversible measure is not indispensable.
3. An inequity, a vulnerability, a global loss and a violation of the law are not interchangeable. Solidarity does not amount to an acknowledgement of responsibility; responsibility does not automatically amount to pricing.
4. Pricing, adjustment, exclusion or sanction may not be decided on the sole basis of an aggregate rating or of a preventive scenario.

Article 12 — Sustainability, future generations and non-compensable floors

1. Decisions shall take account of deferred, cumulative and irreversible effects on future generations, ecosystems, public capacities and essential infrastructures.
2. The interests of future generations shall be represented by identifiable methods, bodies or procedures, without artificially attributing to them a single preference.

3. Non-derogable prohibitions and non-compensable exclusions prevail over the pursuit of efficiency. The minimum guarantees of information, of hearing, of statement of reasons, of counter-assessment and of redress may not be set aside by a mere cost-benefit calculation.
4. Conflicts between rights, guarantees, principles and objectives shall be identified explicitly. Among the lawful solutions, the least restrictive, the most reversible and the best reasoned solution shall be preferred.

Title IV — Powers, institutions and artificial intelligence

Article 13 — Functions before institutions, negative mandates and interfaces

1. Functions shall be defined before the choice of where they are housed. An identifiable and accountable institutional capacity is required for each necessary function; a distinct organisation is required only where the separation affords a demonstrable protection.
2. Each duty-holder is defined as much by what it may do as by what is forbidden to it. The measurer neither qualifies nor determines the consequence; the qualifier does not modify the evidence; the funder does not control the base; the certifier does not decide by algorithm; the redress forum does not govern in the place of the decision-makers.
3. Each interface shall transmit a case file comprising the provenance, the assumptions, the uncertainty, the objections, the authorised and forbidden decisions, the responsible signature, the period of validity and the condition of return to the preceding link.
4. Where guarantees are equivalent, the lightest architecture prevails. Functions may be merged, federated or housed by existing institutions where conflicts of interest and risks of error remain contained.

Article 14 — Independence, checks and balances, conflicts of interest and financing

1. No institution shall be judge in its own cause, above the Charter or exempt from the review it applies to others.
2. Appointments, removals, budgets, incompatibilities, declarations of interest, recusals, audits and reporting channels shall be organised so as to limit political, financial, technological and informational capture.
3. The bodies of measurement, of qualification and of redress shall not be remunerated by reference to the number of ratings, prices, sanctions or case files activated.
4. Revenues generated by a consequence shall not directly finance the body that produced the measurement or the qualification on which it is founded, save through an independent mutualised mechanism and an audited firewall.
5. The founding institutions and the principal funders shall submit to the same obligations of measurement, of transparency and of redress as the other participants.

Article 15 — Artificial intelligence, resilience and crisis

1. Artificial intelligence may assist collection, analysis, comparison, anomaly detection, simulation and documentation. It receives no original power of decision.
2. No official alert, financial consequence, mandatory allocation, final certification or judicial decision may be triggered without identifiable human validation and a statement of reasons entered in the case file.

3. Critical systems shall use, where proportionate, several models, independent audits, adversarial tests, containment mechanisms and degraded-operation plans without artificial intelligence.
4. In a crisis situation, accelerated procedures shall rest on fixed mandates, pre-established thresholds, a limited duration, automatic expiry and review. Urgency creates no permanent powers.
5. Dignity, non-discrimination, minimum access to redress and the prohibition of a fully automated high-impact decision constitute floors that may not be suspended by the mere invocation of urgency.

Title V — International legal order, consent and evolution

Article 16 — Relations with the Charter of the United Nations and international law

1. Nothing in this Charter shall affect the rights and obligations of acceding parties arising under the Charter of the United Nations. In the event of a conflict between the commitments undertaken under this Charter and the obligations arising under the Charter of the United Nations, the latter shall prevail, in accordance with Article 103 thereof.
2. This Charter shall be interpreted and applied in harmony with the applicable international law, in particular the law of treaties, human rights, immunities and the law of international organisations. It creates no new obligation borne by non-acceding States or third parties.
3. The architecture complements existing organisations and regimes — the United Nations, specialised agencies, international financial institutions, regional agreements — cooperates with them and seeks recognition of equivalence. It constitutes neither a competing order nor a means of circumventing the competent fora.
4. Invocation of this Charter may justify neither a measure contrary to a peremptory norm of general international law, nor the disregard of a binding decision of the Security Council.

Article 17 — Reciprocity, consent, non-substitution and revision

1. This Charter binds only those Parties that consent to it, and to the extent of the legal, contractual or institutional instrument by which they incorporate it.
2. It replaces neither national constitutions nor existing international obligations, applies subject to Article 16, does not affect the rights of third parties and claims no external primacy.
3. The Parties shall promote subsidiarity, recognition of equivalence and assistance to low-capacity jurisdictions. They shall avoid the architecture being applied solely to the least powerful actors.
4. Withdrawal is possible on conditions published in advance. The obligations of confidentiality, of preservation of evidence, of data protection and of the handling of pending redress proceedings shall survive withdrawal where the applicable law so permits.
5. Every amendment shall be published, reasoned, versioned and made subject to the same guarantees of participation, of competence, of evidence and of redress. Amendments reducing a non-derogable floor or extending powers require a reinforced procedure.
6. A periodic review shall assess the need to maintain, simplify, merge or abolish the functions and institutions. The Charter must be able to recommend that no new institution be created or that an existing institution be dissolved.

ADOPTION CLAUSE

By acceding to this Charter, the signatory Party agrees to apply its principles and guarantees within the field defined by its instrument of accession, to publish the limits of that commitment and to take part in its independent evaluation. Accession amounts neither to automatic acceptance of all the candidate institutions of the Humanity Compact, nor to recognition of any future consequence, nor to a waiver of the applicable constitutional or jurisdictional competences.

Signatory party	
Capacity and authority of the signatory	
Instrument of adherence or of incorporation	
Material and territorial scope	
Date and signature	

Design and interpretation note

This note accompanies the draft; it does not form part of the normative text, save by express incorporation.
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1. What the Charter does

It transforms the principles of the present work into institutional obligations formulated in a verifiable manner.

It incorporates the three completenesses, the interfaces, the negative mandates, the stopping rules, non-automaticity and prevention.

It protects institutional flexibility: the function is mandatory where it is necessary; a new organisation is not.

It distinguishes rights, procedural guarantees, decision principles and normative objectives.

It makes the openness of evidence, the statement of reasons, counter-assessment and redress structural requirements.

2. What the Charter does not do

It does not create a global tax, a universal authority or a compulsory jurisdiction for non-acceding parties.

It does not turn every externality into fault or every inequity into compensation.

It does not make the 7+3 mandatory and does not impose seven distinct organisations.

It does not give HuIB, GIRA or an AI the power to set substantive policy.

It does not claim that a general legal duty to prevent monetary spillovers already exists.

3. Relationship between the three instruments

Instrument	Function	Principal effect
Carthage Charter	Norms, rights, guarantees and limits	Internal constitution of the architecture according to the form of adoption
Global Accountability Framework	Mandates, interfaces, data, audits, procedures and withdrawal	Consented operational obligations
Call of Carthage	Participation, qualified petition, deliberation and agenda-setting	Advisory effect, save by incorporation into the GAF

4. Correspondence with the fifteen earlier commitments

Prior commitment	Treatment in the consolidated draft
1. The human person at the centre	Articles 1 and 4
2. Enforceable measurement	Article 9
3. Dignity and non-discrimination	Article 4
4. Participation	Article 5
5. Proportionality	Article 11
6. Sustainability and future generations	Article 12
7. Data protection	Article 6
8. Statement of reasons	Article 7
9. Redress	Article 8
10. Non-derogable floors	Articles 12 and 15
11. Reciprocity	Articles 14 and 17
12. Checks and balances	Articles 8 and 14
13. Jurisdiction by consent	Article 17
14. Non-substitution and continuity	Article 17
15. Revision and living text	Article 17
New cross-cutting commitment: informed prevention	Articles 3 and 10

5. Points to be submitted for external legal validation

The exact list of non-derogable floors and their legal basis under each form of adoption.

The scope of the right to erasure where obligations to preserve evidence exist.

The standards of proof applicable to alerts, provisional measures and financial consequences.

The compatibility of mutual recognition, border adjustment and solidarity arrangements with trade law, tax law and the law of immunities.

The regime of reservations, of withdrawal, of the survival of obligations and of the enforcement of decisions.

The representation of affected populations and of future generations without creating indefinite competences.

The distinction between administrative redress, arbitration, existing jurisdictions and a possible specialised jurisdiction.

The precise articulation with Article 103 of the Charter of the United Nations and with binding decisions of the Security Council, under each form of adoption.

Annex O — Global Accountability Framework (GAF)

This annex reproduces the Global Accountability Framework in full — the second of the three instruments of the Humanity Compact (see Table 14 and §6.2). Where the Carthage Charter (Annex N) sets out the principles, the GAF draws from it the enforceable operational obligations: positive and negative mandates, interfaces, procedures of the two loops. The text is reproduced as it stands, with no binding force of its own within the present work.

Operational framework for the Global Accountability Chain and for the cross-cutting prevention and alert loop

Consolidated draft framework agreement, pilot protocol and reference standard

Consolidated draft V2 — aligned with the Carthage Charter V2 (17 articles) and the Call of Carthage V2: United Nations anchoring, cross-reference of definitions, experimental status of the preventive loop, four channels of the Call and register of subordinate protocols.

Status	Consultation draft. Not yet negotiated, ratified or legally validated.
Function	To transform the Carthage Charter into operational mandates, interfaces, procedures, data, audits, financing, alerts and avenues of redress.
Nature	The GAF is not an institution and exercises no power of its own. Its effects result from the instrument by which the parties adopt it.
Hierarchy	Subordinate to the Carthage Charter; distinct from the Call of Carthage; without primacy over applicable law.
International anchoring	The whole is placed under the Charter of the United Nations and international law; in the event of conflict, United Nations obligations prevail, in accordance with article 16 of the Carthage Charter and article 103 of the Charter of the United Nations.
Architecture	Modular functions; Global Accountability Chain; Preventive Accountability Loop; alternative architectures and recognition of equivalence.
Author of the draft	Nizar Yaiche — July 2026.

“A responsible interface never transmits a mere result: it transmits the evidence, the uncertainty, the reasons and the possibility of revisiting the decision.”

