

## Contested transitions: Chinese finance and the political economy of renewable energy in Argentina

Ge Gao \*

### Abstract

Why do Chinese-financed renewable energy projects that draw on similar sources of finance and operate within the same volatile national environment follow sharply divergent delivery trajectories? This article addresses that puzzle through a paired, most-similar comparison of two Chinese-financed projects in Argentina, namely the Cauchari solar park in Jujuy and the Kirchner–Cepernic hydroelectric complex in Santa Cruz. Drawing on critical international political economy and the concept of asymmetric interdependence, and integrating a project-resilience framework built around exposure, absorption, recovery, and adaptation, it traces how political, financial, and socio-environmental shocks were transmitted into each project between 2014 and 2025. The analysis shows that divergence was produced not by the shocks themselves, which both projects faced, but by the institutional configurations through which those shocks were absorbed or amplified, above all the governance locus, the structure of financial risk allocation, and the mode of socio-environmental embedding. Cauchari's provincial anchoring, rule-based revenue guarantees, and contained social conflict allowed it to reach completion, whereas Kirchner–Cepernic's executive concentration, cross-default lock-in, and deferred rights conflicts left it trapped in a stop-start cycle. These findings suggest that host-country institutions do not neutralize structural asymmetry but mediate how asymmetric interdependence is translated into project-level outcomes, thereby shifting the analytical focus from why China invests to how its project is governed.

**Key Words:** Argentina, Chinese Development Finance, Renewable Energy, Infrastructure Governance, Project Resilience

## Transiciones en disputa: el financiamiento chino y la economía política de la energía renovable en Argentina

### Resumen

¿Por qué proyectos de energía renovable financiados por China, que recurren a fuentes de financiamiento similares y operan en un mismo entorno nacional de alta volatilidad, siguen trayectorias de ejecución marcadamente divergentes? Este artículo aborda ese interrogante mediante una comparación pareada de sistemas similares entre dos proyectos financiados por China en Argentina, el parque solar de Cauchari, en Jujuy, y el complejo hidroeléctrico Kirchner-Cepernic, en Santa Cruz. A partir de la economía política internacional crítica y del concepto de interdependencia asimétrica, e integrando un marco de resiliencia de proyectos articulado en torno a la exposición, la absorción, la recuperación y la adaptación, se rastrea cómo los choques políticos, financieros y socioambientales se transmitieron a cada proyecto entre 2014 y 2025. El análisis

\* Doctoranda en Ciencias Humanas: Geografía, Antropología y Estudios de África y Asia en el Centro de Estudios de Asia Oriental de la Universidad Autónoma de Madrid. Sus líneas de investigación se centran en los estudios latinoamericanos, las relaciones internacionales, la política exterior china, la cooperación China–América Latina, la transición energética y las energías renovables. ORCID: <https://orcid.org/0000-0001-5465-9183> . Correo electrónico: [ge.gao@estudiante.uam.es](mailto:ge.gao@estudiante.uam.es)

muestra que la divergencia no fue producto de los choques en sí, que ambos proyectos enfrentaron, sino de las configuraciones institucionales a través de las cuales esos choques fueron absorbidos o amplificados, ante todo el locus de gobernanza, la estructura de asignación del riesgo financiero y el modo de inserción socioambiental. El anclaje provincial de Cauchari, sus garantías de ingresos basadas en reglas y la contención del conflicto social le permitieron alcanzar su finalización, mientras que la concentración ejecutiva de Kirchner-Cepernic, el bloqueo derivado de la cláusula de incumplimiento cruzado y el aplazamiento de los conflictos de derechos lo dejaron atrapado en un ciclo de interrupciones y reinicios. Estos hallazgos sugieren que las instituciones del país receptor no neutralizan la asimetría estructural, sino que median la forma en que la interdependencia asimétrica se traduce en resultados a nivel de proyecto, desplazando el foco analítico desde por qué invierte China hacia cómo se gobierna su proyecto.

**Palabras Clave:** Argentina, Financiamiento chino para el desarrollo, Energía Renovable, Gobernanza de Infraestructuras, Resiliencia de Proyectos

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## 1. Introduction

Against the backdrop of the energy transition, recurrent currency crises, chronic inflation, limited access to long-term financing, and frequent regulatory adjustments have created a highly uncertain investment environment for large-scale infrastructure projects (Buera & Nicolini, 2018; OECD, 2025), thereby further complicating the coordination of long-tenor investments such as renewable energy infrastructure.

For Argentina, the country faces pressure to expand its renewable energy capacity to meet decarbonization targets, diversify its energy matrix, and reduce dependence on fossil fuel imports. Achieving these objectives requires a rapid mobilization of capital at a scale that domestic financial markets are unable to provide. While international financial institutions and private investors have supported renewable energy development through auction schemes and blended finance mechanisms, their participation remains constrained by macroeconomic instability, currency risk, and regulatory uncertainty. As a result, Argentina's energy transition is characterized by a structural tension between ambitious policy goals and limited financing capacity (Barrera et al., 2022).

Within this constrained environment, external sources of infrastructure finance have become increasingly central to the expansion of Argentina's energy sector. Among these, Chinese policy banks, state-owned enterprises, and equipment suppliers have played a growing role since the mid-2010s, participating in renewable energy, hydropower, and grid-related projects through a combination of bilateral agreements and market-based mechanisms (Montoya et al., 2019; Gao, 2025). However, the availability of external finance does not eliminate underlying structural challenges. Evidence from Argentina suggests that renewable energy projects, even when backed by similar sources of financing and operating within the same national context, can follow markedly different trajectories. While some projects reach completion and achieve stable operation, others become entangled in delays, legal disputes, and renegotiation processes. This divergence raises an important analytical question regarding the role of institutional configurations in shaping project-level outcomes.

