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Transnational Administration and Cross-Subsidy Policy: A Conceptual Framework for Crisis Resource Allocation Beyond the Covid-19 Emergency

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ABSTRACT

This article addresses the disconnect between normative prescriptions for transnational administration and the operational realities of crisis resource allocation. It asks why cross-border solidarity mechanisms failed during COVID-19 and what conceptual architecture might make them more adaptive in future emergencies. The study develops a Global Cross-Subsidy Policy (GCSP) framework through a qualitative meta-synthesis of 71 interdisciplinary sources published between 1996 and 2026. The analysis identifies three conditions under which cross-subsidy logics operate transnationally: (1) a clear cost-transfer mechanism that shifts resources from surplus to deficit units, (2) an identifiable public-good rationale beyond emergency charity, and (3) institutional channels capable of executing transfers without reproducing donor–recipient hierarchies. Applied to fisheries reform, energy assistance, and vaccine financing, these criteria reveal that pandemic-era measures rarely constituted cross-subsidies in the strict economic sense; most were ad hoc fiscal transfers or market interventions. The article argues that a GCSP is conceptually defensible only as a modular framework combining legal carve-outs, data interoperability standards, and community-embedded evaluation rather than as a unified global fund. The framework's contribution lies in specifying the boundary conditions under which cross-subsidy principles can be translated from domestic regulatory economics to transnational crisis governance; its principal limitation is reliance on secondary sources and the absence of primary empirical validation.

Keywords: Cross Subsidy; Transnational Administration; Crisis Governance; Global Public Goods; Policy Adaptation

1. INTRODUCTION

The COVID-19 pandemic did not create the coordination failures of transnational administration; it exposed them with unusual clarity. When export restrictions on medical supplies multiplied and multilateral guidance was ignored in operational practice, the resulting pattern was not simply a failure of goodwill but a structural mismatch between institutions designed for slow-moving negotiation and a crisis demanding rapid, redistributive action (Woo 2020; Capano et al. 2020; Van Hecke, Fuhr, and Wolfs 2021). The puzzle at the heart of this article is not why cooperation failed, but what conceptual resources might allow scholars and policymakers to specify with greater precision than the language of "solidarity" or "global public goods" typically permits

how resources ought to move across borders when the costs of inaction are shared but the capacity to act is not.

The term "cross-subsidy" offers one such resource, but it enters transnational analysis burdened by a narrow regulatory genealogy. In mainstream economics, cross-subsidization refers to a pricing structure in which revenues from one set of products or customer groups cover the costs of another, often under regulated conditions that impose universal service obligations (Heald 1996, 1997). The concept migrated into network industries electricity, telecommunications, postal services where it became a tool for balancing affordability with cost recovery. In these technical accounts, cross-subsidization is either a necessary evil (to ensure access to essential services) or an inefficiency to be eliminated through liberalization. This thin framing obscures the deeper question that the pandemic made urgent: whether the logic of structured resource transfer from surplus to deficit, from low-cost to high-cost constituencies, from those who can pay to those who cannot can be deliberately designed into transnational governance rather than left to the improvisations of crisis management.

This article argues that the answer is a qualified yes, but only if the concept is operationalized with far greater strictness than recent scholarship has shown. Several studies have retrospectively labeled pandemic-era measures vaccine procurement subsidies, energy bill relief, fisheries cash transfers as instances of cross-subsidization (Lazo et al. 2023; Aranceta-Garza and Cisneros-Montemayor 2025). Yet not everything that looks like a cross-subsidy is one. Under a strict economic definition, a cross-subsidy requires (a) an identifiable cost or revenue transfer between distinct units, and (b) a pricing or allocation structure that would not emerge under unregulated market conditions (Heald 1997; De Gorter, Just, and Kropp 2008). General fiscal transfers funded from tax revenue, however valuable, do not meet this threshold: they are redistribution, not cross-subsidization. The analytical contribution of the present article lies in specifying this distinction and in asking what would be required for a genuine cross-subsidy architecture to operate transnationally.

The article develops a Global Cross-Subsidy Policy (GCSP) framework through a qualitative meta-synthesis of 71 interdisciplinary sources. It proceeds in four steps. Section 2 reviews the literature on transnational administrative failure, coordination, and local adaptive governance, identifying the gap that a cross-subsidy lens might fill. Section 3 reconstructs the conceptual foundations of cross-subsidization, from Abrahamic moral economies to regulatory economics and algorithmic allocation. Section 4 specifies the methodology, including the criteria used to distinguish cross-subsidies from adjacent forms of resource transfer. Section 5 applies those criteria to three pandemic-era domains fisheries reform in Mexico, energy assistance in Ibero-America, and vaccine financing and finds that most measures fail the strict definition. Section 6 discusses the legal, political, data, and legitimacy challenges of constructing a GCSP, and Section 7 concludes by specifying the framework's novelty, limitations, and conditions for further empirical investigation.

The article deliberately moves beyond the temporal frame of the COVID-19 emergency. The pandemic is treated as a revealing case, not as the permanent context of the argument. The institutional deficits it exposed autonomy without operational capacity, coordination without enforcement, data without interoperability will recur in climate-related disasters, antimicrobial resistance, and future pandemics. A framework designed only for COVID-19 would be obsolete; a

framework designed for the structural problem of redistributive crisis governance may have longer analytical shelf life.

2. LITERATURE REVIEW

2.1. Autonomy And Its Discontents in Transnational Administration

Transnational administration, defined as the regulation and implementation of public-oriented global policies by actors operating beyond state boundaries but beneath the global level, was never designed for the kinetic intensity of pandemic decision-making (Stone & Ladi, 2015). Its normative apparatus soft law, reporting systems, and expert committee oversight assumes that states will cede some operational control in exchange for coordination gains. The crisis exposed how deeply the operational autonomy of international organizations depended on member-state authorization and funding. The resulting crossroads was summarized clinically: regional and international bodies could issue guidance but could not compel action (Van Hecke et al., 2021). The WHO's recommendations on travel restrictions and testing were widely ignored in the early weeks of the pandemic, and the organization had no enforcement leverage beyond moral suasion.

