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Beyond Projects: The Role of Development Partners in Institutionalising Renewable Energy Innovations

Lessons from the Global South

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Summary

Renewable energy has seen rapid uptake, particularly in the Global South. Solar energy projects have boomed in recent years, but uptake by countries is uneven. Beyond geophysical conditions, technological innovation, market dynamics and donor-driven "lighthouse projects", political institutionalisation has played a critical role in decarbonisation. In this policy brief, which is based on extensive research from Global South case studies, we argue that **political institutionalisation** is key to determining whether and how innovative solar initiatives become stabilised, scaled up, and mainstreamed.

Drawing on the research project Institutionalizing Low Carbon Development in the Global South (INLOCADE) and expert contributions from a follow-up IDOS workshop, this policy brief synthesises comparative policy-relevant findings on how institutionalisation unfolds in various emerging economies of the Global South, including Brazil, Bangladesh, Cambodia, India, Indonesia and South Africa.

Key messages:

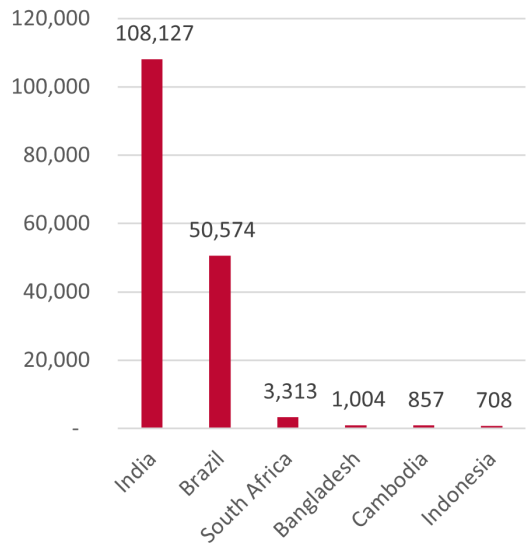
- **Political institutionalisation** – understood here as an enduring change of formal and informal rules and practices towards low-carbon development – is essential for making renewable energy projects sustainable by embedding them in conducive, stable governance frameworks. Isolated, donor-driven initiatives are at risk of provoking resistance and backlash, and of fading away once external support ends.
- **Multiple pathways for institutionalisation exist**. State leadership, subnational action, alliances between development partners and communities, and crisis-driven coalitions can enable institutionalisation under different conditions. Policies should be tailored to the institutional realities of each context rather than using one-size-fits-all models. Similarly, development partners should assess local realities and adapt their strategies accordingly.
- **Distributive justice and participation must be actively supported**. Political institutionalisation can lead to inequitable outcomes and reinforce exclusionary practices. Development partners should take a proactive role by aligning their interventions with inclusive and equitable approaches to ensure support for marginalised groups leads to socially just transitions, not just box-ticking.
- **Crises can be opportunities**. Energy shortages and climate shocks can disrupt fossil-fuel lock-ins and open the door to innovation. Development partners need flexible instruments and strategies to help translate crisis-driven experiments into durable institutional change.
- **Development partners are catalytic, not decisive**. They can accelerate change by providing finance, technical expertise, and legitimacy, especially when working with domestic actors beyond national governments. German and EU development cooperation should place greater emphasis on strengthening domestic institutional environments, including regulatory stability, administrative capacity, and actor coalitions that embed projects in lasting policy and organisational change. This helps ensure donor interventions contribute to sustained low-carbon transitions beyond initial project cycles.

Why political institutionalisation matters

Renewable energy, especially solar photovoltaic (PV) deployment, is expanding at an unprecedented speed. In 2024, PV added a record 452 GW to the global renewable energy generation (IRENA, 2025). Every three years, PV capacity doubles, and projections suggest that solar energy may become the largest source of energy supply by the 2040s (IEA, 2026b).