To address this question, the study employs a paired comparative case design centered on two Chinese-financed renewable energy projects that experienced contrasting delivery trajectories. Both cases involve Chinese development finance and Chinese SOEs in construction. By holding constant Argentina's macroeconomic volatility, the comparison focuses on how differences in institutional configuration, including governance architecture, stakeholder alignment across state levels, financing risk allocation, and socio-environmental contestation, shape exposure to coercive pressures and ultimately influence delivery outcomes. Temporally, the analysis spans the decade between the projects' contractual origins and the present (2014–2025). The starting point is anchored in the 2014 Comprehensive Strategic Partnership between China and Argentina (Boletín Oficial de la República Argentina, 2014) and the launch of the RenovAr programme under Law 27.191 (Boletín Oficial de la República Argentina, 2015) and Resolution 136/2016 (Boletín Oficial de la República Argentina, 2016), which together established the financing and regulatory architecture for both cases. The endpoint extends to 2025, thereby capturing two divergent trajectories, the suspension of one project's planned expansion and the renewed activity surrounding another project.

The analysis previews two core expectations. First, projects with clearer multilevel coordination mechanisms (linking national agencies, provincial authorities,

regulators, and affected communities) and more coherent financial risk allocation are likely to display greater resilience under volatility. Second, projects that rely primarily on high-level political endorsement but lack robust institutional embedding are more vulnerable to litigation, compliance disputes, and implementation breakdowns even when financing is secured. These dynamics contribute to broader debates on how transnational infrastructure performance is mediated through host-country governance systems. While much of the existing literature concentrates on the motivations behind China's overseas investment, whether framed in geoeconomic, strategic, or developmental terms (Brautigam, 2020; Hillman, 2020), less attention has been paid to the governance mechanisms that shape delivery outcomes over time. By shifting the analytical focus from the question of why China invests to the processes through which projects are implemented, stabilized, and contested within volatile institutional environments, this study refines prevailing accounts and situates infrastructure performance within the political economy of host-country governance structures.

The remainder of the article proceeds as follows. Section 2 develops the theoretical framework and sets out the case selection and data collection. Section 3 reconstructs how the two projects were initially assembled, presenting each case in turn and then comparing their configurations across the three dimensions. Section 4 follows these configurations into motion, tracing how political, financial, and socio-environmental shocks were transmitted into each project once construction began and how each field responded. Section 5 concludes by returning to the framework, setting out the policy implications for managing infrastructure delivery under volatility.

## **2. Analytical Framework and Research Design**

### **2.1 Global Infrastructure Governance under Political, Financial, and Socio-Environmental Volatility**

The delivery of large-scale infrastructure projects represents a persistent challenge in development economics and global political economy. A substantial interdisciplinary literature converges on the empirical observation that projects embedded in volatile environments face heightened risks of delay, cost overruns, renegotiation, and, in extreme cases, cancellation (Flyvbjerg, Holm, & Buhl, 2002; Flyvbjerg, 2014; Guasch, 2004). A central driver of this pattern is political and regulatory instability, which increases contractual uncertainty and raises the probability of ex post renegotiation, particularly in infrastructure sectors requiring long-term capital commitment (Guasch, Laffont, & Straub, 2008). From a broader institutional perspective, weakly institutionalized governance environments amplify transaction costs and undermine credible commitment mechanisms, thereby affecting investment performance and project continuity (North, 1990). If institutional weakness sets the general conditions for failure, the more proximate question is through which channels volatility is transmitted to, and ultimately shapes, the stability of infrastructure projects.

The first is political-administrative. Historical institutional research suggests that political systems characterized by credible veto players, separation of powers, and constrained executive authority tend to provide more predictable environments for long-term investment (North & Weingast, 1989; Henisz, 2000; Tsebelis, 2002). In such contexts, policy reversals are institutionally costly, and regulatory commitments are more difficult to overturn. The second is economic-financial. Macroeconomic volatility typically reaches projects through financial channels: monetary tightening, widening sovereign spreads, and shifts in global risk perception raise the cost of capital and restrict access to long-term credit (Eichengreen & Hausmann, 1999; Reinhart & Rogoff,

2009), with transmission especially uneven in emerging economies marked by banking sector fragility, inflation expectations, and balance sheet constraints (Calvo, 1998 ; Kaminsky, Reinhart & Végh, 2004). A third channel is socio-environmental. The social amplification of risk occurs when technical or financial disturbances interact with collective perceptions, transforming localized challenges into broader political crises (Kasperson et al., 1988; Renn, 2008). Energy projects are particularly susceptible to socio-environmental contestation. Although public support for decarbonization may be high at the national level, local opposition frequently emerges due to perceived distributive injustice, lack of procedural inclusion, or the reproduction of extractivist patterns in new green forms (Avila, 2018; Sovacool & Dworkin, 2015).

## 2.2 Asymmetric Interdependence and the Political Economy of Chinese Development Finance

The project-level framework outlined above specifies how host-country institutions mediate volatility, but it operates within a structurally asymmetric relationship that must now be made explicit in this study. The Latin American tradition of dependency analysis, from its classic formulation (Cardoso & Faletto, 1979) to contemporary readings of the region's relationship with China, interprets such asymmetry not as a transient market condition but as a structural feature of centre-periphery relations (Slipak, 2014; Ghiotto & Slipak, 2019). From this perspective, the deepening of Sino-Argentine ties through commodity demand, infrastructure lending, and equipment supply risks consolidating a pattern of reprimarization and technological dependence rather than dissolving it (Svampa & Viale, 2014; Fornillo, 2019).