A decades-long neoliberal transformation was traced in which bureaucratic autonomy shifted from direct operational capacity to financial autonomy (Baranes & Hazen, 2022). International organizations were increasingly evaluated on their ability to manage budgets, attract co-financing, and demonstrate efficiency metrics that had little to do with emergency response. The result was a class of bodies that could produce elegant strategic plans but could not deploy field hospitals or redirect supply chains at speed. When the pandemic hit, the instruments that had been hollowed out operational surge capacity, direct procurement authority, rapid deployment teams were precisely those most urgently needed. The lesson is not simply that international organizations need more money; it is that they need a different kind of autonomy, one that grants pre-authorized standing to act in specified crisis scenarios without waiting for member-state consensus on each operational decision. Any cross-subsidy architecture must confront this autonomy puzzle directly, designing mechanisms that can bypass the iterative authorization cycles that paralyzed transnational responses in 2020.

Decentralized political systems compounded the problem in a different register. COVID-19 stressed the Spanish territorial system and demonstrated that fragmented authority and contested power-sharing could produce slow decision-making even under extreme pressure (Erkoreka, Creus, and Kölling 2021). A pattern emerged across federal and quasi-federal systems: lower organizational autonomy at the central level correlated with slower, less effective crisis responses, while higher local autonomy when combined with effective intergovernmental coordination allowed for more adaptive measures (Zheng 2026; de Melo and Papageorgiou 2021). The paradox is central to cross-subsidy design: autonomy at the wrong level (rigid international bodies) was paralyzed, while autonomy at the right level (local actors with contextual knowledge) was productive only when connected to enabling resources and coordination mechanisms.

2.2. Coordination Failures and the Collective Action Problem

Coordination failures proved pervasive across every governance level. Through econometric analysis, cross-country externalities and the absence of coordination mechanisms were shown to lead to inconsistent policies, delayed threat identification, and misallocation of resources (Lago-Peñas et al., 2022). When one country imposed an export ban on personal protective equipment, others retaliated in kind, setting off a cascade that left health workers everywhere unprotected. This was a classic collective action failure: individually rational behavior producing a collectively irrational outcome. The institutional machinery designed to prevent such failures the International Health Regulations, WTO trade facilitation provisions, and regional mutual assistance pacts proved too weak or too slow to reverse the spiral. Countries with pre-existing coordination bodies fared better, but even they suffered from the absence of real-time data sharing and pre-negotiated burden-sharing agreements.

Within countries, Australia, Canada, Germany, and Switzerland all struggled with intergovernmental coordination, though the intensity varied by institutional design (Schnabel & Hegele, 2021). Federal systems faced greater hurdles because shared jurisdictions required constant negotiation. Germany's federal–Länder balance produced a patchwork of policies that varied not only across states but within neighboring counties. Switzerland's cantonal autonomy initially enabled agility but later impeded coherent vaccination and testing strategies. Canada's fiscal transfer system was adapted for pandemic response an implicit form of cross-subsidy but only after prolonged political bargaining. These cases demonstrate that coordination is not a binary variable but a fragile, ongoing achievement requiring political maintenance. Any transnational cross-subsidy policy must anticipate these domestic coordination challenges, because international transfers ultimately land on national institutional terrain that may be ill-equipped to absorb and allocate them effectively.

In the global South, the indirect governance structure used by PAHO and WHO to coordinate responses in Latin America was studied; these bodies pooled resources and offered technical guidance but lacked the power to force national governments to coordinate (González, 2021). The resulting operational inefficiencies were quantified using data envelopment analysis, showing that health system efficiency scores declined when intermediate outputs such as testing and contact tracing were suboptimal (Singh et al., 2026). The implication for cross-subsidization is stark: when coordination fails, resources one country dedicates to suppression are wasted as imported cases reignite outbreaks, effectively subsidizing the free-riding of neighbors.

2.3. Local Adaptive Governance as A Counterpoint

If coordination failures were the pandemic's most visible governance deficit, the quiet successes of local adaptive governance were its most important counterpoint. The literature is unusually consistent: localities with greater decision-making autonomy experienced lower case and death rates, especially when healthcare provision was organizationally diverse (Minniti et al., 2025). The explanation is not that local governments are inherently more competent but that they possess contextual knowledge about informal settlements, migrant worker dormitories, and supply bottlenecks knowledge that central authorities lack and they can act on this knowledge without waiting for multi-level approvals. Learning health communities were described as more rapid

adopters of best practices than centralized systems (Ramaswamy et al., 2023). In the United States, community health centers allowed to reallocate funding flexibly were significantly more resilient than those bound by rigid federal grant conditions.

The key mechanism was not independence but intelligent interdependence. Communities improvised because they were not waiting for central directives, yet they were connected enough through professional networks, informal information sharing, and web platforms to learn from each other's experiments. Authorities can facilitate distributed improvisation by eliminating decision bottlenecks (Phillips et al., 2023). Central governments that provided enabling resources data, funding waivers, and legal safe harbors without dictating operational details facilitated vaccine rollout and community engagement. This is precisely the balance a well-designed cross-subsidy mechanism can enable: central resource pools distributed to local actors with superior contextual knowledge, under conditions that are light but not absent. The conditions should focus on transparency, learning, and non-discrimination rather than prescribing operational methods. A GCSP must resist the gravitational pull toward monolithic, standard-issue solutions and instead embed modularity: broad principles that apply everywhere and a menu of implementation options selectable by entities closest to the ground. The temptation to over-standardize in the name of accountability is persistent; the pandemic's evidence argues that accountability is better served by measuring outcomes than by enforcing uniformity of inputs (Bracke et al., 2024).