Note on status and forms of adoption

The Global Accountability Framework (GAF) is the operational instrument of the Humanity Compact. It describes who exercises each function, under what mandate, with what data, what interfaces, what controls, what funding and what avenues of correction. It does not, of itself, create an authority, a tax, a border adjustment, a funding obligation or a jurisdiction.

In order to avoid confusing proposal, pilot and binding law, the same core is set out in three legally distinct forms. Articles marked “optional module” enter into force only if the instrument of adoption expressly designates them.

Three coordinated forms of the GAF

Code	Form	Effect	Use
GAF-R	Non-binding reference standard	Methods, interfaces, codebooks, audits and comparison criteria	Research, technical cooperation, voluntary convergence
GAF-P	Pilot agreement	Limited contractual obligations, frozen data, notional prices, shadow alerts, independent evaluation	National, regional or sectoral pilots
GAF-C	Framework agreement or treaty protocol	Obligations enforceable only within the consented and incorporated scope	Durable cooperation, mutual recognition, defined legal effects

Principle of non-confusion: a result produced under GAF-R or GAF-P must never be presented as a legally binding act of the GAF-C. The status of each case file, act, party and module appears in its header.

Operational summary

The GAF turns the theory of the three completenesses into an infrastructure of case file, responsibility and control.

Functional completeness is secured by a matrix setting out the applicable functions, their duty-holder and the conditions of activation. Relational completeness is secured by the identification of a duty-holder and a forum for each act. Procedural completeness is secured by a common case-file passport and by interface contracts preserving provenance, assumptions, uncertainty, objections, version, signature and redress.

The GAF does not require every case file to pass through seven functions. After measurement and qualification, a case file may be closed, kept under watch, routed towards a capacity measure, prevention, consented solidarity, an efficiency correction or a legal remedy. The determination of a consequence and its enforcement are conditional branches.

The preventive loop organises cascade risks before they materialise: foresight, detection, alert level, notification, reasoned response, anticipatory action and learning. It gives no veto power to the producer of the alert and creates no automatic liability.

Artificial intelligence may assist the functions, but no official alert, final qualification, consequence, mandatory disbursement, certification or redress decision may be triggered without an identifiable human authority. Operation without AI is a resilience requirement.

The GAF is modular. Where guarantees are equivalent, an existing institution, a federated network or a merged architecture is to be preferred to a new organisation. Any adoption begins with a capacity diagnosis, a register of legal bases and a pre-registered pilot.

Architecture of the present instrument

Part	Content
I	General provisions, definitions, hierarchy, consent and modularity
II	Governance of the functions, negative mandates, duty-holders, forums and interfaces
III	Procedure of the Global Accountability Chain, from filing to consequence and redress

Part	Content
IV	Preventive Accountability Loop: alerts, responses and anticipatory action
V	Data, artificial intelligence, cybersecurity and confidentiality
VI	Financing, independence, audits and cooperation clause
VII	Crisis, pilots, capacities, participation, monitoring and evaluation
VIII	Suspension, conflicts, amendment, accession, withdrawal and final provisions
Annexes	Case-file passport, interface contract, alert levels, matrices and model clauses

DRAFT INSTRUMENT

Preamble

The parties to this Framework,

Acting in compliance with the Carthage Charter, with applicable law, with their mandates and with their constitutional procedures;

Recognising that global accountability requires the coverage of the necessary functions, the identification of duty-holders and forums, and the preservation of evidence and uncertainty at the interfaces;

Considering that the prevention of cascade risks must inform the decision without transferring competence to the forecaster;

Determined to test gradual, reversible and comparable architectures, and to prefer the lightest solution that protects rights, independence, the quality of evidence and redress;

Recalling that the Humanity Compact as a whole is placed under the Charter of the United Nations and international law, obligations under the Charter of the United Nations prevailing in the event of conflict, as provided by Article 16 of the Carthage Charter;

Have agreed as follows.

Part I — General provisions

Article 1 — Purpose

1. This Framework organises the mandates, interfaces, data, procedures, funding, audits, alerts, correction mechanisms and avenues of redress necessary for the consented implementation of the Global Accountability Chain and of the Preventive Accountability Loop.
2. It establishes common minimum requirements and optional modules. The instrument of adoption designates the applicable functions, sectors, territories, parties, acts and annexes.
3. The GAF is not an institution, holds no original power, has no budget of its own and produces no act outside the authorities designated by the parties.

Article 2 — Essential definitions

1. “Act” means any measurement, qualification, alert, consequence, allocation, certification, redress decision or other formalised output under the GAF.

2. “Case file” means the versioned set of data, assumptions, methods, uncertainties, objections, acts, responses and redress relating to a matter.
3. “Duty-holder” means the authority or person required to explain and justify an act before an identified forum.
4. “Forum” means the body empowered to receive information, to question, to assess, to require a correction or to attach a consequence in accordance with applicable law.
5. “Interface” means the transformation and transmission of a case file between two functions or between a function and a forum.
6. “Admissible consequence” means a response authorised by the evidence, the law, the Charter and the applicable module; it may be nil, non-financial, preventive, solidarity-based, corrective or legal.
7. “Alert” means a contestable prospective act describing a risk, without prejudging the decision or liability.
8. “Equivalence” means the recognition of an external system producing substantially comparable guarantees and results without imposing duplication.
9. The definitions in Article 2 of the Carthage Charter apply in addition to the present ones. In the event of divergence, the definition most protective of affected parties prevails; the present Article specifies their operational use.

Article 3 — Hierarchy and applicable law

1. The Carthage Charter prevails within the internal order of the Humanity Compact. This Framework is interpreted in accordance with its rights, guarantees, negative mandates and stopping rules.
2. The Call of Carthage may feed the agenda, participation and the adversarial process; it modifies no competence of the GAF without express incorporation.
3. The GAF prevails neither over the Charter of the United Nations, nor over constitutions, nor over applicable treaties, laws, immunities or judicial decisions. Obligations under the Charter of the United Nations prevail in the event of conflict, in accordance with its Article 103 and with Article 16 of the Carthage Charter. Any incompatibility is identified and dealt with in accordance with Article 44.
4. Binding modules take effect only after valid consent and incorporation.

Article 4 — Scope and declaration of participation

1. Each party deposits a declaration specifying: the GAF-R, GAF-P or GAF-C form; the sectors and territories covered; the functions activated; the host institutions; the acts recognised; the data accessible; the competent forums; and any reservations or exclusions.
2. No competence is inferred from silence, from participation in a meeting, from the provision of data or from signature of the Call of Carthage.
3. Third parties are subject to no act of the GAF without an independent legal basis. Their rights to information, to participation and to redress are nonetheless protected where they are materially affected.
4. The register of declarations is public, versioned and accompanied by a map of legal maturity.

Article 5 — Modularity, subsidiarity and lightest architecture

1. The parties activate only those functions necessary to the case file and to the level of risk. A function may be exercised by an existing institution, an accredited network, a panel, a technical secretariat or a specialised body.
2. An institutional separation is adopted only if it reduces a conflict of interest, protects independence, improves the quality of evidence, strengthens redress or confines an error to a proportionate cost.
3. Where guarantees are equivalent, the existing process or the lightest architecture prevails.
4. Any new institution is created for a limited initial period, with evaluation, a sunset clause and an option of transfer to an existing body.

Article 6 — Principles of interpretation

1. This Framework is interpreted in accordance with dignity, non-discrimination, consent, subsidiarity, proportionality, sustainability, participation, the statement of reasons, reversibility and redress.
2. Legally protected rights, procedural guarantees, decision principles and normative objectives are distinguished; their collision is reasoned.
3. No provision is interpreted as authorising the full automation of a high-impact decision, pricing without evidence or recognition without control.
4. Doubt as to competence limits the act; scientific doubt widens the uncertainty or blocks the consequence; doubt as to hosting favours the lightest architecture.

Article 6 bis — Source of obligations and non-presumption of constraint

1. No provision of the present instrument, no result produced by a function of the chain and no algorithmic or institutional qualification creates, of itself, an obligation upon a State, an organisation, an undertaking or a person not legally bound by it. Any binding effect expressly states its legal vehicle, its addressee, its scope, its date of applicability, the forum of control and the regime of enforcement.
2. Participation in a reference standard, in a consultation, in a public register, in a simulation or in a pilot in shadow mode amounts neither to an acknowledgement of liability, nor to consent to a jurisdiction, nor to acceptance of a tax, a compensation or a border adjustment. Binding effects arise only from consent, from incorporation or from competence validly established under applicable law.
3. The qualification of an act as binding prejudices neither its justiciability nor its enforceability. These two properties are identified separately in the legal passport of the case file.

Part II — Governance of functions and interfaces

Article 7 — Matrix of functions and host institutions

1. Before any deployment, the parties adopt a matrix setting out, for each function: the duty-holder, the positive mandate, the negative mandate, the input data, the possible outputs, the forum, the conflicts of interest, the resources, the applicable law and the stopping rule.

2. The candidate functions cover measurement, qualification, determination of the admissible consequence, enforcement, funding, digital certification and redress. Prevention cuts across these functions.
3. A function may be inactive, experimental, advisory or binding. Its status appears on each act.
4. The matrix is revised after any change of hosting, of law or of risk.

Article 8 — Negative mandates

1. The measurement authority does not qualify normatively and does not determine a consequence.
2. The qualification authority does not modify measurement data or models and sets no financial amount.
3. The consequence authority does not produce its own base and does not collect for its own budget.
4. The enforcement authority does not alone elaborate the doctrine it enforces, and verifies the legal basis of each measure.
5. The funder controls neither the measurement nor the threshold that determines its allocations.
6. The digital certifier does not decide substantive policy and does not certify its own system without external audit.
7. The redress forum does not replace the expertise or the decision-maker beyond its competence.
8. Any derogation is limited, reasoned, audited and accompanied by a functional firewall.

Article 9 — Duty-holders, forums and personal responsibility

1. Each act designates an institutional duty-holder and a human signatory bearing responsibility. Automated acts without an identifiable responsible person are void within the internal order of the GAF.
2. Each duty-holder answers before a forum whose powers, time limits and remedies are published.
3. The forum receives the complete case file necessary for control, including uncertainties and dissenting opinions, subject to controlled confidentiality guarantees.
4. Institutions publish their charts of responsibility, their incompatibilities, their recusal procedures and their whistleblower protection mechanisms.