Reframing this asymmetry in international political economy terms, China's growing role as a creditor and financier confers a form of structural power, understood as the capacity to shape the terms, options, and risk allocation within which borrowing states operate, beyond the outcome of any single transaction (Strange, 1996). In the renewable-energy domain specifically, a growing body of work documents how Chinese overseas finance accelerates capacity expansion while embedding dependence on imported modules, turnkey engineering-procurement-construction contracts, concessional but conditionality-laden lending, and limited technology transfer (González Jáuregui, 2021; Gélvez Rubio & González Jáuregui, 2022). Asymmetry, in other words, enters the analysis not as an inert background but as a concrete configuration of bargaining power and risk that the host country must govern.

This article does not claim that host-country institutions neutralize structural asymmetry. Rather, it argues that they mediate how asymmetric interdependence is translated into project-level outcomes. The same structural relationship can yield a ring-fenced, locally embedded project that is delivered despite volatility, or an executive-dependent megaproject that stalls when political and financial conditions shift. What varies is not the underlying asymmetry itself, but the institutional and relational architecture through which that asymmetry is absorbed, contested, or amplified, including governance embedding, multilevel coordination, and socio-environmental legitimation. Situating the resilience and actor-coupling framework within this critical political-economy reading clarifies its analytical scope.

## 2.3 Project Resilience, Actor Coupling, and the Translation of Macro-Level Volatility into Delivery Outcomes

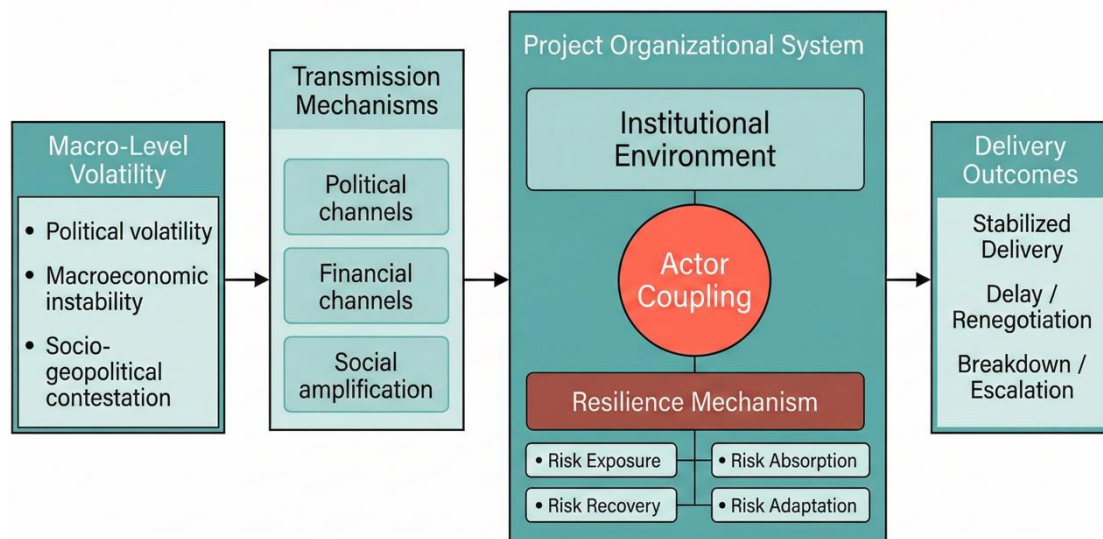
To move beyond deterministic interpretations of volatility, this article introduces resilience as the integrating mechanism linking macro risk and project outcomes.

Resilience is understood not as static robustness but as a dynamic capacity encompassing exposure management, absorption, recovery, and adaptation (Folke, 2006; Boin, Comfort, & Demchak, 2010). Exposure refers to the degree of pre-existing vulnerability to external shocks. Absorption captures the ability to withstand disruptions without systemic failure, often facilitated by financial redundancy, diversified funding structures, or political risk insurance. Recovery concerns the restoration of operational stability following disruption. Adaptation involves more fundamental transformation, allowing the project organization to adjust institutional arrangements, stakeholder relations, or technical configurations in response to evolving risk conditions.

To render these dimensions analytically tractable rather than purely descriptive, each is operationalized through observable project-level indicators. Exposure is observed through the financing instrument's sensitivity to sovereign risk, specifically whether disbursement and debt-service schedules are contractually anchored through fixed-rate, pre-crisis closure or instead float with sovereign spreads and executive discretion. Absorption is observed through the presence or absence of liquidity backstops and payment guarantees, such as standardized power purchase agreements or multilateral credit lines, that decouple project cash flow from macroeconomic repricing. Recovery is observed through the speed and continuity with which coordination is restored after a shock, proxied by the length of suspension and restart cycles and by the interval between disruption and renewed disbursement or works. Adaptation is observed through documented changes in institutional arrangements, risk allocation, or stakeholder relations, including renegotiated loan structures, redesigned technical configurations, or new benefit-sharing agreements undertaken in response to evolving conditions.