2.4 The Conceptual Foundations of Cross-Subsidy

2.4.1 From Moral Economy to Regulatory Economics

Cross-subsidization occupies an awkward position in the policy sciences. In mainstream economic literature, it is narrowly construed as an intra-firm or intra-sectoral practice where profitable units cover the losses of others, often under regulated monopolies (Heald, 1996, 1997). The concept migrated into regulatory economics through network industries, where it balanced universal service obligations with cost recovery. A general theory of cross-subsidization in agriculture was formalized, showing how inframarginal support mechanisms affected output and exit decisions (De Gorter et al., 2008). In these technical accounts, cross-subsidization is either a necessary instrument for affordability or a source of inefficiency to be eliminated through liberalization. The underlying assumption is that resources should be allocated according to marginal cost principles, and deviations require special justification. This thin framing, while analytically powerful within its domain, obscures the normative fabric from which cross-subsidy principles emerged.

The intellectual history reaches back to the redistributive ethics codified in the Abrahamic traditions. Christianity's tithe system directed a tenth of produce and later income to support religious institutions and the poor; within the Catholic Church, wealthy dioceses subsidized missionary activities and poorer congregations, a practice that informed early modern European poor laws. Islamic jurisprudence developed zakat, one of the five pillars, obligating Muslims whose wealth exceeds a threshold (nisab) to pay 2.5 percent annually to specified categories of recipients. Judaism's tzedakah, often translated as charity, is better understood as a legal requirement of righteousness mandating structured giving. What these traditions share is a conception of redistribution as a constitutive social bond rather than a distortion of market signals. Resources

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belong ultimately to the divine, and the human holder is a steward with obligations to the wider community. This theological backdrop matters for transnational policy because it provides a moral vocabulary that resonates across cultural settings in ways the clinical language of "externalities" does not. A GCSP that speaks only the language of efficiency will fail to mobilize the political will that crises demand.

2.4.2 The Strict Economic Definition and Its Boundary Conditions

For analytical purposes, this article adopts a strict definition: a cross-subsidy exists when (1) a transfer of costs or revenues occurs between distinct units or customer classes within an institutional framework that constrains pricing or allocation, and (2) the transfer is structured to achieve a public-interest objective that would not be served by unregulated pricing (Heald 1997; De Gorter, Just, and Kropp 2008). Two boundary conditions follow. First, general fiscal transfers funded from broad-based taxation are not cross-subsidies; they are redistribution. Second, emergency relief financed from general revenue is not a cross-subsidy unless it embodies a deliberate cost-shifting architecture for example, requiring higher-cost users to pay above marginal cost so that lower-cost users can pay below it. This distinction matters because much of the pandemic-era literature conflates cross-subsidization with any resource transfer from rich to poor, thereby diluting the concept's analytical precision.

The regulatory landscape for cross-subsidies at the transnational level is thin. The WTO's Agreement on Subsidies and Countervailing Measures (SCM Agreement) disciplines subsidies as trade distortions, not as instruments of global redistribution (Wouters & Coppens, 2009). The public health policy space under the SCM Agreement was mapped, and pandemic-related subsidies could be defended under existing provisions but only with uncertainty (Lin & Tsai, 2022). The threat of countervailing duties chills governments considering large-scale health subsidies, including those for global public goods such as vaccine development. The EU's Foreign Subsidies Regulation, in force since 2023, expands subsidy control beyond the WTO framework but remains a defensive instrument; it does nothing to facilitate proactive cross-border subsidization for crisis response (Stegink, 2025). It has long been argued that the boundary between legitimate state aid and trade-distorting subsidy is inherently political and cannot be settled by legal texts alone (Rubini, 2010, 2021). The pandemic vindicated this realist position: states used every available ambiguity to justify subsidy policies, and the WTO dispute settlement system was essentially irrelevant to pandemic-era trade tensions.

Regional trade agreements offer more promise. Future preferential trade agreements are shown to be departing from the paradigm of subsidies as market distortions toward subsidies as instruments of legitimate policy objectives, including public health and crisis preparedness (Biffi et al., 2025). Japan's FTAs have been documented as exploring more flexible subsidy disciplines (Iino, 2023). The legal pathway for a GCSP exists in embryonic form; it requires articulation and diplomatic momentum, ideally through a stand-alone protocol on crisis cross-subsidies annexed to the SCM Agreement or adopted as a plurilateral agreement.

2.4.3 Algorithmic Allocation and the Technological Frontier

A parallel development in the energy sector suggests that cross-subsidization need not be a static, annual budget decision. Smart grids, distributed energy resources, and optimization algorithms have enabled dynamic, granular, and transparent value distribution. The pandemic provided an inadvertent natural experiment: demand shocks reduced commercial and industrial electricity consumption while residential loads increased. Systems with smart meter infrastructure and time-of-use tariffs managed the load shift without blackouts; systems without them struggled (Colelli et al., 2021). Virtual power plants (VPPs) aggregations of rooftop solar, battery storage, electric vehicles, and controllable loads dispatched through a cloud platform allow real-time compensation and automated value distribution (Jegadeesan et al., 2023). VPP potential for cost-reflective network charging with explicit cross-subsidies to vulnerable consumers has been demonstrated (Dapkute et al., 2023). Hybrid genetic algorithms and Pareto optimization now balance efficiency, equity, and environmental objectives in tariff-setting models (Jargstorf & Belmans, 2015; Khodoomi & Sahebi, 2023).