Article 10 — Common case-file passport

1. Every case file receives a unique identifier, an opening date, a data freeze date, a legal and evidentiary status, a list of parties, a scope, a version history and a timetable.
2. The passport states the functions activated, the decisions that are possible and prohibited, the conditions of passage, the stopping rules, the addressees, the confidentiality regime and the avenues of redress.
3. Earlier versions are not deleted. Every correction is appended with its author, its date and its ground.
4. The minimal template of the passport is set out in Annex O-A.

Article 11 — Interface contracts

1. Each passage between functions is governed by an interface contract specifying the object of the transformation, the sending authority, the receiving authority, the data and metadata, the uncertainty, the exclusions, the time limit, the conditions of return and the signature.
2. The recipient may not present the input as more certain or more complete than the sender declared it to be.
3. Any aggregation, normalisation, currency conversion, rating, weighting or suppression of a dimension is documented and, where possible, reversible.
4. A circuit breaker blocks transmission if provenance, competence, confidentiality or minimum quality are insufficient.
5. The minimal template is set out in Annex O-B.

Article 12 — Recognition of equivalence and non-duplication

1. A party recognises an external system where that system offers substantially equivalent guarantees of evidence, independence, reasoning, data, redress and audit.
2. Equivalence may be full, partial, conditional or temporary. It is reviewed according to the risk and to changes of law or of method.
3. A refusal of equivalence is reasoned and open to review. A party may not use equivalence to impose its own architecture where a comparable result is demonstrated.
4. The recognition of a particular act remains subject to competence, to purpose, to the adversarial process, to public policy and to applicable law.

Part III — Procedure of the Global Accountability Chain

Article 13 — Opening, reporting and admissibility

1. A case file may be opened by a participating authority, an affected party, a qualified report, a petition transmitted by the Call of Carthage or an alert that has matured.
2. Reporting is open and protected; it triggers an examination, not an obligation to act. Formal referral presupposes standing, competence and the conditions of the applicable module. The authors of a report made in good faith benefit from confidentiality and from protection against reprisals, to the extent permitted by applicable law.
3. The admissibility decision specifies the scope, the parties, the data required, the functions liable to be activated and the risks of conflict of interest.
4. Case files manifestly outside competence, non-material, redundant or impossible to investigate are closed by reasoned decision, without erasing the report.

Article 14 — Measurement and evidence of impact

1. The measurement authority defines the unit of analysis, the spatial and temporal boundaries, the counterfactual, the mechanisms, the agents, the price base, the currency, the data, the scenarios and the uncertainties.
2. Exposures liable to be used for attribution are fixed before the shock is observed or justified as predetermined.
3. Flows, stocks, valuations, transfers and welfare measures are kept in separate registers. Offsets and beneficiaries are identified.

4. Where the data or the identification do not permit a point estimate, the authority publishes bounds or suspends the conclusion.
5. The measurement is accompanied by a proportionate reproducibility package: sources, dictionary, code, log, sensitivity tests and limitations.

Article 15 — Qualification and rating

1. The qualification authority examines the materiality, severity, duration, reversibility, distribution, vulnerability, confidence and normative scope of the effect, without modifying the measurement.
2. Qualification preserves several dimensions and reduces them to a single rating only if the use, the weightings, the loss of information and the right to contest are explicit.
3. The rating is never a price and carries no presumption of fault or of competence.
4. The parties are afforded an adversarial process on the qualification method and on the factual data, without being able to negotiate the rating through influence or funding.

Article 16 — Routing of consequences and classes S0-S6

1. After measurement and qualification, the case file is routed according to the nature of the effect and to the burden of proof. The S0-S6 classes distinguish in particular pecuniary transfer, recipient-side friction, domestic externality under constrained instruments, non-internalised global loss, terms of trade, inequitable incidence without demonstrated net loss, and breach of an applicable obligation.
2. Classification is a routing and not a moral hierarchy. It may lead to closure, a recommendation, a capacity measure, prevention, consented solidarity, an efficiency correction or a legal remedy.
3. Reclassification is possible on new evidence; it produces no automatic retroactive effect.
4. The determination of the consequence is separated from the proof of harm and from enforcement.

Article 17 — Determination of the admissible consequence

1. The competent authority verifies in turn the class, the level of evidence, competence, purpose, the alternatives, proportionality, distribution, institutional cost and the avenues of redress.
2. Efficiency correction, solidarity and legal remedy fall within distinct normative windows and rest on different bases. They are neither substitutable nor cumulative without justification.
3. The financial consequence, where it is authorised, is expressed as a range or as a formula where uncertainty does not permit a single amount.
4. The decision may conclude in favour of no consequence, of a non-financial measure or of a notional experiment.
5. Non-compensable goods, rights and prohibitions are excluded from pricing.

Article 18 — Enforcement, adjustments and recognition

1. Any enforcement measure, in particular a border, fiscal, regulatory or access measure, requires a legal basis of its own, public criteria, non-discrimination, proportionality, a treatment of equivalence and an avenue of redress.

2. The enforcement authority verifies that the upstream act is final, or states its provisional character and the associated guarantees.
3. No measure is intended to circumvent an applicable trade, tax, constitutional or competition obligation.
4. Revenues, where they exist, are traced separately from the decision and allocated according to rules adopted upstream.

Article 19 — Funding of prevention, transition and solidarity

1. Funding answers to an identified purpose and does not, of itself, constitute an acknowledgement of fault or of liability.
2. Every allocation includes a beneficiary, a plan, capacity conditions, indicators, a duration, an exit clause and an audit.
3. The fund or the funder does not modify the data, the rating or the threshold that determine its intervention.
4. Allocations distinguish prevention, transition, reparation, technical assistance and solidarity. Useful flows, time limits, fees and final beneficiaries are published.

Article 20 — Certification of digital systems

1. High-impact digital systems used in the chain are inventoried, classified by risk and subject to a proportionate certification bearing on data, models, security, bias, explainability, contestability, suppliers, dependencies and degraded operation.
2. Certification concerns the system and its declared use; it does not approve the policy or the result that it produces.
3. A substantial change of data, of model, of supplier or of context triggers a reassessment.
4. The hosting of certification may be parliamentary, regulatory, technical or federated; the legitimacy of the objective, the technical audit and redress remain separate.

Article 21 — Review and redress

1. Acts state the applicable avenues, time limits, suspensive effects and standards of review.
2. Internal review is distinct from independent redress. It corrects errors rapidly without depriving a party of access to the forum.
3. The forum may annul, suspend, remit, require reasons, order a fresh measurement, limit dissemination or grant a remedy provided by law.
4. Redress does not transform an advisory function into a jurisdictional competence and creates no effect upon a non-consenting party.
5. Decisions and dissenting opinions are published subject to the necessary protections.

Part IV — Preventive Accountability Loop

Article 22 — Purpose and triggering threshold

1. The preventive loop seeks to bring a cascade risk into the decision before it fully materialises, without displacing the mandate of the decision-maker.

2. It is activated where four conditions are reasonably satisfied: a plausible cross-border or intergenerational link; identifiable mechanisms; potential materiality in the light of pre-registered thresholds; and a window for action still open.
3. Where the conditions are insufficient, the signal remains under watch. The absence of an alert is not a certification of the absence of risk.
4. Alerts are assessed as acts of knowledge and of procedure, not as substantive decisions.
5. The preventive loop is deployed first under the GAF-R and GAF-P forms — alerts in shadow mode, pre-registered thresholds, independent evaluation. Its move to the GAF-C form is conditional on the results of the comparative pilot provided for in Article 36 and in Annex O-E.

Article 23 — Prospective case file and alert levels

1. The prospective case file comprises the impulse, the mechanisms, the exposures, vulnerabilities, scenarios, horizons, thresholds, uncertainties, competing models, distributive effects, options and addressees.
2. The levels are: V0 watch; V1 vigilance; V2 coordinated alert; V3 systemic alert. Their definition, dissemination, duration and obligations are set out in Annex O-D.
3. The measurement authority produces the prospective evidence; the qualification authority confirms, supplements, downgrades or rejects the level without modifying the data.
4. Every alert expires or is reviewed on a determined date.

Article 24 — Notification, consultation and reasoned response

1. The alert is transmitted to the competent authorities and, according to the dissemination regime, to potentially affected parties and to preparedness institutions.
2. The recipient acknowledges receipt and responds within the prescribed time limit, stating the elements accepted or contested, the options examined, the measures adopted or set aside, the mandate constraints and the date of review.
3. The obligation bears on examination and on the statement of reasons, not on the adoption of a proposed option.
4. A confidential alert is subject to control, an access log, a duration and a declassification rule. Confidentiality may not indefinitely conceal a material risk.

Article 25 — Anticipatory action and pre-arranged funding

1. The options may include communication, sequencing, assistance, protection of essential spending, liquidity, capacity, phasing, macroprudential measures or transition funding, according to the law and the sector.
2. No option is automatic. It is tested against necessity, proportionality, displaced effects, reversibility and the exit plan.
3. Pre-arranged facilities use triggers defined before the episode, an independent qualification, a beneficiary, a plan and an expiry.
4. Anticipatory action is not an acknowledgement of liability on the part of the actor whose decision contributed to the risk.

Article 26 — Ex post evaluation of alerts

1. An independent evaluator compares the frozen case file with the observed outcomes and measures timing, mechanisms correctly identified, false positives, false negatives, actionability, distributive effects, communication effects and cost.
2. The initial scenarios are not rewritten. Corrections appear as new versions.
3. The aggregate performance of the alert authority is published, including unconfirmed alerts and missed events.
4. The loop is simplified, suspended or abandoned if it does not improve preparedness or if it produces disproportionate reflexive effects.

Part V — Data, artificial intelligence and security

Article 27 — Data contract and provenance

1. Each pipeline is governed by a data contract specifying purpose, responsible person, sources, quality, rights, minimisation, access, sharing, retention, security, localisation, transfer, correction, deletion and audit.
2. Provenance links each result to the data, transformations, code, model version and responsible person. Synthetic or imputed data are identified.
3. Data are frozen for decisions or comparative analyses; any update is dated and does not silently replace the decision version.
4. Low-capacity parties receive support to produce and to contest data without transferring their informational sovereignty.

Article 28 — Human authority matrix and use of AI

1. For each system, the matrix distinguishes: automatable tasks; recommendations; human validations; acts reserved to an authority; and prohibited acts.
2. No AI may on its own issue an official alert, a final qualification, a consequence, a mandatory disbursement, a certification or a redress decision.
3. Human validation is not a formal signature: the responsible person has comprehensible information, time, the power to refuse and the responsibility to give reasons.
4. The rates of disagreement, of modification, of reversal and of error are measured. Relevant minority opinions are preserved.