These indicators describe resilience as a capacity of the project organization, yet that capacity is exercised relationally. The four dimensions operate through the coupling among the actors responsible for delivery, including national agencies, provincial authorities, regulators, financiers, and affected communities, whose aligned commitments hold a project together between shocks. As Figure 1 shows, it is the durability of this coupling that is tested when macro-level transmission mechanisms intensify. Crisis phases emerge not simply because shocks occur, but because coordination capacity becomes overstretched. Early signals often go unrecognized due to nonlinear escalation across political, financial, and social arenas, where feedback effects amplify uncertainty and obscure causal attribution. Stabilization then depends on whether actors can re-synchronize commitments and reconstruct working relationships. In renewable energy projects, where long-term operational viability hinges on social legitimacy, the restoration of coupling is particularly critical. Informal trust networks and locally embedded partnership structures can lower transaction costs during renegotiation and facilitate coordinated recovery. Variation in resilience outcomes therefore reflects variation in coupling dynamics rather than differences in resource endowment alone. It is this coordination process that forms the core focus of the comparative analysis.

Figure 1. Theoretical framework for infrastructure delivery under volatility



Source: Author's own elaboration.

#### 2.4 Case Selection and Data Collection: Cauchari Solar and Kirchner–Cepernic Hydropower

Within the broader universe of Chinese-financed energy projects in Argentina, this study selects two cases: the Cauchari-Olaroz Solar Photovoltaic Park (hereinafter Cauchari) in the province of Jujuy, and the Cóndor Cliff and La Barrancosa hydropower stations, collectively known as the Kirchner-Cepernic complex (hereinafter Kirchner-Cepernic), on the Santa Cruz River in the province of Santa Cruz. These cases are selected because both are financed by Chinese policy banks. Cauchari received a loan from the Export-Import Bank of China (CHEXIM), while Kirchner-Cepernic was financed through a joint arrangement between China Development Bank (CDB) and CHEXIM.

Furthermore, both projects also involved Chinese state-owned enterprises as major engineering, procurement, and construction actors. The Cauchari solar project was implemented with the participation of PowerChina and Shanghai Electric as EPC contractors, while key equipment was supplied by Chinese firms such as Talesun Solar and Huawei. The Kirchner-Cepernic hydropower complex was contracted to a consortium led by China Gezhouba Group Corporation, in association with Electroingeniería S.A., an Argentine construction company. This involvement of Chinese SOEs means that both project fields are subject to similar organisational cultures, diplomatic logics, and Chinese state interests in project completion.

Crucially, both projects belong to the electricity generation sector, which provides a common sectoral referent for comparison. The Cauchari solar plant was incorporated into Argentina's renewable-energy expansion under the RenovAr framework, while the Kirchner-Cepernic was presented as strategic baseload infrastructure intended to reduce energy imports, strengthen grid stability, and promote territorial integration (Presidencia de la Nación Argentina, 2019; Presidencia de la Nación Argentina, 2014). Both were authorized or framed as priority energy infrastructure projects by the Argentine national

government and were linked to national energy-security and energy-sovereignty narratives.

Moreover, both projects are located in Argentina's peripheral provinces. Cauchari is situated in Jujuy in the northwest, while Kirchner-Cepernic is located in Santa Cruz in the far south. Both provinces possess significant natural resource endowments and substantial indigenous populations, creating comparable baseline conditions of socio-environmental sensitivity and territorial contestation.

## 2.5 Data Collection

Evidence for the process-tracing exercise was collected primarily through semi-structured interviews conducted between 2023 and 2024. The study draws on ten interviews with participants directly or indirectly involved in the design, financing, implementation, oversight, or contestation of the two projects. Interviewees span a range of institutional positions and include national government officials from the Ministries of Economy and Energy, provincial government representatives from Jujuy and Santa Cruz, staff of Argentine environmental and indigenous rights organizations active in the two project areas, legal professionals who participated in the environmental litigation related to the Santa Cruz dams, and academic researchers specializing in Argentine energy policy, Chinese investment, and indigenous rights. Interviews lasted between forty-five minutes and ninety minutes and were conducted in Spanish, either in person in Buenos Aires, Jujuy city, and Río Gallegos, or via video conference. Interviews were semi-structured: a set of questions and themes organized around the three analytical dimensions of the framework was prepared in advance, but conversations were not limited to these, allowing respondents to introduce narratives and actor relationships not anticipated in the framework. Most interviewees requested anonymity given the politically sensitive nature of the projects, and interview data is handled accordingly throughout the analysis.

Simultaneously, interview data is further triangulated with an extensive body of secondary documentation, including intergovernmental agreements, concession contracts, environmental impact assessment reports, provincial and national legislative records, Supreme Court rulings, and regulatory decisions from Argentina's Secretaría de Energía. Financing data are drawn from the AidData 3.0 Global Chinese Development Finance Dataset, the China Overseas Finance Inventory, and publicly available or freedom-of-information-disclosed loan documentation. For the socio-environmental dimension, the analysis draws on court dossiers from the Supreme Court litigation over Kirchner-Cepernic, reports by FARN, and press archives from Argentine national and provincial outlets. Argentina has a relatively open and active media environment, and both projects have been extensively covered in national and regional press, providing a rich documentary record that complements and cross-checks interview testimony.