The relevance for a GCSP is direct: a global pandemic preparedness facility could, in principle, aggregate contributions and dispense grants automatically when predetermined epidemiological and capacity triggers are exceeded. Smart contracts could encode who pays, who receives, and under what conditions, reducing political manipulation and delay. Atheeswaran et al. (2026) have proposed auction-theoretic transactive market frameworks for community energy systems; the conceptual leap to a global health cross-subsidy market is modest, even if politically daunting. Two quantitative illustrations make the point concrete. A facility could be designed to disburse automatically when a composite trigger is met: for example, when (a) a WHO-declared PHEIC is active, (b) the effective reproduction number (Rt) in a recipient region exceeds 1.2 for two consecutive weeks, and (c) hospital bed occupancy attributable to the pathogen exceeds 85 percent of surge capacity. In a financing facility with a notional pool of $10 billion, a formula could allocate 40 percent of the annual disbursement to the three regions with the highest burden of severe cases and the lowest per-capita health expenditure, with tranches released upon verification of expenditure through interoperable platforms. These are illustrative parameters, not operational recommendations, but they demonstrate that the gap between VPP algorithms and crisis financing is one of institutional design rather than technical feasibility. The algorithms will be only as good as the values programmed into them by human designers.

3. METHOD

3.1 Four Interlocking Assessment Dimensions

The GCSP framework is built on four interlocking assessment dimensions, each of which must be satisfied for a cross-subsidy initiative to achieve success in a transnational administration context. These dimensions are not additive checkboxes; they interact, and a failure in any one of them can ruin the whole initiative (Figure 1).

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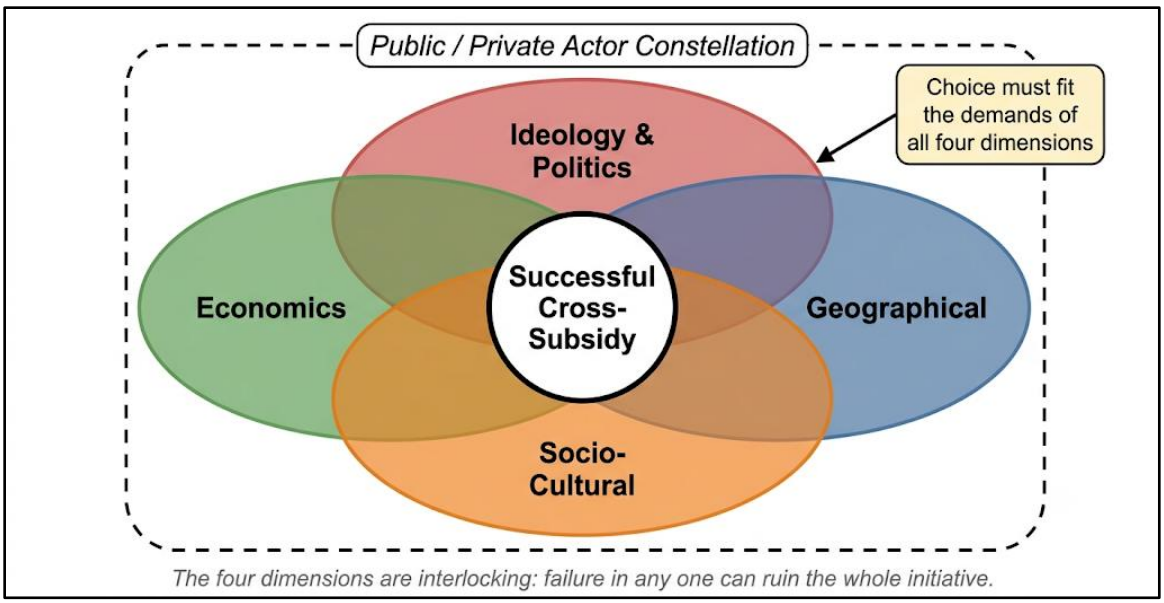


Figure 1: The Global Cross-Subsidy Policy Framework a Multi-Layered Analytical Model

The first dimension is ideology and politics, which captures the alignment of the cross-subsidy transfer with the dominant ideological commitments of the participating polities and the political feasibility of sustaining the transfer over time. A cross-subsidy perceived by the donor public as a giveaway to corrupt foreign elites, or by the recipient public as a humiliating form of neo-colonial charity, will fail regardless of its economic design. The politics of subsidy is invariably entangled with narratives of national identity, sovereignty, and fairness.

During the pandemic, the political backlash against vaccine donations to developing countries framed by some domestic constituencies as "putting foreigners before our own citizens" constrained the generosity of several high-income countries, a dynamic that a GCSP must anticipate and manage through transparency and reciprocal obligation structures. The second dimension, geographical, concerns the spatial distribution of surplus and deficit, including physical infrastructure connectivity, environmental vulnerability, and epidemiological connectivity. A cross-subsidy that ignores geography is a policy designed for an imaginary flat world. The pandemic made brutally clear that disease transmission follows travel routes, trade corridors, and patterns of human mobility that no border wall can fully interrupt. A GCSP would use spatial data air passenger volumes, genomic surveillance networks, and climate vulnerability maps to identify where cross-subsidies can most efficiently interrupt transmission chains or build resilience.

The geographical dimension also highlights the relevance of regional approaches: a cross-subsidy pool for Southeast Asian nations, administered through ASEAN, may be more agile and politically acceptable than a single global fund. The framework thus encourages variable geometry, where cross-subsidy arrangements can be tailored to the spatial scale at which externalities are most keenly felt. The third dimension, socio-cultural, recognizes that resource transfers are never purely technical transactions; they are embedded in cultural meanings, trust relations, and social organizations. Drawing directly from the Abrahamic moral economy discussed earlier, this dimension insists that cross-subsidies must be compatible with local norms of reciprocity, dignity,

and obligation. The "soft" factors that Kravchenko and Yusupova (2020) identified as critical to pandemic response social trust, leadership credibility, and cultural homogeneity or its absence apply equally to cross-subsidy design.