Article 29 — Algorithmic assurance, plurality and supplier dependence

1. Systems are tested before deployment and periodically for accuracy, robustness, regime change, bias, security, explainability, contestability and distributive effects.
2. For significant decisions, several models are used, or a justification of the single model. Divergences are not erased by an unreasoned average.
3. Contracts with suppliers secure access to logs, portability, continuity, audit, incident notification and an exit plan.
4. Critical dependence on a supplier, on a model or on an infrastructure is treated as an institutional risk to be reduced.

Article 30 — Cybersecurity, confidentiality and incident

1. Data and systems are classified according to their sensitivity and protected by proportionate technical, organisational and human controls.
2. Any incident liable to impair the evidence, the confidentiality, the availability or the integrity is notified, contained, documented and submitted to independent analysis.
3. An incident suspends dependent acts where integrity cannot be demonstrated. Affected parties are informed according to the law and the risk.
4. Backups, logs, recovery plans and crisis exercises are tested regularly.

Part VI — Funding, independence and cooperation

Article 31 — Budget and funding of the functions

1. Each function has a transparent budget, multiannual where necessary, distinct from the revenues or decisions that it influences.
2. The sources, amounts, conditions, beneficiaries, fees and conflicts of interest are published. Earmarked contributions buy neither method, nor rating, nor case-file priority.
3. Measurement and independent counter-assessment are funded through mutualised mechanisms or independent firewalls; the principle is to finance the measurement — but the rated never pays the rater.
4. The accounts are audited against recognised standards and accompanied by a report on effective independence.

Article 32 — Rules of non-circularity and independence

1. The body that produces a measurement, a rating or a consequence is not financially dependent on its activation, on the amount set or on the revenues collected.
2. The funder does not choose the beneficiaries on the basis of a measurement that it can modify, and the beneficiary does not choose the evaluator on whom its allocation depends.
3. Remuneration, promotions and contracts are not linked to the number of case files, alerts, sanctions or amounts.
4. Any exception is temporary, published, audited and accompanied by an exit solution.

Article 33 — Cooperation clause and mutual assistance

1. The parties cooperate on the exchange of data, technical assistance, alerts, notification, audits, the enforcement of their own acts and the protection of affected persons.
2. Cooperation does not amount to automatic recognition of an act. Any recognition requires competence, purpose, procedure, proportionality, a clearly indicated final or provisional character, equivalence and redress.
3. A party may refuse or limit cooperation incompatible with its law, its fundamental constitutional principles, security or the rights of third parties; it gives reasons for the refusal and seeks a less restrictive alternative.
4. Cooperation mechanisms may not be used to create a regulatory cartel, arbitrary discrimination or an abuse of market power.

Article 34 — Optional module of coordinated recognition

1. The parties may adopt a module exhaustively listing the categories of acts capable of coordinated recognition and their conditions.
2. Mutual recognition distinguishes final, provisional, advisory and experimental acts. GAF-R or GAF-P acts do not become binding through mere political recognition.
3. Equivalent regimes are recognised without double burden. A public policy exception is interpreted strictly and is open to redress.
4. This module authorises no conditioning of market access contrary to trade, tax, constitutional or competition law.

Part VII — Crisis, pilots, capacities and evaluation

Article 35 — Fast-track modes in crisis situations

1. Fast-track modes are pre-authorised in the mandate of each function and activated by public or reviewable thresholds. They accelerate the procedure without extending substantive power.
2. They preserve at a minimum the duty-holder, the provenance, the reasons, the duration, the expiry, the log and an adapted avenue of redress.
3. Acts taken in fast-track mode are reviewed after the crisis and cease on expiry unless a new basis is established.
4. The preventive loop prepares the shift to fast-track mode, but does not on its own trigger it.

Article 36 — Minimum viable pilot and comparison of architectures

1. Every pilot is pre-registered and specifies the question, the case files, the parties, the data, the functions, the architectures compared, the indicators, the stopping rules, the budget, the conflicts and publication.
2. The reference design compares at a minimum: A, the existing process; B, a light protocol or federated network; C, the proposed integrated architecture. The same frozen data and horizons are used.
3. The first pilots use, absent a specific basis, notional consequences, shadow alerts and no sanction. Affected parties nonetheless have information, counter-assessment and procedural redress.
4. The pilot concludes in favour of maintaining, simplifying, merging or rejecting. It may not be declared successful on internal coherence alone.

Article 37 — Differentiated capacity and equitable access

1. Requirements are graduated according to materiality, function and capacity without lowering the floors of rights and of redress.
2. Low-capacity parties benefit from assistance, open tools, funding for data, translation, training and independent counter-assessment.
3. A missing datum does not automatically become an absence of impact; it is handled by uncertainty, bounds, assistance or stopping.
4. Compliance costs are monitored so that the architecture does not exclude the actors it claims to protect.

Article 38 — Participation and articulation with the Call of Carthage

1. Reports, transmissions, qualified petitions and deliberative opinions arising from the four channels of the Call of Carthage are received, registered and processed according to published thresholds and time limits, specified by the citizen participation guide adopted as a subordinate protocol.
2. A petition requires a reasoned response, not a decision. Referral and standing remain governed by the law and by the applicable module.
3. Panels or consultations receive expertise, counter-assessment, information on uncertainties and publication of conflicts of interest.
4. Institutions publish the manner in which the contribution was taken into account, or why it was set aside.

Article 39 — Audit, red team and transparency

1. Audits cover the science, the data, the law, governance, cybersecurity, finances, conflicts, interfaces and results.
2. An independent red team actively seeks out errors, circumventions, capture strategies, biases, adverse scenarios and simpler architectures.
3. Reports, responses, correction plans and disagreements are published, subject to strictly necessary protections.
4. The auditor does not depend on the audited entity for selection, renewal or remuneration without an independent mechanism.

Article 40 — Indicators, annual report and learning

1. The indicators distinguish process, output, impact and unintended effects. They include cost, delay, quality of evidence, errors, revised decisions, access to redress, compliance burden, distribution, resilience and performance without AI.
2. An annual report publishes the case files, alerts, activations, closures, redress proceedings, errors, costs, audits, changes of method and negative results.
3. No institution assesses its own success alone. Affected parties and independent evaluators contribute to the report.
4. The indicators are revised without erasing the historical series.

Part VIII — Correction, conflicts and final provisions

Article 41 — Correction, suspension and non-propagation

1. Any material error, unmanaged conflict, incident, loss of integrity or excess of competence triggers a correction procedure and, where necessary, a targeted suspension.
2. The failure of one function does not automatically suspend the others. Interfaces are designed to prevent the propagation of an error, of a capture or of an incident.
3. Acts dependent on invalidated data or on an invalidated system are identified, reviewed and, where appropriate, withdrawn or corrected.
4. Suspension is proportionate, reasoned, temporary and open to redress.

Article 42 — Settlement of disputes

1. Disputes are first submitted to consultation and to technical or legal mediation. This stage does not suspend urgent measures necessary for the protection of rights.
2. Failing that, the parties use the forum designated in their declaration: independent committee, arbitration, existing court or specialised mechanism.
3. No party is subject to a jurisdiction without valid consent. The rights of third parties and the individual avenues of redress provided by law are not removed by an inter-institutional clause.
4. Decisions on the interpretation of the GAF are published and entered in the register of internal precedents, without creating any external primacy.

Article 43 — Amendment, version and experimentation

1. Every amendment is accompanied by its purpose, its evidentiary basis, its impact on rights, functions, costs, data and redress, together with the alternatives examined.
2. Amendments extending a power, reducing a guarantee, modifying a critical threshold or creating a mandatory consequence follow a reinforced procedure of consultation, legal opinion and approval.
3. Experiments are identified, limited in time, reversible and separated from the stable rules. They expire in the absence of confirmation.
4. Each version retains a concordance table and a public log of modifications.

Article 43 bis — Revision of parameters and of technical annexes

1. Mandates, competences, negative mandates, procedural guarantees and recognised rights are modified only by amendment, in accordance with Article 43.
2. Quantitative parameters and technical annexes — scales, thresholds, coefficients, taxonomies, case-file formats and data dictionaries — are revised by qualified decision of the competent body, with automatic effect for all parties, without a new accession procedure.
3. Every revision of a parameter is published, justified by its evidentiary basis, and accompanied by an objection period and by an assessment of its distributive effect. A party that refuses it may withdraw from the module concerned in accordance with Article 45, without that withdrawal affecting the other modules.
4. The distinction between structure and parameter is set out in an annex; it is modified only by amendment.

Article 44 — Conflicts of norms and public policy

1. In the event of conflict, the act is suspended to the extent necessary and an analysis identifies the applicable norm, the competence, the rights at stake, the compliance solutions and the effects on third parties.
2. The Carthage Charter guides the internal order; applicable law prevails in the external legal order.
3. The public policy exception is reasoned, targeted and open to review. It does not serve to escape, for reasons of convenience, an obligation validly consented to.
4. The parties seek the least restrictive solution: consistent interpretation, adaptation, equivalence, reservation, withdrawal from the module or cessation of the act.

Article 45 — Accession, reservations and changes of participation

1. Any authorised entity may accede by a declaration conforming to Article 4. Admission may be made conditional on a capacity diagnosis and on a compliance plan.
2. Reservations may not deprive the rights, the statement of reasons, human responsibility, the integrity of the case file or redress of their substance within the activated scope.
3. A party may add or withdraw modules with notice, impact analysis, treatment of pending case files and updating of the register.
4. Accessions, reservations, objections, modifications and suspensions are published.

Article 46 — Withdrawal and surviving obligations

1. A party may withdraw in accordance with the notice period and the procedure of its instrument of adoption. Withdrawal does not transform advisory acts into obligations, nor obligations into perpetual rights.
2. Pending case files are closed, transferred or continued by a reasoned decision respecting the rights of the parties and applicable law.
3. Obligations of confidentiality, data protection, preservation of evidence, integrity of versions, audit of funds and enforcement of a final remedy may survive to the extent provided by law.
4. Withdrawal is assessed in order to identify its effects on continuity, on capacity and on third parties.

Article 47 — Entry into force and final clauses

1. The GAF-R comes into use on the date of publication of its adopted version. The GAF-P enters into force in accordance with the pilot agreement. The GAF-C enters into force in accordance with the conditions of consent and incorporation for which it provides.
2. The authentic languages, the depositary, the notifications, the signatures, the mandatory annexes and the certification procedure are specified in the instrument of adoption.
3. Technical annexes may be updated under a simplified procedure where they modify neither competence, nor right, nor consequence; any substantial modification falls under Article 43.
4. The present draft remains open to consultation, adversarial challenge and revision before any adoption.