## 3. Initial Configuration: How the Two Projects Were Assembled

### 3.1 Cauchari Solar Park

Cauchari's financial architecture was distinctive because it combined Chinese policy-bank lending, subnational borrowing, and auction-backed electricity revenues. The main source of financing was a US\$331.5 million preferential buyer's credit from the Export-Import Bank of China, which covered approximately 85 percent of the EPC contract. The loan had a fixed interest rate of around 3 percent, a 15-year tenor, and a 5-year grace period. However, because Jujuy was a province rather than a sovereign

borrower, the loan required a sovereign guarantee from Argentina's federal government, which then on-lent the funds to the province (Juste, 2024). This structure created a dual financial logic. On the one hand, the project was presented as a provincial development initiative. Jujuy, through JEMSE, was the institutional promoter and expected beneficiary of the project. On the other hand, the province could not independently access Chinese policy-bank finance without the Argentine federal state. The federal guarantee was therefore not a minor technical requirement; it was a core mechanism through which a subnational project became financially bankable. The second component of the financial architecture was Jujuy's issuance of a US\$210 million green bond in international capital markets. This bond was described as Argentina's first green bond and was explicitly tied to the financing of a renewable-energy project. The bond had a five-year maturity and an 8.625 percent coupon, and it was strongly oversubscribed, indicating that Cauchari could be framed not only as an infrastructure project, but also as a green-finance asset. The IISCAL report identifies the green bond as one of the project's core financing sources and notes that it attracted investors from Europe, Asia, Latin America, and the United States (Lucci & Garzón, 2019). Furthermore, the third pillar of Cauchari's financial architecture was the 20-year PPA obtained under RenovAr. JEMSE won the Cauchari I, II and III solar projects in RenovAr Round 1, each with a capacity of 100 MW, forming a combined 300 MW project in Jujuy. The project secured a 20-year PPA with CAMMESA at an average price of approximately US\$60/MWh, providing the dollar-denominated revenue stream that underpinned its bankability.

Cauchari's governance logic originated primarily in Jujuy's provincial development strategy rather than in a purely federal executive initiative. Governor Gerardo Morales used his political position within the Cambiemos coalition to build direct links with Chinese financiers and contractors, including repeated visits to China, the reception of Chinese delegations, and exchanges with PowerChina and CHEXIM representatives. This subnational diplomatic activity allowed Jujuy to position itself as the main political promoter of the project, while JEMSE provided the institutional vehicle through which the province coordinated external engagement. JEMSE prepared the bid for the RenovAr auction, secured the PPAs, contracted with Chinese firms, and acted as the provincial entity responsible for managing the project's relationship with both national and foreign actors.

The project's occupation of high-altitude steppe land raised questions about long-term ecological effects and the carrying capacity of the Puna environment (FARN, 2020), but these remained largely uncontested at the time of project approval. The Jujuy provincial government presented Cauchari as a case of prior and informed consultation, at this stage, the procedural framework appeared, at least in formal terms, to meet the requirements of participatory governance, as consultations had been conducted, community representatives had been engaged, and an economic agreement had been reached (JEMSE, 2020). At the time of project preparation and approval, organized opposition and public protest had not yet materialized.

### 3.2 Kirchner-Cepernic Hydroelectric Dams

The Kirchner-Cepernic's financing structure was assembled around a configuration of extreme concentration. The entire USD 4.713 billion project cost was covered by Chinese state bank loans from CDB, the Industrial and Commercial Bank of China, and the Bank of China. No multilateral, bilateral non-Chinese, or commercial co-financing was secured. The loan was structured at LIBOR plus 3.8 per cent, with a five-year grace period on repayment contingent on project completion (Lucci, 2017). The

most analytically consequential feature of the financial architecture was the cross-default clause linking the Kirchner-Cepernic loan to the separately financed Belgrano Cargas railway upgrade of USD 2 billion, under which any Argentine decision to cancel, suspend, or significantly restructure either project would automatically trigger default on the other (Gelpert et al., 2022). Procurement reinforced this concentrated logic: the EPC+F contract was awarded to the Represas Patagonia consortium under a procedure that drew substantial criticism for a contested re-bid arrangement alleged to reflect Electroingeniería's proximity to the Kirchner political network (Mora, 2018).

The governance architecture of the Kirchner-Cepernic project was largely shaped at the level of the Argentine federal executive. Although the project had initially been managed within the provincial sphere, the cancellation of the previous tender process enabled its transfer to national jurisdiction, where the Ministry of Federal Planning became central to its reconfiguration. President Cristina Fernández de Kirchner revived the long-dormant dam proposal and publicly presented it as a symbol of Argentine developmental sovereignty and South-South cooperation. The decision to name the dams after Néstor Kirchner and Jorge Cepernic, both closely associated with Santa Cruz and the broader Kirchnerist political tradition, further embedded the project within the symbolic and institutional repertoire of Kirchnerismo. Under Julio De Vido, who headed the Ministry of Federal Planning from 2003 to 2015, project authorization, procurement, and intergovernmental coordination were concentrated within a federal political channel (Lucci & Garzón, 2019). The institutional interface between the Argentine state and Chinese financiers was primarily mediated through ENARSA, Energía Argentina S.A. However, ENARSA's ability to perform the complex technical, regulatory, and financial management functions required by a project of this scale was constrained by the structural discontinuities of Argentina's energy-sector bureaucracy (Haro Sly, 2025).

As a result, the project's governance structure was marked by a high degree of executive concentration, weak inter-institutional contestation, and limited independent oversight. At the procedural level, these weaknesses were reflected in the preparation and review of the environmental impact assessment. The EIA for the Aprovechamientos Hidroeléctricos del Río Santa Cruz was prepared by Serman y Asociados in 2015, yet FARN later questioned the consultancy's independence from the companies awarded the project and criticized the broader assessment process for failing to provide sufficient conditions for effective public participation (Serman y Asociados, 2015; FARN, 2016). In particular, the public hearing was convened only fourteen days after its announcement, including merely six administrative working days, a period that FARN described as "sumamente exiguo" for meaningful participation. Subsequent technical assessments by IANIGLA-CONICET further questioned the adequacy of the glacier-impact analysis, noting that the studies had not sufficiently evaluated the dams' potential effects on glaciers and the broader glacial system connected to Lago Argentino (IANIGLA-CONICET, 2021).