A transfer mechanism that requires communities to publicly identify themselves as "aid recipients" in stigmatizing ways will erode social cohesion and reduce uptake. By contrast, programs framed as mutual insurance where all parties contribute and may one day draw down can build solidarity rather than dependency. The socio-cultural dimension thus serves as a check on the technocratic impulse to optimize purely for efficiency. The fourth dimension, economics, uses the analytical tools of regulatory economics and public finance. It draws attention to the efficiency implications of cross-subsidies, the potential for moral hazard, the incidence of costs and benefits across income groups, and the long-term fiscal sustainability of transfer systems. The broad literature on optimal subsidy design provides a toolkit for calibrating cross-subsidies to minimize deadweight losses while meeting distributional targets (De Villena et al., 2019; Heald, 1997). However, the economics dimension of the GCSP must be broader than conventional welfare economics; it must incorporate considerations of macro-criticality the idea that a pandemic-induced collapse in one region can, through trade and financial channels, trigger a global recession that harms everyone.

This interdependence provides an efficiency rationale for cross-subsidization that even the most hard-nosed treasury official can recognize. The framework further distinguishes between public and private actor constellations. As Figure 1 indicates, success is not guaranteed by choosing one type of actor over the other; rather, success depends on whether the actor constellation fits the demands of the four assessment dimensions for the specific global problem at hand. Some cross-subsidies say, a vaccine procurement fund may be best executed by public bodies with sovereign guarantees, while others like the distribution of antiviral medications through pharmacy networks may leverage private logistics capacity. The GCSP is explicitly agnostic about the public–private mix, insisting only that the choice be justified by the assessment dimensions.

3.2. Qualitative Meta-Synthesis

This study employs a qualitative meta-synthesis of 71 scholarly works, policy analyses, and legal commentaries published between 1996 and 2026, with intensive focus on 2020–2023. The methodological approach follows the ENTREQ statement for enhancing transparency in reporting the synthesis of qualitative research (Tong et al. 2012), adapted for a policy-oriented corpus.

1) Search strategy: Four databases were searched: Web of Science, Scopus, HeinOnline, and Google Scholar. Search terms were combined in three strings: ("cross-subsid" OR "cross subsid") AND ("transnational" OR "global governance" OR "international organization*"); ("COVID-19" OR "pandemic") AND ("coordination failure" OR "transnational administration" OR "policy adaptation"); and ("subsidy" OR "resource transfer") AND ("fisheries" OR "energy assistance" OR "vaccine financing"). The search was iterative: initial results identified additional keyword combinations, and forward and backward citation tracking supplemented database searches.
2) Inclusion and exclusion criteria: Sources were included if they (a) were peer-reviewed articles, scholarly monographs, or official policy analyses from international

organizations; (b) were published in English or Spanish; (c) addressed at least one of the five thematic families specified below; and (d) provided empirical, legal, or conceptual material relevant to resource transfers across jurisdictional or sectoral boundaries. Sources were excluded if they were purely descriptive news reports, lacked identifiable authorship or institutional provenance, or treated "subsidy" only as a domestic electoral instrument without transnational implications.

3) Coding and synthesis: The corpus was thematically coded in three stages. First, open coding identified recurring patterns, organized into five families: institutional autonomy deficits, coordination breakdowns, adaptive governance practices, cross-subsidy adaptations, and regulatory gaps. Second, three illustrative case domains were selected for deeper analysis Mexico's fisheries subsidy reform, Ibero-American energy assistance programs, and the WTO SCM Agreement's pandemic-related debates because they represent different sectors (food, energy, health), different scales (national to global), and different degrees of explicitness in cross-subsidy logic. Third, the case and thematic insights were iteratively integrated into the GCSP framework, with explicit attention to disconfirming evidence. The success of countries with minimal cross-subsidization, for instance, was treated as a limit case refining the framework's boundary conditions.
4) Analytical criteria for identifying cross-subsidies: To address the definitional looseness identified in the literature, each case was assessed against three criteria derived from the strict economic definition in Section 3.2. Table 1 summarizes the criteria and the classification rules.

Table 1. Analytical Criteria for Classifying Resource-Transfer Mechanisms

Criterion	Question	If met	If not met
C1. Cost-transfer mechanism	Is there an identifiable transfer of costs or revenues between distinct units or customer classes?	Proceed to C2	Classify as general redistribution
C2. Public-interest constraint	Does the transfer operate within an institutional framework that constrains pricing or allocation for a public objective?	Proceed to C3	Classify as market intervention
C3. Directionality and conditionality	Are transfers structured with explicit conditions linking contributions to outcomes?	Classify as cross-subsidy	Classify as discretionary emergency relief

A case qualifies as a cross-subsidy only if all three criteria are met; if only C1 is met, it is classified as redistribution; if C1 and C3 are met but C2 is absent, it is classified as a market intervention. This coding rule is applied consistently in Section 5.

Limitations: The study relies on secondary sources; no primary interviews or survey data were collected. The rapidly evolving nature of pandemic policy means that some findings based on 2020–2021 publications may represent the state of knowledge at a specific moment rather than settled conclusions. The inclusion of forward-looking works published through 2026 (Salehi, Rafiee, and Fatahi Valliai 2026; Atheeswaran et al. 2026)

provides a counterbalance, but the framework's validity ultimately depends on its capacity to generate testable propositions for future empirical research. Comparative challenges in international policy-response research also limit the precision of cross-case claims (Riley, Xie, and Khurshid 2021).