ADOPTION BLOCK

Party	
Form adopted	GAF-R / GAF-P / GAF-C
Modules activated	
Territory and sectors	
Host institutions and forums	
Reservations or exclusions	
Date of entry into force	
Name, capacity and signature	

Operational annexes

Annex O-A — Minimal case-file passport

Field	Minimum content
Identity	Identifier; title; GAF-R/P/C status; version; opening date; freeze date
Scope	Question; sectors; territories; agents; horizons; exclusions
Parties	Applicant; affected persons; duty-holders; third parties; representatives
Basis	Charter; GAF; module; applicable law; jurisdiction; consent
Functions	Active; inactive; experimental; host institutions; forums
Evidence	Data; sources; code; counterfactual; mechanisms; uncertainties
Possible acts	Closure; watch; capacity; prevention; solidarity; correction; remedy
Interfaces	Sender; recipient; package; time limit; circuit breaker; return
Redress	Review; forum; time limit; suspensive effect; remedies
History	Versions; corrections; dissents; incidents; withdrawal

Annex O-B — Minimal interface contract

Element	Requirement
Transformation	Describe what is transformed and what is not
Authorities	Sender, recipient, responsible human officers and forums
Inputs	Data, methods, version, price base, currency, horizon
Uncertainty	Interval, scenarios, limits, contested assumptions
Output	Format, status, authorised use, prohibited uses, duration
Dissents	Objections, minority opinions, unresolved elements
Quality	Tests, minimum threshold, missing data, stopping rules
Security	Classification, access, sharing, retention, incident
Return	Conditions for rejection, correction, referral back and suspension
Signature	Responsible officer, date, log and link to the case file

Annex O-C — Epistemic statuses and authorised consequences

Status	Description	Maximum default consequence
E0 — Signal	Unverified information or initial indication	Examination or watch
E1 — Verifiable fact	Primary source or enforceable datum	Factual measurement; no automatic attribution
E2 — Internal result	Programme analysis not replicated	Publication with a caveat; pilot or further work
E3 — Replicated result	Method and data independently reproduced	Qualification or decision according to law and to adversarial procedure
E4 — Normative basis	Applicable principle, statute, contract or treaty	Act within the competence and in accordance with the procedure

Status	Description	Maximum default consequence
E5 — Final act	Decision having exhausted or stabilised the avenues of redress	Enforcement according to the applicable instrument

Annex O-D — Alert levels of the Preventive Accountability Loop

Level	Criterion	Dissemination	Obligation
V0 — Watch	Distant, weak or non-material signal	Internal and documented	Update; no external response
V1 — Vigilance	Plausible risk; materiality or window to be confirmed	Limited technical recipients	Verify; prepare options
V2 — Coordinated alert	Material risk; plausible mechanisms and window for action	Designated authorities and parties	Acknowledgement of receipt and reasoned response
V3 — Systemic alert	High risk; thresholds close; significant interactions	Controlled dissemination, possibly public	Coordination, anticipatory action and close review

Annex O-E — Minimal design of the three-arm pilot

Element	Arm A	Arm B	Arm C
Architecture	Existing process	Light protocol or federated network	Integrated 7+3/PAL architecture
Data	Same freeze date	Same freeze date	Same freeze date
Teams	Independent	Independent	Independent
Consequences	Observed or simulated	Notional or advisory	Notional or advisory
Indicators	Cost, delay, error, redress	Same indicators	Same indicators
Final decision	Reference	Preferred if equivalent safeguards at lower cost	Retained only if additional value is demonstrated

Annex O-F — Summary matrix of functions

Function	Positive mandate	Negative mandate	Forum
Measure	Produce the evidence and the uncertainty	Does not qualify or determine the consequence	Scientific committee, audit, redress
Qualify	Assess materiality and severity	Does not alter the measurement; does not set prices	Review body, independent forum
Consequence	Determine an admissible response	Does not produce the base; does not collect	Legal or administrative forum
Apply	Execute a valid act	Does not create the doctrine	Court or supervisory authority
Finance	Allocate prevention, transition, solidarity	Does not control the measurement or the threshold	Audit, council, redress
Certify	Audit the digital pipeline	Does not decide policy	Regulator, parliament, court
Redress	Review procedure, competence and legality	Does not govern beyond its competence	Higher body or applicable law
Prevent	Anticipate, alert, elicit a response, learn	Does not decide policy; does not presume fault	Independent evaluation and procedural redress

Annex O-G — Minimal data contract

Heading	Content
Purpose and responsible party	Purpose, basis, data controller and duty-holder
Sources and quality	Origin, licence, frequency, coverage, tests and limits
Rights and access	Authorised persons, levels, logging, independent counter-assessment
Transformation	Cleaning, imputation, aggregation, models, version and code
Protection	Minimisation, security, localisation, transfer, retention
Correction and incident	Rectification, notification, suspension, resumption
Output	Format, status, restrictions, publication, archiving
Audit	Auditor, frequency, access, report and remediation

Annex O-H — Scale of legal and operational maturity

Level	Status	Example of effect
L0	Research, analysis, simulation	No external effect
L1	Cooperation or non-binding protocol	Sharing, alert, voluntary response
L2	Internal policy or administrative decision	Obligation within the institution's mandate
L3	Contract or pilot agreement	Obligations between signatory parties
L4	Statute, regulation, treaty or judicial decision	Binding effect under the applicable law

Annex O-I — Operational glossary

Term	Short definition
Partial attribution	Bounded attribution when the point is not identified
Circuit breaker	Rule that blocks an interface or a consequence when the conditions are not met
Admissible consequence	Response authorised by evidence, law, Charter and module
Forward-looking case file	Frozen version of the scenarios, thresholds, exposures and uncertainties
Duty-holder	Office-holder required to explain and justify before a forum
Forum	Body able to question, assess, correct or attach a consequence
Interface	Transformation of the case file between functions
Negative mandate	Act expressly forbidden to a function
Non-additivity	Prohibition on adding together incompatible registers or channels
Stopping rule	Condition prohibiting concluding, attributing, pricing or activating
Shadow pilot	Real-time pilot without binding substantive effect
Evidentiary status	Level of proof and maximum authorised consequence

Annex O-J — Register of subordinate protocols

Subordinate protocols specify the application of the GAF without being able to extend a competence, to reduce a guarantee of the Charter or to create a new consequence. They are versioned, published and amended in accordance with Article 43. Initial register:

Subordinate protocol	Purpose	Initial status
Citizen participation guide	The four channels of the Call — endorsement, qualified petition, deliberation by sortition, transmission — with thresholds, time limits and safeguards.	GAF-R
Monetary Cascade Early-Warning Protocol	Monetary cascade early-warning pilot: indicators, V0-V3 levels, notification and ex post evaluation.	GAF-P — experimental
Three-arm comparative pilot protocol	Pre-registration, data freeze, independent teams and common indicators (Annex E).	GAF-P
Standard interface and data clauses	Contractual templates in annexes B and G for exchanges between functions and with third parties.	GAF-R

Design note and points for external validation

This note does not form part of the normative text, save by express incorporation.

1. Principal design decisions

The GAF is an instrument and not an eighth institution.

The Charter sets the rights and the limits; the GAF organises the procedures; the Call opens participation.

The 7+3 remains a candidate architecture. The GAF also allows a federated or merged model, or one hosted within existing institutions.

The financial consequence is a conditional branch, never the default path.

Prevention is a cross-cutting loop and a procedural duty, not a veto power.

Coordinated recognition is an optional module subject to the law, to equivalence and to redress.

Pilots must compare the status quo, a light architecture and the integrated architecture.

2. Points to be validated by specialists

The exact qualification of the GAF-P and of the GAF-C according to the participants and the jurisdictions.

The legal bases and immunities applicable to each act of consequence, of enforcement and of redress.

Mutual recognition and the conditions of market access in the light of trade, tax and competition law.

The standards of evidence and of suspensive effect for provisional acts, alerts and emergency measures.

Data protection, localisation, transfers, erasure and evidentiary retention.

The clauses on survival after withdrawal, on reservations, on public policy and on the settlement of disputes.

The governance of appointments, budgets, audits, AI suppliers and recusal mechanisms.

The articulation with Article 103 of the Charter of the United Nations and with the binding decisions of the Security Council, for each of the GAF-R, GAF-P and GAF-C forms.

3. Documentary portfolio to be produced after consultation

Document	Indicative length	Function
GAF-R — Reference standard	25 to 40 pages	Common public and non-binding framework
GAF-P — Pilot agreement	20 to 30 pages + annexes	Data, obligations, notional prices, shadow alerts, evaluation
GAF-C — Draft convention	30 to 50 pages	Consent, jurisdiction, recognition, enforcement and withdrawal
Manual of functions	50 to 80 pages	Detailed procedures and indicators by function
National adoption kit	30 to 50 pages	Diagnosis, hosting arrangements, law, cost and pilot
Digital register of the GAF	Evolving database	Versions, parties, modules, acts, audits and redress

Annex P — Call of Carthage

This annex reproduces the Call of Carthage in full — the third of the three instruments of the Humanity Compact (see Table 14 and §11.6). Where the Carthage Charter (Annex N) sets out the principles and the Global Accountability Framework (Annex O) the operational obligations, the Call carries civic mobilisation and agenda-setting: an advisory instrument, without executive power or binding force. The text is reproduced as it stands.

To make the effects of global decisions visible, foreseeable where possible, reasoned and contestable

Consolidated draft V2 — places the Call in the continuity of “We the peoples of the United Nations”, specifies the four channels of participation and the guarantees of register integrity.

Status	Draft for consultation and public endorsement. It creates neither an automatic legal obligation nor endorsement of the detail of the 7+3 architecture.
Function	Civic, scientific and institutional instrument of the Humanity Compact: to mobilise, to place on the agenda, to federate pilots and to open the architecture to challenge.
Audiences	States, international organisations, parliaments, cities, universities, research centres, companies, civil organisations and citizens.
Commitment requested	To support the principles, the opening of evidence, experimentation and the right to criticise; not to approve in advance every institution or mechanism.
International anchoring	The Call stands in the continuity of “We the peoples of the United Nations” and under the Charter of the United Nations; the Carthage Charter expressly so provides (article 16).
Author of the draft	Nizar Yaiche — July 2026.