At the right level, the Santa Cruz River basin overlaps with the ancestral territory of Mapuche-Tehuelche communities. Civil society sources identify at least fourteen Mapuche communities affected by the project's advance over ancestral territory without prior consultation (BiodiversidadLA, 2020). Nevertheless, no Free, Prior and Informed Consent process was conducted during the project's construction, as consultation process began only after litigation and after project works had already advanced, with Indigenous representatives explicitly demanding reparation for the absence of prior consultation (Borse, 2019).

### 3.3 Comparing the Two Configurations across Three Dimensions

From the perspective of financial architectures, the main difference between the two lies less in the institutional setting into which that financing was placed. In the Kirchner-Cepernic, Chinese state-bank credit was channeled through a purely bilateral sovereign framework, with repayment deferred to a post-completion grace period and the entire debt-servicing logic contingent on sustained national executive support. This structure left the financing arrangement acutely sensitive to construction delays, political change, and disruptions in central government commitment. A national economy official with direct knowledge of the loan terms would be positioned to observe this dynamic from the inside:

“The cross-default clause made us deeply uncomfortable at the Treasury. It was not a technical provision...it was a political instrument. It meant that any future government reviewing the dams would face a fiscal cost extending well beyond the energy sector, making exit prohibitively expensive regardless of the project's individual merits.” I2 (National Economy/Finance Official).

The Cauchari operated on a structurally different logic. Chinese policy-bank lending was combined with provincial bond financing and a twenty-year PPA with CAMMESA, anchoring repayment to contractual electricity revenues rather than to a single political or construction-related condition. Critically, the Cauchari benefited from the institutional architecture of the RenovAr programme, which significantly reinforced the bankability of its PPA obligations. RenovAr established a dedicated guarantee trust (FODER), required to maintain at least twelve months of PPA payments on deposit at all times; should FODER's funds prove insufficient, Argentina's Ministry of Finance bore an obligation to replenish the account.

This difference in locus was reinforced by the divergent incentive structures embedded in each project's institutional vehicle. ENARSA operated according to a national political logic in which lines of accountability ran toward the governing coalition and executive priorities. This insulation from external discipline meant that ENARSA's institutional behavior was shaped primarily by political rather than financial or electoral constraints, rendering project continuity vulnerable to shifts in federal prioritization. JEMSE's position was structurally different. Embedded in a provincial fiscal logic, its institutional behavior was conditioned by the need to mobilise financial resources, preserve the credibility of the power-purchase arrangement, meet repayment obligations to creditors, and justify project outcomes to provincial constituents. This configuration allowed financial and electoral pressures to operate simultaneously as disciplinary mechanisms (Guerrero et al., 2022).

The same concentration of authority that shaped financing and governance also governed how each project handled its social and environmental obligations at the outset. At Kirchner-Cepernic, the compression of the EIA reflected a deliberate governance choice to prioritize authorization speed over procedural legitimacy (Mora, 2018). By compressing the authorization timeline and bypassing indigenous consultation, the Kirchner-Cepernic governance architects not only generated legal vulnerability, but also eliminated the institutional space in which community interests might have been incorporated into the project's operational logic. On the other side, Cauchari's remote location and comparatively contained ecological footprint limited contestation in the initial configuration. By contrast, in the Kirchner-Cepernic project,

the intervention of the Supreme Court transformed socio-environmental opposition into a formal legal constraint, thereby suspending project implementation.

#### **4. Configurations under Volatility: Shock Transmission and Field-Level Responses**

##### **4.1 Cauchari: Completion Through the Crisis as the Rights Conflict Escalated**

Cauchari advanced precisely during Argentina's period of highest volatility. Ground was broken in earnest in 2018 as the peso entered free fall; the three plants were completed by the end of 2019; and the complex was connected to the national grid on 26 September 2020, mid-pandemic, entering commercial operation shortly afterwards. This is striking because implementation was not insulated from macroeconomic stress, yet the project kept moving from construction to operation.

The decisive stabilizer was the revenue architecture. Cauchari's income, projected at USD 25–50 million annually for the province, was secured through a dollar-denominated offtake contract. This did not eliminate exposure: the peso devaluation made Jujuy's dollar-coupon green bond more burdensome to service, and reliance on imported equipment tied implementation to external supply and financing. But it changed how volatility operated. Because the income stream was contractually protected, macroeconomic stress translated mainly into a repayment burden rather than an interruption of the project's revenue logic.

This distinction was also recognized by officials involved in provincial implementation, who understood Cauchari's resilience as a function of how its obligations had been contractually organized. I4, a representative of the provincial vehicle JEMSE, located the difference in the locus of control, stressing that Cauchari remained governable because the province retained institutional ownership over both the project and its expected revenues:

“Governments changed in Buenos Aires, but the panels were in Jujuy, the offtake was with CAMMESA, and the responsibility was ours. A national government cannot cancel a province's project the way it can cancel its own...which is why Cauchari crossed the finish line.” I4 (JEMSE Representative)

However, the limits of Cauchari's resilience appeared when it moved from operation to expansion. At the 2018 G20 summit in Buenos Aires, Argentina and China agreed to add two 100 MW plants, Cauchari IV and V, which would have raised connected capacity from 300 to 500 MW, with China Eximbank associated with a preliminary package of about USD 170 million, roughly 85 per cent of cost. Yet the agreement never matured into effective project finance. On paper the expansion reproduced the first phase's coalition. What had changed was the environment in which they had to assemble a new project. The first plants had been made bankable within RenovAr, but by the time IV and V were negotiated, that window had narrowed.