4. RESULTS

4.1. Fisheries Reform in Mexico: Redistribution, Not Cross-Subsidy

Mexico's reform of fisheries subsidies during the early pandemic months is often cited as an example of cross-subsidy logic. For decades, the government had provided capacity-enhancing subsidies fuel tax exemptions, vessel construction grants, gear subsidies that incentivized overfishing and disproportionately benefited larger industrial operations. When COVID-19 collapsed tourism and restaurant markets, the government removed many of these subsidies and replaced them with direct cash transfers to fishers (Aranceta-Garza and Cisneros-Montemayor 2025). The reform was politically feasible because it addressed a dual crisis livelihood loss and ecological depletion within a single fiscal window.

Applying the criteria from Table 1, however, the reform does not qualify as a cross-subsidy. The transfers were financed from general fiscal resources, not from a cost-shifting architecture in which one set of users pays above cost to support another. There was no pricing constraint linking beneficiaries to contributors. The measure was, in strict terms, redistribution: taxpayer-funded income support to a vulnerable sector, coupled with the removal of a policy that had generated environmental costs. This is a significant policy achievement, but it is not evidence that cross-subsidy principles were operating. The lesson for a GCSP is that political windows can enable rapid redistribution, but redistribution should not be conflated with cross-subsidization. The reform's weaknesses also illustrate the evaluation problem: cash transfers were not accompanied by strong monitoring of biological stocks or household welfare, making it impossible to determine whether the measure achieved its conservation and income-support goals (Pedroza-Gutiérrez et al., 2021). Subnational political variation shaped implementation, with some governors resisting or undermining the reform (García-Tejeda & Vieira-Silva, 2023). Without embedded evaluation and institutionalized buy-in from lower levels of government, even well-designed redistributive measures risk being patchy and ephemeral.

4.2. Energy Assistance in Ibero-America: Mixed Instruments, Few Strict Cross-Subsidies

The pandemic triggered a wave of energy assistance programs across Latin America and the Iberian Peninsula. Subsidies for low-income households, payment moratoria for small businesses, direct energy vouchers, and tariff freezes that shifted costs from consumers to utilities and ultimately to taxpayers were documented (Lazo et al., 2023). The design varied widely. Brazil expanded its existing social electricity tariff and supplemented it with emergency credits. Spain created a new category of "vulnerable severe consumers" entitled to deeper discounts financed through general system charges ultimately paid by all consumers. Chile and Peru preferred lump-sum cash transfers.

Only some of these measures approximate cross-subsidization in the strict sense. Spain's system, in which all consumers pay system charges that finance discounts for vulnerable

households, contains an explicit cost-shifting element: higher-volume or higher-income consumers contribute proportionally more to the system's general charges, and those charges fund below-cost tariffs for a designated vulnerable class. This meets C1 and arguably C2 in Table 1. Brazil's social tariff, embedded within the regulated electricity pricing structure, similarly embodies a cross-subsidy logic, though its expansion during the pandemic was financed partly through emergency credits rather than purely through tariff architecture. Chile and Peru's lump-sum transfers, by contrast, were fiscal redistribution, not cross-subsidization. The resilience of these programs depended heavily on existing social protection infrastructure: countries with robust conditional cash transfer systems could rapidly identify eligible households and channel assistance through existing payment platforms. A GCSP must build on existing institutional infrastructure rather than create parallel bureaucracies, but it must also recognize that administrative capacity is unevenly distributed. A cross-subsidy mechanism that assumes a uniformly modern administrative landscape will fail where it is most needed.

4.3. Vaccine Financing: The Absence of Cross-Subsidy in The Strict Sense

The global distribution of COVID-19 vaccines represents the pandemic's most visible failure of redistributive governance, but it was not a failure of cross-subsidization. High-income countries poured billions into Operation Warp Speed, EU Advanced Purchase Agreements, and bilateral deals, effectively underwriting research, development, and manufacturing scale-up. These subsidies de-risked the pharmaceutical industry, which then delivered vaccines first to the governments that had paid. Low-income countries depended on COVAX, which pooled donor funding through its Advance Market Commitment to provide free doses to 92 low-income economies (Gavi, 2026). COVAX's financing architecture contained elements of cross-subsidization in a loose sense: higher-income self-financing countries paid into a pooled procurement mechanism that also supported subsidized access for lower-income participants. But the transfers were mediated through a multilateral procurement facility, not through a pricing structure in which one class of purchasers systematically paid above cost to support another within the same institutional framework. The binding constraint was not legal. The SCM Agreement did not bar governments from conditioning vaccine contracts on tiered pricing or allocation to COVAX (Lin & Tsai, 2022). It was political and material: production capacity was scarce, and domestic political priorities dominated.

From a cross-subsidy perspective, the relevant lesson is not that the concept failed but that it was never operationalized. The transfers went from rich-country taxpayers to rich-country consumers, with limited spillover to the global poor. It has been argued that a "peace clause" immunizing pandemic-related subsidies from legal challenge would give governments the confidence to structure procurement as explicit global cross-subsidies (Hoekman & Nelson, 2020). But a peace clause alone would not create a cross-subsidy; it would only remove a legal disincentive. The design of a genuine transnational cross-subsidy would require a pricing or allocation architecture in which contributions from high-income participants are systematically linked to below-cost access for low-income participants, with enforceable conditions and transparent accounting. No such architecture existed, and the COVAX experience suggests that creating one will require more than legal flexibility: it will require institutional design that makes the transfer visible, conditional, and legitimate to both contributors and recipients.