“Responsibility begins with visibility, is built through statement of reasons, and is fulfilled when correction remains possible.”

Note on the status of the Call

The Call of Carthage is the open-accession instrument of the Humanity Compact. It is neither the Carthage Charter, which sets the normative foundation, nor the Global Accountability Framework, which organises the obligations and procedures of participants. It constitutes a public invitation to recognise a problem, to support a working method, to open the evidence and to test solutions.

Signing the Call does not mean approving the creation of seven organisations, accepting a tax, acknowledging a liability, relinquishing a national competence or acceding to a jurisdiction. The signature expresses support for the principles of accountability, prevention, participation, scientific rigour and gradual experimentation.

Positioning formula: the Call asks for endorsement of a requirement and of a testing programme, not of an institutional regime already settled.

The three instruments of the Humanity Compact

Instrument	Question	Function
Carthage Charter	Which rights, safeguards and limits must any architecture obey?	Normative foundation
Global Accountability Framework	Who does what, with which data, procedures, audits and avenues of redress?	Operational framework
Call of Carthage	Who agrees to recognise the problem, to open the evidence, to participate and to test?	Mobilisation and agenda-setting

PROPOSED OFFICIAL TEXT

Call of Carthage

Decisions have changed scale. Responsibility has not yet followed.

A monetary policy, a technological standard, a digital infrastructure, a value chain, a trade decision or a climate crisis can produce effects far from the place where they are decided. These effects propagate across markets, States, firms, communities and generations. They sometimes alter the choices of those who took part neither in the initial decision nor in the definition of its mandate.

The international system is not empty. It has institutions, data, expertise, standards, funding and settlement mechanisms. But these capacities often remain fragmented. An effect may be measured without being qualified, acknowledged without response, financed without identifiable responsibility, or handled without the affected persons being able to know the reasons, produce an independent counter-assessment and obtain a review.

We reject two simplifications. The first consists in turning every external effect into a fault and every affected actor into a creditor. The second consists in holding that a decision complying with a domestic mandate exhausts every question of responsibility. A decision may be legitimate within its own framework and nevertheless produce effects that must be made visible, anticipated where reasonably possible, explained and discussed.

We call for the construction of a global accountability that rests neither on an omniscient authority nor on the goodwill of decision-makers alone. It must be inscribed in functions, interfaces, evidence, limited mandates, stopping rules and avenues of redress.

We place ourselves in the continuity of “We the peoples of the United Nations” and of the Universal Declaration of Human Rights. This Call creates no competing order: it stands under the Charter of the United Nations and extends, on the side of peoples, the lineage that runs from Monterrey and Addis Ababa to Sevilla — each generation adding the stratum that the previous one could not lay.

We support the idea that an accountability architecture must be functionally complete, relationally explicit and procedurally sound: the necessary functions must be covered; every holder of power must answer before an identifiable forum; evidence, uncertainty, objections and rights must survive the passage from one link to the next.

We also support a preventive accountability. Where a material risk of cascade is reasonably foreseeable and a window for action remains, information must be able to reach decision-makers, the parties concerned and preparedness mechanisms. The alert must neither govern in their place

nor create an automatic consequence; it must compel examination, statement of reasons, preparation and learning.

We recognise that the functions proposed by the Humanity Compact may be exercised by existing institutions, networks, protocols, new bodies or combinations of these forms. We do not make the number of institutions an objective. At equivalent guarantees, the lightest, most pluralist, most reversible solution, and the one least exposed to capture, must prevail.

We ask that corpora, methods, models, assumptions, limits, errors and negative results be open to adversarial challenge. A global architecture becomes legitimate neither through the sheer scale of its ambition nor through the moral quality of its language. It becomes so when it agrees to account for its own power, to be compared with simpler alternatives, and to be corrected or abandoned if it does not produce the value announced.

We invite States, international institutions, central banks, parliaments, cities, universities, researchers, firms, civil organisations and citizens to support a gradual programme: open the evidence; harmonise definitions; finance counter-assessment; organise alerts in experimental mode; conduct comparative pilots; obtain independent legal opinions; and publish the results.

Finally, we call for dignity, non-discrimination, participation, sustainability, statement of reasons, data protection and redress to be placed back within the very structure of decisions that produce effects beyond their borders.

We do not ask for adherence to a completed architecture.

We call for responsibility to be made testable.

The twelve commitments of the Call

1. Recognise displaced effects. Admit that territorially legitimate decisions may produce material effects on persons, economies or generations located outside their decision scope.

2. Distinguish intention, effect and responsibility. Refuse to infer fault automatically from harm, or the absence of responsibility from compliance with a domestic mandate.

3. Make evidence accessible. Publish or make auditable the data, assumptions, methods, models, uncertainties, versions and limits that ground important claims.

4. Protect the adversarial process. Guarantee effective access to information, to participation, to counter-assessment and to redress, including for actors with low capacity.

5. Prevent without governing by forecast. Organise the alert and the reasoned response where cascade risks are reasonably foreseeable, without transferring the decision to the producer of the scenario.

6. Separate conflicting roles. Prevent a single entity from measuring, qualifying, pricing, collecting, financing and adjudicating without justified and verifiable firewalls.

7. Preserve uncertainty at the interfaces. Transmit provenance, assumptions, objections, dissents and stopping conditions, and not merely a score or an amount.

8. Refuse automaticity. Never turn a measurement, a rating or an alert into a financial, commercial or legal consequence without competence, evidence, proportionality and redress.

9. Use AI under human authority. Allow artificial intelligence to assist analysis, never to receive originary authority over high-impact decisions.

10. Compare before institutionalising. Test the existing process, light protocols, federated networks and integrated architectures on the same case files and indicators.

11. Publish limits and negative results. Make refutability, independent evaluation and the right to simplify or to abandon into conditions of the project.

12. Begin with consented pilots. Proceed through shared data, simulations, shadow prices, advisory mechanisms and reversible experiments before any binding effect.

What the signature means

Signature expresses support for...	Signature does not amount to...
recognition of the deficit in the continuity of accountability	legal recognition of a fault or a debt
the opening of evidence and independent adversarial review	scientific validation of all the results of this book
the protection of rights, of reasoned justification and of redress	automatic accession to the Humanity Court
prevention, alert and reasoned response	veto power for a forecasting authority
comparative, gradual and reversible pilots	immediate acceptance of a binding regime
the search for the lightest architecture compatible with the safeguards	necessary approval of seven new institutions
cross-border cooperation founded on consent	renunciation of a constitutional or national competence

The four channels of participation

The Call is not only a signature: it opens four channels, whose thresholds, time limits and guarantees are detailed by the citizen participation guide and incorporated, where applicable, by the Global Accountability Framework (§6.3 of the present work).

Channel	What it allows	What it never allows
Endorsement	Public support, by category and level of commitment, with possible reservations.	Being presented as approving what has not been expressly accepted.
Qualified petition	Above a published threshold — of representativeness as much as of number — placing a question on the agenda of an institution in the chain and obtaining a reasoned response, published within a set time limit.	Carrying a decision, a consequence or a presumption of fault.
Deliberation by stratified sortition	A representative citizens' panel deliberates with access to expertise and to independent counter-assessment, then issues an opinion; the recipient institution examines it and gives reasons for any departure.	Binding the decision-maker or replacing constitutional procedures.
Transmission	Relaying a documented case file to the competent function, with acknowledgement of receipt and versioned tracking.	Creating a jurisdictional competence or a right to a given outcome.

Integrity of the channels. One person, one signature; verification proportionate to the effect sought; detection and publication of automated or coordinated campaigns; transparency of the funding of collection campaigns; and thresholds of geographical and category diversity, so that agenda-setting

is not captured by the most powerful mobilisation. The whole remains advisory, save express incorporation by the Global Accountability Framework.

Who may accede, and in what form?

Categories of accession

Category	Form of endorsement	Expected contribution
State or government	Political declaration, cooperation protocol or pilot commitment	Data, expertise, participation in an experiment, legal opinion
International organisation	Institutional endorsement or support for a specified programme	Hosting, methodology, funding, coordination or evaluation
Central bank or regulatory authority	Technical support or confidential participation in a pilot	Data, scenarios, experimental alerts, analysis of mandates
Parliament or parliamentary network	Resolution or declaration of support	Democratic scrutiny, public debate, AI governance
City or local authority	Local commitment or sectoral pilot	Use cases, participation, data and evaluation
University or research centre	Scientific endorsement	Replication, double coding, adversarial research, publication
Company or professional association	Endorsement of principles and pilot cases	Data, audit, independent counter-assessment, responsible experimentation
Civil organisation or community	Civic or collective endorsement	Identification of effects, participation, social scrutiny and rights
Citizen	Individual signature	Public support, contribution to debate and to consultations

Levels of commitment

Level	Commitment
Public support	To endorse the text of the Call and authorise publication of the name or of the institution.
Knowledge partner	To contribute to the literature, the data, the coding, the modelling or the replication.
Contradiction partner	To test the assumptions, identify the failures and publish an independent analysis.
Pilot partner	To take part in a pre-registered, reversible and evaluated experiment.
Capacity partner	To fund data, an independent counter-assessment, assistance or access for low-capacity jurisdictions.

Institutional accession form

Institution / organisation	
Country / jurisdiction	
Name and capacity of the signatory	
Basis of authority to sign	
Category of endorsement	
Level of commitment chosen	

Institution / organisation	
Proposed contribution	
Public reservations or clarifications	
Authorisation to publish the name	Yes / No
Date and signature	

Individual accession form

Name	
Country	
Occupation or affiliation — optional	
Email address — not public	
Authorisation to publish the name	Yes / No
Date and signature	

Governance of the Call and integrity of the register

The register of signatories must be public, versioned and auditable. Every institutional accession states the capacity of the signatory, the basis of competence, the level of commitment and any reservations.

Personal data not necessary for publication are protected. Electronic addresses, identity documents and verification information are not published.

No signatory may be presented as supporting an institution, a pricing, a consequence or an outcome that it has not expressly accepted.

Withdrawal from the register is possible upon verified request. The withdrawal is dated and does not retroactively erase earlier public versions where their retention is necessary to documentary integrity, subject to applicable law.

Where public expression exposes a signatory to serious risk, confidential support is possible: the public register then mentions only what has been expressly authorised, and the secretariat refrains from any disclosure that would expose the person or the organisation.

The funding of the secretariat of the Call, conflicts of interest, verification criteria and the rules for moderating contributions are published.