The December 2023 change of government weakened origination further. Milei froze public works, distanced Argentina from China, and reduced the credibility of the federal backing of a sovereign-guaranteed loan required. Provincially, the replacement of Gerardo Morales by Carlos Sadir did not end Jujuy's commitment. However, the incoming leadership signaled a more diversified external strategy, with greater openness to European partnerships in lithium and energy. This pluralization weakened the previously exclusive coupling between Jujuy and Chinese finance and, combined with the national shift, increased uncertainty around future financing.

The same contrast between durability and constraint appeared in social and environmental governance. The Puesto Sey community received a 2 per cent profit share and pledges of employment and local development, yet the community on whose land nearly a million panels powered an estimated 160,000 households elsewhere remained off the national grid, dependent on diesel generators. The project thus distributed revenue without dismantling infrastructural exclusion, folding the community into a compensatory scheme while leaving intact the asymmetry between the territory hosting generation and the urban consumers receiving its power. Provincial Law 5915, which regulates administrative easements for energy production and transmission, deepened this asymmetry: it authorized the occupation of community land without formal expropriation and limited communities' capacity to contest the works. The legal framework governing consultation had itself been enacted without prior consultation, placing it in tension with ILO Convention 169 and constitutional protections of Indigenous territory. Mobilisation through the Qullana Aymara Parliament and repeated repeal petitions therefore indicates that the project's social license was assembled within an uneven institutional setting rather than secured through symmetrical consent (Espósito, 2023).

#### 4.2 Kirchner–Cepernic: Litigation, Partisan Turnover, and Financial Lock-in

Once construction began, the first channel through which volatility entered the project was not financial or technical but judicial. A suit brought in 2014–2015 by the Argentine Association of Environmental Lawyers of Patagonia and the Fundación Banco de Bosques warned that the works would damage the glaciers of the UNESCO-listed Los Glaciares National Park and the habitat of the endangered Hooded Grebe. The incoming Macri government issued a stop-work order in December 2015, and on 21 December 2016 the Supreme Court ordered the works suspended until the environmental impact assessment and public hearing required under Law 23,879 had been carried out (Mora, 2018). A new assessment and a July 2017 public hearing lifted the precautionary measure on procedural grounds, but litigation over the substantive adequacy of the studies continued, and in October 2020 the Court required technical opinions from IANIGLA-CONICET, the National Institute for Seismic Prevention, and the National Parks Administration (Corte Suprema de Justicia de la Nación, 2020).

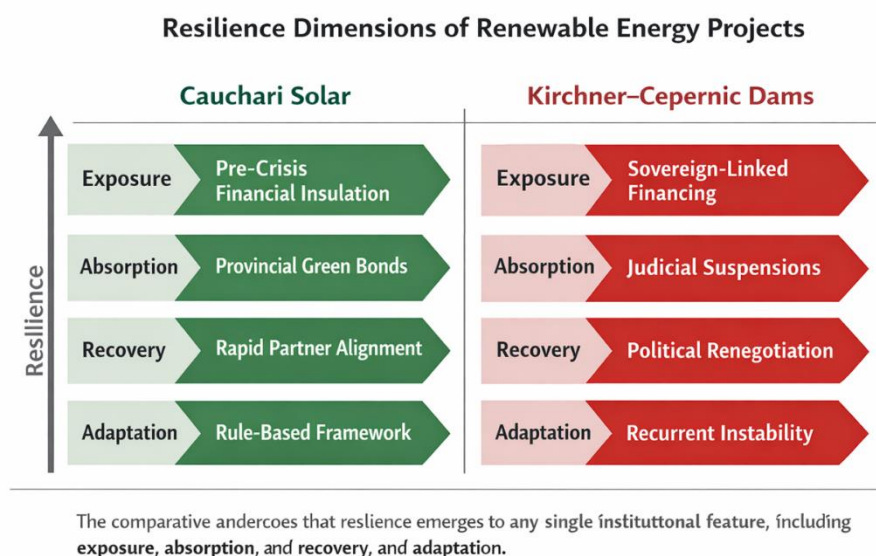
On the other side, by 2016, cancellation was no longer a purely political decision, because the project's financial architecture had already turned withdrawal into a systemic cost. Owing to the cross-default arrangement, the Chinese banking consortium stated in a confidential letter to the Argentine government on 10 March 2016 that "delays or cancellations will result in an event of default under the dam facility agreement and will trigger the cross-default clause in the Belgrano Cargas facility agreement" (Ámbito Financiero, 2016). Exit was therefore priced into a wider bilateral package that included disbursed funds repayable upon cancellation and, indirectly, the currency swap supporting Argentina's macro-financial position. Abandonment became politically and financially unaffordable. Faced with this situation, Macri's government opted for rescaling rather than cancellation, as the complex was reduced from 1,740 MW to 1,310 MW across the second half of 2017, the number of turbines was cut, a transmission line to Buenos Aires was added, and the schedule was extended, while the lower operating level was invoked to justify lifting the precautionary measure.