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Case	C1: Cost-transfer mechanism	C2: Public-interest constraint	C3: Directionality and conditionality	Classification
Mexico fisheries reform	No (general taxation)	Partly (environmental and social objectives)	No	Redistribution
Spain energy social tariff	Yes (system charges fund discounts)	Yes (regulated tariff structure)	Partly	Cross-subsidy (partial)
Brazil social electricity tariff	Yes (regulated tariff structure)	Yes	Partly	Cross-subsidy (partial)
Chile/Peru energy cash transfers	No (general taxation)	No	No	Redistribution
COVAX vaccine financing	Partly (pooled procurement)	Partly (global access objective)	Weak	Market intervention / pooled procurement, not strict cross-subsidy

Table 2. Case Assessment Against Strict Cross-Subsidy Criteria

5. DISCUSSION

5.1. Legal And Institutional Hybridity

The legal framework for a GCSP cannot be built from a single instrument. The WTO SCM Agreement is the relevant baseline, but its disciplines were designed to prevent subsidy races, not to enable crisis redistribution. Pandemic-related subsidies can be defended under existing provisions, but the uncertainty is itself a deterrent (Lin & Tsai, 2022). A more realistic strategy pursues multiple complementary pathways. The first embeds GCSP model clauses in regional and bilateral trade agreements; Japan's FTAs are already moving toward flexible subsidy disciplines that could accommodate pandemic-related cross-subsidization (Iino, 2023).

A network of such clauses could create a de facto legal framework even without a global agreement. The second pathway is a stand-alone convention on pandemic preparedness and cross-subsidization under WHO auspices, drawing on the precedent of the Framework Convention on Tobacco Control, which combines binding commitments with flexibility in national implementation. The ongoing "pandemic treaty" negotiations provide a ready vehicle, though the political interactions are contested. The third pathway uses international financial institutions.

The IMF's 2021 allocation of $650 billion in Special Drawing Rights was a large-scale cross-subsidy in a liquidity sense from countries with strong balance-of-payments positions to those with weak ones though it operated through a liquidity mechanism rather than a fiscal transfer. A permanent pandemic SDR facility triggered automatically by a WHO declaration could provide the financial backbone of a GCSP, with conditionality on public health outcomes rather than

macroeconomic adjustment. Institutional hybridity should extend to governance. A GCSP secretariat should be a lean coordinating hub drawing on existing capacities WHO for epidemiological triggers, WTO for subsidy legality, IMF for fiscal sustainability, regional bodies for political legitimacy rather than a monolithic new bureaucracy. The complexity of such an arrangement is a risk, but it is also a strength: it embeds the GCSP in existing structures rather than creating a new entity vulnerable to defunding or political attack.

5.2. Data Infrastructure and the Politics of Interoperability

The data architecture for a GCSP must track not only epidemiological indicators but also cross-subsidy flows: who is contributing, who is receiving, through which instruments, and with what outcomes. Promising building blocks exist. The Protective Policy Index demonstrated that cross-country policy data can be compiled and harmonized globally during an emergency (Shvetsova et al., 2022). A Stratified Tripartite Pandemic Assessment Framework has been proposed that evaluates governance quality beyond gross output metrics (Salehi et al., 2026). These initiatives need to be knitted together and extended. A GCSP data trust, governed jointly by participating states and international organizations, could validate cross-subsidy flow data against epidemiological and fiscal indicators. For the open data projects, the same logic applies: governments and international organizations that publish data, research, and policy in interoperable formats enable communities to build analytical tools rapidly.

The political dimension of data standardization must not be underestimated. Governments resist transparency for a mixture of legitimate (national security, privacy) and less legitimate (accountability avoidance) reasons. The GCSP must embed data obligations within a framework of mutual benefits: states that access the pool must adhere to data standards, but they also gain situational awareness and access to infrastructure for domestic planning. Privacy-preserving technologies such as differential privacy and federated learning can allow sensitive data to be examined without centralization, addressing sovereignty concerns. The post-2008 financial sector reforms, which created the Financial Stability Board and expanded data-sharing requirements, offer a precedent for balancing transparency with sovereignty.

5.3. Trust, Legitimacy, And the Limits of Technocratic Design

It has been demonstrated that “soft” factors social trust, leadership credibility, and cultural norms of reciprocity were powerful determinants of pandemic response effectiveness, sometimes outweighing healthcare spending or bed capacity (Kravchenko & Yusupova, 2020). This finding carries a direct implication for the GCSP: no matter how elegantly the economic incentives are structured or how sophisticated the algorithms become, the policy will fail if it is not embedded in trust relationships between donor and recipient countries, between governments and communities, and between the institutional apparatus and the publics it serves. The deep roots of cross-subsidization in religious traditions of communal obligation remind us that redistribution has always been as much about social relationships as about resource flows. This relational aspect can easily be lost in the technocratic language of triggers, conditionality, and optimization.

Transparency is a concrete practice, not an abstract sentiment. When citizens in donor countries can see their contributions reaching intended beneficiaries and producing measurable

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results, opposition to cross-subsidization dissipates. This requires investment in independent monitoring, dashboards, and participatory auditing that involve civil society organizations in both donor and recipient countries. Dignity is equally important: cross-subsidies must be structured so that recipients are not demeaned. Insurance models in which all countries contribute and all may one day draw down are inherently dignity-preserving in ways that charitable donation models are not. Legitimacy also requires moving beyond the donor–recipient dichotomy toward co-ownership, in which all participating states have a meaningful voice regardless of the size of their financial contributions. The one-country-one-vote governance of the World Health Assembly, for all its inefficiencies, embodies a principle of sovereign equality that a GCSP would do well to emulate, even if weighted voting applies to certain technical decisions. Community-based participatory research offers a practical way to embed beneficiary voices in program design and evaluation (Sampson et al. 2021).