Roles of the secretariat of the Call

Role	Mandate	Prohibition
Verification	To verify the identity and capacity of institutional signatories	To assess their political opinions
Register	To publish endorsements, reservations, withdrawals and versions	To amend a declaration silently
Consultation	To organise open and adversarial contributions	To present a consultation as a binding vote
Connection	To connect researchers, institutions, communities and pilots	To attribute a legal competence that does not exist

Role	Mandate	Prohibition
Annual report	To publish progress, limits, disagreements and negative results	To conflate mobilisation with scientific validation

Public questions and answers

Does the Call demand the creation of a world government?

No. It demands that the necessary functions be covered and accountable. They may be exercised by existing institutions, networks or protocols.

Does signing mean accepting the 7+3?

No. The 7+3 is a candidate instantiation. The signature supports the principles, the opening of the evidence and the comparative pilots.

Does the Call create a debt of source countries towards affected countries?

No. Incidence, causality, net loss, equity, solidarity and law must be established separately.

Does the Call call into question the independence of central banks?

No. It proposes that cross-border risks be capable of analysis and of receiving a reasoned response; it transfers neither the mandate nor the decision.

Will artificial intelligence decide?

No. It may assist analysis, never receive originary authority over an official alert, a financial consequence or a remedy.

Does the Call compete with the United Nations?

No. It places itself in the continuity of “We the peoples of the United Nations” and under the Charter of the United Nations; in the event of conflict, United Nations obligations prevail, as the Carthage Charter expressly provides in its Article 16.

What does a qualified petition concretely trigger?

The placing of a question on the agenda of an institution of the chain and the obligation of a reasoned response, published within a fixed time limit. Never a decision, a financial consequence or a presumption of fault.

Why Carthage?

Carthage symbolises an ancient crossroads between continents, exchanges, law, power and interdependence. The name confers no particular competence on any State or city.

Is the project scientifically validated?

Not as a whole. It contains a theory, provisional descriptive results, specified models, simulations and a programme of external validation.

What is the first concrete action?

Open the corpora, form independent teams, launch a comparative pilot and finance the counter-assessment of the affected parties.

Proposed launch road map

Phase	Indicative duration	Actions
1. Closed consultation	6 to 8 weeks	Opinions from researchers, lawyers, public officials, institutions and community representatives; publication of the objections.
2. Public version	4 weeks	Revision of the text, launch of the website, register of signatories, confidentiality rules and verification.
3. First wave of endorsements	3 months	Universities, parliamentary networks, cities, development institutions and knowledge partners.
4. Pilot commitments	6 to 12 months	Selection of a shadow monetary pilot and of a Sevilla pilot; pre-registration and independent governance.
5. Carthage Report	Annual	Endorsements, contributions, replications, disagreements, pilots, costs, errors and simplification decisions.

Criteria for the success of the Call

The geographical and institutional diversity of the signatories, rather than their number alone.

The proportion of signatories who contribute to a datum, a replication, a counter-assessment or a pilot.

The publication of substantive objections and of responses, without suppression of dissents.

The capacity to attract source and recipient actors, powerful and vulnerable.

The transformation of symbolic support into pre-registered and evaluable programmes.

The capacity of the movement to recognise that a proposal must be simplified or abandoned.

Short version — one page

This version may be used for a web page, an event, a resolution, an invitation or a signature form.

Decisions have changed scale. Responsibility has not yet followed.

Public policies, financial flows, technologies, value chains and digital infrastructures produce effects beyond the borders and the generations that take part in their formation. The international system has many institutions, but still insufficiently connects measurement, qualification, prevention, consequence, financing and redress.

The Call of Carthage invites the construction of a global accountability grounded in rights, evidence, prevention and contestation. It does not turn every harm into a fault, does not demand a world government and does not entrust the decision to artificial intelligence.

We call for opening data and methods; distinguishing intention, incidence, causality, equity and law; protecting participation and counter-assessment; organising contestable alerts; separating conflicting roles; preserving uncertainty at the interfaces; comparing architectures; and beginning with consented, reversible and evaluated pilots.

Signing the Call does not mean approving a tax, a court or seven new institutions. It means supporting a requirement: where a decision displaces its effects beyond its mandate, those effects must be capable of being made visible, reasoned, foreseeable where reasonably possible, and contestable.

We do not ask for adherence to a completed architecture.

We call for responsibility to be made testable.

Annex Q — Elements of a model procedural mandate

This annex brings together the substantive elements that a procedural referral should contain in order to open the path described in §12.7, and develops §12.7.4. It is not a draft resolution: no session, no agenda item and no authoring State appear in it. A resolution belongs to the delegations that table it, negotiate it, amend it and sponsor it; the author may supply the theory, the evidence, the protocols and drafting elements — he cannot substitute himself for them (§12.7.6). The elements below are therefore drafted to be taken up, modified or set aside.

Proposed title — deliberately neutral, so that the process may be owned without endorsing a brand, a doctrine or an organisational chart: “Strengthening institutional continuity in the assessment and responsible management of significant cross-border and intergenerational effects”.

Q.1 Design principle: not creating one more commission

The first risk of a referral is not rejection: it is duplication. The system has already produced the 2009 Commission of Experts, the High-Level Panel on International Financial Accountability, Transparency and Integrity, the 2025 International Expert Commission, and the outcomes of Monterrey, Doha, Addis Ababa and Sevilla. A referral that added one more general commission would reproduce the deficit it purports to correct (Box 9). The mandate must therefore be entrusted to an existing mechanism — the Inter-agency Task Force on Financing for Development, whose function is already to monitor commitments, analyse gaps and advise the intergovernmental process — and accompanied by the following locks.

Lock	Intended effect
No new general commission	The text establishes no independent high-level group and no autonomous expert commission.
Use of the existing machinery	The report is prepared by the Secretary-General through the Inter-Agency Task Force on Financing for Development and its existing members.
Stocktaking before proposal	The report must draw up a tracking matrix of the Stiglitz, Ocampo, FACTI, Addis Ababa and Sevilla recommendations before proposing anything new.
Mandate centred on implementation	The mandate bears on the breaks between evidence, duty-holder, response, financing and redress, not on a new general reform of the global financial system.
No duplicate reporting	The results must be integrated into the Financing for Sustainable Development Report and the ECOSOC FfD Forum, rather than published in a parallel series.
Zero-institution option	The report must explicitly examine the possibility of creating no new permanent entity.
Automatic sunset	The temporary workstream ends with the submission of the report, unless States expressly decide otherwise.
Proof of added value	Any new function must demonstrate that it delivers a better result than an improvement of the existing mechanisms, at proportionate cost.

Q.2 Preambular elements

The preambular paragraphs perform three functions: to attach the request to texts already adopted, to delimit expressly what it does not presume, and to place non-duplication before the operative part.

Guided by the purposes and principles set out in the Charter of the United Nations, in particular international cooperation in solving international problems of an economic, social, cultural or humanitarian character, respect for the sovereign equality of States and the promotion of economic and social progress,

Recalling its resolution 70/1 of 25 September 2015, entitled “Transforming our world: the 2030 Agenda for Sustainable Development”,

Recalling also its resolution 69/313 of 27 July 2015, by which it endorsed the Addis Ababa Action Agenda of the Third International Conference on Financing for Development,

Recalling further its resolution 79/1 of 22 September 2024, entitled “The Pact for the Future”, including the Global Digital Compact and the Declaration on Future Generations annexed thereto,

Recalling its resolution 79/323 of 25 August 2025, by which it adopted the Sevilla Commitment, and the renewed mandate of the Inter-agency Task Force on Financing for Development to monitor commitments, analyse gaps and advise the intergovernmental process,

Reaffirming that each State has the primary responsibility for its own economic and social development and that national policies must take account of the priorities, circumstances and capacities specific to each country,

Reaffirming also the mandates, competences, independence, privileges and immunities of national and international institutions, in accordance with applicable law and with the instruments governing them,

Taking note of the recommendations of the Commission of Experts of the President of the General Assembly on Reforms of the International Monetary and Financial System, transmitted in document A/63/838,

Taking note also of the report of the High-Level Panel on International Financial Accountability, Transparency and Integrity for Achieving the 2030 Agenda, transmitted in document A/75/810/Rev.1,

Taking note further of the 2025 report of the International Expert Commission on Financing for Development, entitled “Financing a Sustainable Future: Proposals for a Renewed Global Development Finance Agenda”,

Recognising that this work, together with the successive outcomes of the financing for development process, has already established a substantial body of diagnoses and recommendations concerning the international financial architecture, debt, taxation, cooperation, transparency, financial flows, systemic risks and the needs of developing countries,

Stressing that the present process is not intended to constitute a new general reform commission or to reproduce recommendations already formulated without first examining their state of implementation, the institutions responsible and the precise causes of non-implementation,

Recognising also that policies, decisions, infrastructure, technologies, financial flows, commercial activities and other actions adopted or authorised in one jurisdiction may, in certain circumstances, produce economic, social, environmental, technological or human rights effects beyond that jurisdiction or on future generations,

Recognising further that the international system already has numerous instruments, bodies, financing mechanisms, data systems, oversight procedures and avenues of redress, but that gaps may remain in the continuity between the production of evidence, its qualification, the

identification of a duty-holder responsible for the response, financing, prevention, review and redress,

Stressing that the existence of an adverse effect does not, in itself, establish exclusive causation, fault, a breach of international law, a net global loss or an automatic entitlement to compensation,

Stressing also the need to distinguish between the measurement of an effect, the establishment of its causation, its appraisal in the light of equity and the determination of any legal liability,

Conscious of the need to avoid the duplication of mandates, the premature creation of institutions, the proliferation of reporting obligations, disproportionate administrative burdens, the politicisation of evidence and the undesirable effects of insufficiently tested mechanisms,

Recognising that a gradual, voluntary, transparent and pilot-based approach may make it possible to assess implementation gaps and to compare different solutions before any decision concerning new permanent or legally binding mechanisms,

Stressing the importance of the transparency of methods, the traceability of data, the publication of uncertainties, the possibility of an independent counter-assessment and the effective participation of countries and populations liable to be affected,

Recognising also that digital technologies and artificial intelligence may contribute to analysis, while stressing that any official decision must remain under the authority and responsibility of identifiable human persons and institutions,

Q.3 Operative elements

The operative part organises an inventory, a gap analysis, voluntary pilots and a return before States. It creates no permanent institution, presumes no liability and establishes no automatic consequence.