This logic was also reflected in elite-level accounts of the decision-making process. I2, an official responsible for the national accounts, framed the continuation of the dams not as a policy preference, but as a constrained response to the financial penalties embedded in the contractual structure:

“We did not keep the dams alive because we believed in them. We kept them alive because the cost of stopping them had been wired into the contracts...the cross-default, the swap, the funds that would have to be returned. Every exit door had a price tag the country could not afford.” I2 (National Economy/Finance Official)

Rescoping removed the immediate legal blockage but did not stabilize the project. The scientific dispute remained open, and the dams’ political standing was reopened with each electoral cycle. Under Fernández (2019–2023) the works were revived as an emblem of developmental sovereignty, and Argentina’s entry into the Belt and Road Initiative in February 2022 embedded them in a broader geopolitical narrative; under Milei, from December 2023, the trajectory was reversed and the works halted again. The problem was not simply that governments changed but that each change redefined what the dams meant. Its continuity depended less on bureaucratic routine than on whether each administration would claim ownership of it. The most revealing episode came at the end of this sequence. Despite Milei’s hostility toward Beijing and Washington’s pressure to curb Chinese investment, his administration reactivated the works. A US-aligned libertarian government thus revived a Kirchnerist megaproject through a rival-party provincial governor in the days before a midterm election.

Figure 2. Comparative Mapping of Project-Level Resilience Dimensions



Source: Author’s own elaboration based on the comparative analysis developed in the manuscript

Finally, if politics determined when the dams stopped and restarted, the financing structure determined what each interruption cost. It was dollar-denominated, completion-contingent, and tied to an asset that could only generate repayment capacity once operational. Over time, the project was trapped in a stop–start rhythm in which political volatility was translated into financial accumulation. The disbursement record captures this rhythm. Outstanding principal remained around USD 850 million during the 2015–2016 suspension, rose to roughly USD 1.35 billion after the 2017 resumption,

and then fell again in 2020–2021 as the pandemic reinforced the standstill. When the Milei government suspended the works in December 2023 over a funding shortfall, construction crews were dismissed. Read as a financial trace of political interruption, each suspension froze implementation without cancelling the principal already drawn, and each resumption required further disbursement into structures that remained incomplete and non-revenue-generating. Across the decade, therefore, the loan grew against an asset that was not yet capable of producing the income on which repayment had been premised.

## Conclusion

This article began from a puzzle: why do Chinese-financed renewable energy projects, drawing on similar sources of finance and operating within the same volatile national environment, follow such divergent delivery trajectories? Holding constant Argentina's macroeconomic volatility and a common reliance on Chinese development finance, the paired comparison of Cauchari and Kirchner–Cepernic shows that the divergence was not produced by the shocks themselves, which both projects faced, but by the institutional configurations through which those shocks were transmitted and absorbed.

Reading through the framework developed in Section 2, this divergence can be understood as a relational difference in resilience, with the two projects mapping onto the framework's four dimensions in almost exactly opposite ways. On exposure, Cauchari closed its financing before the crisis and insulated it from sovereign risk, whereas Kirchner–Cepernic's sovereign-linked financing left it exposed to executive discretion at every stage. On absorption, Cauchari's provincial green bonds and the FODER guarantee decoupled its cash flow from macroeconomic repricing, so that shocks became a manageable repayment burden; Kirchner–Cepernic, by contrast, absorbed shocks as judicial suspensions that halted the works outright. On recovery, Cauchari restored coordination quickly through aligned provincial, regulatory, and contractor commitments, while Kirchner–Cepernic could re-enter implementation only through political renegotiation that reopened the project with each electoral cycle. And on adaptation, Cauchari adjusted within a rule-based framework that consolidated what already worked, whereas Kirchner–Cepernic's adaptations amounted to recurrent instability, since each adjustment rewrote the project without stabilizing it.

Across the three institutional dimensions, the comparison locates the decisive contrast in the governance locus, understood as the spatial distribution of authority over the project. Cauchari's locus was anchored in the provincial state and in a completed, revenue-generating asset, which allowed continuity to become a shared interest across national administrations. Kirchner–Cepernic's locus was concentrated in, and personalized around, the national executive, which left it open to political re-adjudication at every change of coalition. Crucially, governance locus was not a variable competing with financial architecture but its mutually constitutive counterpart, since the instruments that allocated capital simultaneously located authority. The socio-environmental dimension followed the same logic. The compression of the environmental assessment at Kirchner–Cepernic deferred rights conflicts into the construction phase, where they acquired judicial force and operated as a standing tax on efficiency. At Cauchari, comparable conflicts were contained, incorporated through participation-as-compensation and foreclosed by easement law, without ever acquiring the capacity to block implementation.

Moreover, the three dimensions do not operate as independent determinants but converge on a single underlying logic. Financial architecture, governance locus, and socio-environmental embedding were mutually constitutive: the instruments that allocated capital also fixed where authority resided, and the locus of authority in turn determined whether rights conflicts were absorbed early or deferred into costly contestation. Resilience, on this account, was less a property that either project possessed than an effect of how these dimensions were aligned.

Theoretically, the study shifts the analytical focus in the political economy of Chinese overseas finance from why China invests to how host-country institutions mediate what that investment becomes. It does not claim that institutions neutralize structural asymmetry. The dependence on imported equipment, single-channel external finance, and lock-in provisions persisted in both cases; what the institutional configuration governed was how that asymmetry was absorbed, contested, or amplified at the project level. The dimensions developed here therefore explain variation in delivery within a shared condition of dependence, not an exit from it.

Finally, a two-case design supports analytical rather than statistical generalization. It specifies a plausible mechanism, namely how institutional and relational configurations mediate asymmetric interdependence, rather than establishing its frequency or net effect across the universe of Chinese-financed projects. The contrast between Cauchari and Kirchner–Cepernic also covaries with sector, scale, and the intensity of socio-environmental conflict, meaning that the design cannot fully disentangle the effect of provincial coordination from these correlated differences. The findings should therefore be read as theoretically grounded propositions to be tested on a larger and more varied sample, while the provincial-led model should be treated as a contingent configuration rather than a portable formula for securing autonomy under conditions of structural dependence.

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