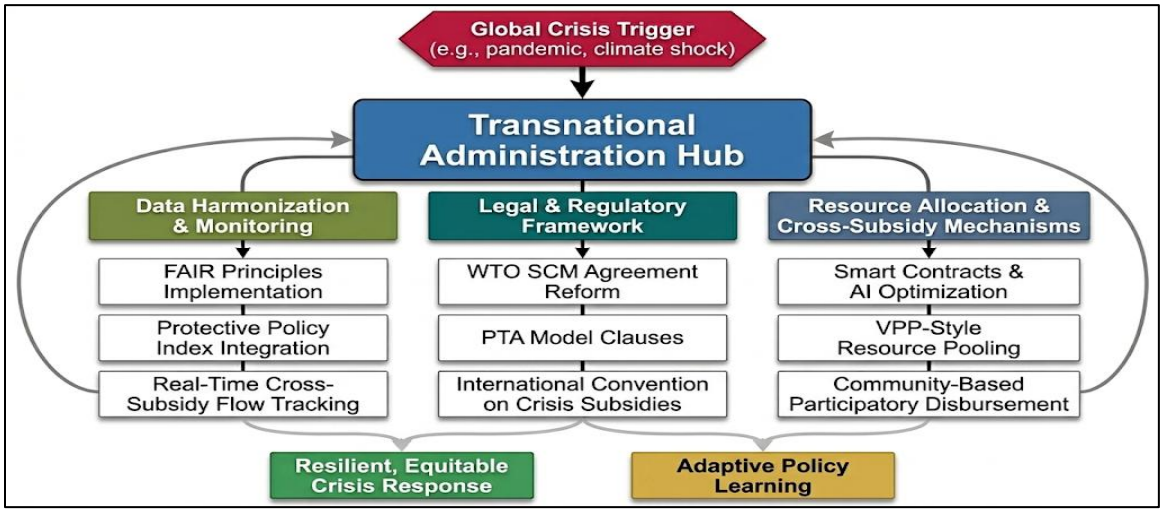


Figure 2: Proposed Data and Governance Architecture for a Global Cross-Subsidy Policy

5.4. Novelty, Strengths, And Limitations

The novelty of this study is threefold. First, it disaggregates "cross-subsidy" from adjacent concepts redistribution, emergency relief, market intervention and specifies the boundary conditions under which the concept can legitimately be applied transnationally. Much of the existing literature uses the term loosely; this article shows that the looseness has analytical costs. Second, it demonstrates through structured case comparison that pandemic-era measures rarely met the strict definition, which means that claims about the "spread" or "adaptation" of cross-subsidy logics need to be treated with caution.

Third, it translates the technological logic of algorithmic allocation from energy systems to crisis governance, not as a blueprint but as a proof of concept that clarifies what institutional and political conditions would be required. The study's strengths lie in its interdisciplinary range public administration, international law, energy economics, and political science and in its explicit engagement with disconfirming evidence. The framework does not assume that cross-subsidization is always desirable; it specifies the conditions under which it may be feasible and the conditions under which it may reproduce the inequities it is meant to address.

The limitations are equally clear. The reliance on secondary sources means that the case analyses are interpretive rather than primary. The three case domains differ in scale, instrument type, and data availability, which limits direct comparability. The GCSP framework is a conceptual scaffold, not an empirically validated institutional design; its value will depend on whether it generates testable propositions. Future research should test the framework against cases of successful and failed cross-border resource transfers in other domains climate finance, antimicrobial resistance, and pandemic preparedness and should collect primary data from donor and recipient institutions to assess the political feasibility of the proposed mechanisms.

6. CONCLUSION

This article began with a puzzle: why did the pandemic expose such deep deficits in transnational administration, and what conceptual resources might allow scholars and policymakers to specify more precisely how resources ought to move across borders when the costs of inaction are shared but the capacity to act is not? The answer developed here is that cross-subsidization, properly defined, offers a more disciplined analytical vocabulary than the language of solidarity or global public goods, but only if its boundary conditions are respected. The case analyses show that pandemic-era fisheries reform, energy assistance, and vaccine financing rarely constituted cross-subsidies in the strict economic sense; they were predominantly redistribution, emergency relief, or market intervention. This finding is not a dismissal of those measures but a clarification of what the cross-subsidy concept can and cannot explain. The GCSP framework proposed here is therefore advanced as a conditional and modular architecture, not as a unified global fund. It integrates four assessment dimensions ideology and politics, geography, socio-cultural context, and economics and insists that success depends on the fit between those dimensions and the public–private actor constellation. The framework's legal pathway lies in hybrid instruments: regional trade clauses, a WHO-hosted convention, and IMF liquidity mechanisms. Its data infrastructure requires interoperable platforms that track cross-subsidy flows with the same rigor as epidemiological indicators. Its political viability depends on trust, transparency, dignity-preserving design, and co-ownership. The article's contribution is to specify the conditions under which cross-subsidy principles can be translated from domestic regulatory economics to transnational crisis governance. Those conditions are demanding, and the framework may ultimately prove more useful as a diagnostic tool a way of asking whether a proposed resource transfer is genuinely a cross-subsidy or something else than as a blueprint for institutional construction. That is a modest contribution, but it is a necessary one. The next crisis will not wait for conceptual clarity; but without it, the world will continue to improvise mechanisms that redistribute resources without the discipline, transparency, and legitimacy that cross-subsidy design, at its best, can provide.

CONFLICT OF INTEREST

The authors declare that there is no conflict of interest regarding the publication of this article.

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AUTHOR CONTRIBUTIONS

Subhan: Conceptualization; Data curation; Formal analysis; Investigation; Methodology; Project administration; Resources; Software; Validation; Visualization; Writing – original draft; Writing – review & editing

Rizal Khadafi: Conceptualization; Data curation; Formal analysis; Investigation; Methodology; Project administration; Resources; and Software.

Agus Irfan: Conceptualization; Formal analysis; Investigation; Methodology; Supervision; Validation; Writing – review and editing.

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