1. Recognises the value of strengthening, without creating any new legal regime by the present resolution, the continuity between existing mechanisms of measurement, assessment, prevention, response, financing, oversight and redress concerning significant cross-border and intergenerational effects;

2. Affirms that the work carried out pursuant to the present resolution is guided by the following principles:

(a) respect for the sovereign equality of States, for national ownership, for institutional mandates and for applicable law;

(b) priority given to existing institutions and mechanisms where these can perform the required functions in an effective, independent and proportionate manner;

(c) the distinction between the measurement of an effect, the establishment of its causation, its appraisal in the light of equity and its legal qualification;

(d) the absence of any automatic presumption of liability, compensation, pricing, sanction or jurisdiction;

(e) the transparency of data and methods, subject to the applicable rules relating to confidentiality, security, data protection and legitimate property rights;

(f) the publication of assumptions, material uncertainties, limitations, dissenting opinions and negative results;

- (g) proportionality, the possibility of not concluding where the evidence is insufficient and the preference for the least complex institutional solution offering equivalent guarantees;
 - (h) the effective participation of developing countries, affected populations, independent experts and other relevant stakeholders;
 - (i) the maintenance of an identifiable human authority for any public, financial, regulatory or judicial decision;
3. Also affirms that nothing in the present resolution modifies the legal mandates, independence, privileges, immunities or decision-making competences of States, central banks, international organisations or other institutions concerned;
 4. Further affirms that participation in a study, a consultation or a pilot project carried out pursuant to the present resolution constitutes neither an acknowledgement of liability, nor consent to jurisdiction, nor acceptance of any financial obligation other than that expressly agreed to by the participant;
 5. Decides that the follow-up requested by the present resolution shall be carried out within the framework of the existing mechanisms of the financing for development process and that no independent high-level commission, standing expert group or parallel reporting arrangement shall be created;
 6. Requests the Secretary-General, through the Inter-agency Task Force on Financing for Development and within the framework of its existing mandate, to submit to the General Assembly, at a later session to be determined at the time of tabling, a targeted assessment of the implementation and interface gaps concerning significant cross-border and intergenerational effects;
 7. Also requests the Inter-agency Task Force to integrate this assessment, as far as possible, into the Financing for Sustainable Development Report and into the existing online monitoring arrangements, in order to avoid any new stand-alone series of reports;
 8. Requests the Secretary-General to ensure that the assessment includes, before any new proposal, a public tracking matrix of relevant previous recommendations, in particular those of the Stiglitz Commission, the FACTI Panel, the 2025 Ocampo Commission, the Addis Ababa Action Agenda and the Sevilla Commitment, indicating for each recommendation:
 - (a) its content and its original text;
 - (b) the States, organisations or institutions on which its implementation falls;
 - (c) its state of implementation, in so far as this can be established;
 - (d) the results obtained, the persisting gaps and any unintended effects;
 - (e) the documented reasons for its non-implementation or partial implementation;
 - (f) the institutional, informational, financial or legal interfaces that were lacking;
 9. Decides that no new recommendation should appear in the assessment without setting out the closest precedent, the specific added value of the proposal, the institution called upon to answer for it, its foreseeable cost, the outcome indicators and the reason why an improvement of existing mechanisms would be insufficient;
 10. Further requests the Secretary-General to ensure that the assessment:

- (a) maps the existing international, regional and national mechanisms of measurement, reporting, prevention, financing, oversight, dispute settlement and redress;
- (b) identifies any functional, relational and procedural gaps, in particular at the points of transmission of data, assessments, decisions and challenges;
- (c) considers as a priority the means of strengthening the coordination, interoperability and accountability of existing mechanisms;
- (d) compares an improved status quo, federated protocols among existing institutions and, only where justified, specialised mechanisms;
- (e) explicitly considers the option of creating no new permanent entity;
- (f) assesses the legal bases, the limits of competence, the procedural guarantees, the costs, the capacity needs and the risks of capture associated with each option;
- (g) examines the conditions of access of developing countries and affected populations to data, expertise, counter-assessment and review;
- (h) proposes, where appropriate, a framework of voluntary, comparative and time-limited pilot projects accompanied by pre-established criteria for continuation, simplification, suspension or discontinuation;
- (i) assesses the benefits, costs and risks of artificial intelligence and other digital technologies, including human oversight, cybersecurity, auditing and operation without artificial intelligence;

11. Requests the Inter-agency Task Force to use its existing membership and consultation mechanisms, including contributions from the regional commissions, the international financial institutions, the relevant United Nations bodies, Member States and stakeholders, without constituting a new standing panel or transferring decision-making power to external experts;

12. Invites the Economic and Social Council to devote, within the framework of a forthcoming Financing for Development Follow-up Forum, a dialogue session to the interface gaps between the existing mechanisms of measurement, prevention, financing, implementation and redress, drawing on the assessment requested and without establishing a parallel process;

13. Invites Member States, the regional commissions, international and regional organisations, the international financial institutions, development banks and other interested entities to submit information on:

- (a) the existing mechanisms that address cross-border or intergenerational effects;
- (b) the difficulties encountered in the transmission of data, coordination, participation, financing, implementation and redress;
- (c) the practices that make it possible to preserve the provenance of data, uncertainty, the reasons given for decisions and the possibility of challenge;
- (d) the areas in which a voluntary pilot project could bring measurable added value;

14. Also invites interested Member States and institutions to propose or host voluntary pilot projects that:

- (a) bear on a precisely defined material and geographical scope;
- (b) rely as far as possible on existing institutions and competences;
- (c) compare the existing procedure with at least one other configuration of cooperation;

- (d) pre-register their hypotheses, indicators, stopping rules and evaluation methods;
 - (e) preserve the traceability of data, models, uncertainties, objections and human decisions;
 - (f) provide for an independent evaluation and the publication of the results, including where these do not confirm the usefulness of the mechanism tested;
 - (g) entail no pricing, compensation, sanction or legally binding consequence without a separate legal basis and express consent;
 - (h) provide, as appropriate, for the participation and counter-assessment of affected populations;
15. Encourages development partners, the international financial institutions and other interested donors to support, on a voluntary basis, the strengthening of the statistical, legal, technological and institutional capacities of developing countries participating in the work;
 16. Stresses that any financial support for the production or assessment of data must protect the independence of measurement and prevent an entity financing an analysis from determining its results;
 17. Encourages the entities participating in the pilot projects to provide for procedures allowing the rectification of data, the submission of opposing observations, the review of methods and results, protection against reprisals in accordance with applicable law and the suspension of the mechanism where its costs or risks exceed its demonstrated value;
 18. Decides that the specific workstream requested of the Inter-agency Task Force shall end upon the submission of the assessment referred to in paragraph 6, unless the General Assembly expressly decides otherwise at a later stage;
 19. Stresses that the conclusions of the assessment and of the pilot projects prejudice neither the future creation of a body, nor the negotiation of an international instrument, nor the recognition of a legal obligation, nor the acceptance of a dispute settlement mechanism;
 20. Invites Member States, development partners, the international financial institutions and other interested donors to make voluntary contributions in order to support the implementation of the present resolution, in particular the assessment requested in paragraph 6, the effective participation of developing countries and the counter-assessment of affected populations, on the understanding that such contributions confer on those making them no influence over the findings, methods or conclusions;
 21. Requests the Secretary-General to seek efficiency gains, to use existing resources and capacities to the fullest extent possible and to present, in accordance with the rules of procedure of the General Assembly, any programme budget implications;
 22. Decides to consider, at a later session to be determined at the time of tabling, under the item on the follow-up to and implementation of the outcomes of the International Conferences on Financing for Development, the assessment requested in the present resolution and any action that it may be appropriate to take thereon.

Q.4 Why an existing mechanism rather than a new commission

Why use the Inter-agency Task Force

The Inter-agency Task Force on Financing for Development already has the functions of monitoring commitments, analysing progress and gaps and advising the intergovernmental

process. Its composition makes it possible to avoid reconstituting an external panel. The text entrusts it with a temporary workstream, integrated into its existing publications and forums.

Difference from the Stiglitz Commission

The Stiglitz Commission had a substantive mandate for the general reform of the international monetary and financial system. The present draft does not redefine that system and does not produce a new general list of policies. It analyses implementation, duty-holders, evidence interfaces and feedback mechanisms.

Difference from the 2025 Ocampo Commission

The Ocampo Commission proposed a renewed development finance agenda in order to feed into FFD4. The draft resolution begins by examining the translation of that commission's recommendations and of the Sevilla outcome into responsibilities, useful flows, verifiable data and corrections in the event of drift.

Difference from FACTI

FACTI bore principally on integrity, transparency, taxation and illicit financial flows. The present draft does not take up its mandate. It requests that its relevant recommendations be integrated into the implementation matrix and that the interface gaps be studied without creating a new specialised panel.

What remains open

The text settles neither the number of institutions, nor the existence of a jurisdiction, nor the nature of any compensation. It makes it possible to conclude that existing mechanisms suffice, that a federated protocol is preferable or that certain functions must be strengthened. The option of rejection forms part of the mandate.

Q.5 Official sources of the texts cited

- A/RES/79/323, Sevilla Commitment — Resolution adopted on 25 August 2025 under the item on the follow-up to the International Conferences on Financing for Development.
- A/63/838, Stiglitz Commission — Recommendations of the Commission of Experts of the President of the General Assembly on Reforms of the International Monetary and Financial System.
- A/75/810/Rev.1, FACTI Panel — Report of the High-Level Panel on International Financial Accountability, Transparency and Integrity for Achieving the 2030 Agenda.
- International Expert Commission on Financing for Development, 2025 — Report Financing a Sustainable Future, led by José Antonio Ocampo.
- Inter-agency Task Force on Financing for Development — Existing mechanism responsible for monitoring commitments, analysing gaps and advising Governments; its mandate was renewed by the Sevilla Commitment.
- Financing for Sustainable Development Report 2026 — First report of the Task Force since FFD4, centred on the implementation of the Sevilla Commitment and including a mapping of commitments and initiatives.

The symbols, the session for submission of the report and the agenda item references are to be confirmed by the sponsoring delegation and the Secretariat at the time of any tabling.

About the author

About the author. Nizar Yaiche was Minister of Finance of the Republic of Tunisia in 2020, steering the country's budgetary response to the COVID-19 crisis and negotiating the IMF's first Rapid Financing Instrument for the MENA region. An engineer by training (École Centrale Paris; executive education, Harvard Business School), he has led public-sector digital transformation assignments in more than thirty countries, most recently holding the position of global head of the public and government sector practice within a Big Four firm. He writes here in a strictly personal and independent capacity.