Solar PV therefore plays a critical role in the production of low-carbon energy. Yet the diffusion of solar power remains highly uneven. India, a frontrunner country, has commissioned some of the world's largest solar parks, yet adoption varies considerably across its federal states. Similarly, Indonesia, with its vast solar potential, has only made limited progress. South Africa has witnessed rapid growth in small-scale embedded generation, yet reliance on coal remains deeply entrenched. Brazil, in contrast, has seen dynamic initiatives at the municipal level, and by private players, community and non-profit actors, yet large-scale solar deployment remains limited (see Figure 1). We argue that these divergent trajectories can be explained by exploring how energy innovations become **politically institutionalised.**

Figure 1: Total increase of solar PV electricity generation 2015 – 2023 (GWh)



Source: IEA (2026a)

Political institutionalisation can be understood as a procedural outcome in which discourses, policies, organisations and practices change in lasting ways. In the context of solar PV electricity, institutionalisation occurs when support moves from temporary pilot projects to become embedded in policy frameworks that underpin long-term transition processes (Marquardt et al., 2023). Institutionalisation thus helps projects to become anchored in regulation, develop organisational routines and align with social norms. As a result, these projects are more likely to generate reliable markets, attract sustained investment and gain legitimacy. Without such support, energy projects can be easily reversed when funds dry up or political priorities shift.

Political institutionalisation is critical for long-term climate policies. However, what is not well understood is how policy experiments lead to durable, rule-bound practices that persist over time and across political contexts. Is this process automatic and linear once a technology proves viable, or a contingent political process that hinges on specific enabling conditions? We argue that it is the latter: institutionalisation depends on a mix of favourable conditions, including supportive political and economic environments and strong administrative capacities. Similarly, a diverse set of actors is required who individually, or more likely collectively, drive (or resist) institutional change (Marquardt et al., 2023). For example, a shiny donor-driven pilot project may demonstrate technical feasibility and innovation, but without supporting environments such as community acceptance or a supportive domestic market it will have limited impact on shifting broader energy systems away from carbon lock-in. Therefore, political institutionalisation is the missing link for turning a solar park into a sectoral policy, a mini-grid into a nationwide programme, or one donor initiative into a broader governance reform. Without such processes of institutionalisation, the global energy transition risks remaining patchy and fragile.

Understanding the critical role of political institutionalisation is especially relevant for **development cooperation.** Donors and development agencies have long promoted renewable energy in the Global South by financing projects, providing technical assistance or supporting policy reforms. Many celebrated innovations, such as rooftop solar in Brazil, floating solar in Indonesia, community-based mini-grids in South Africa, solar home systems in Bangladesh, and early large-scale solar parks in India, received significant support from development partners. Yet their long-term impact has been uneven. Too many projects have remained at a pilot stage, celebrated during their funding cycles but fading once external support is withdrawn. Regardless of its technical success, this represents a limited return on investment. In the context of shrinking aid budgets and mounting scrutiny of development agencies, political institutionalisation has become a vital yardstick for measuring the effectiveness of development cooperation.

The INCOLADE project explored why some solar PV projects in selected Global South countries endure and were scaled up, while others remain short-lived. For this, a qualitative comparative analysis was conducted of 64 solar projects in four countries – Brazil, India, Indonesia and South Africa. Additionally, the findings were discussed and validated at a key expert workshop with IDOS, where additional input was gathered from researchers and practitioners from government, development agencies and civil society. Findings from two solar energy projects in Bangladesh and Cambodia were added to test results in other country contexts and to develop a fuller understanding of institutionalisation processes. A range of initiatives and technologies was considered, including large-scale solar parks, embedded generation, donor-driven programmes, mini-grids, energy communities, floating solar plants and energy auctions.

Common pathways for political institutionalisation in the Global South

From our research, we identified four decisive clusters – or pathways – through which solar energy projects become institutionalised across the different country contexts. These pathways emerge from our empirical analytical study of how institutionalisation processes unfold in the real world; we did not set out to define or select normatively desirable models. The results differ in their mix of enabling conditions, including actor constellations, structural factors and overall implications for low-carbon development.

Across these pathways, development partners play an important, but ambivalent role, as development cooperation is typically shaped by project-based timelines, funding cycles and the need to work through domestic institutions. Our findings show that development partners can shape institutionalisation both directly – for example, through capacity-building and technical support in contexts of institutional weakness or crisis – and indirectly, by forging broad actor coalitions, strengthening local capacities, or supporting gradual changes in the political, economic and administrative environments in which projects are embedded.

Pathway 1: Varieties of state-led capitalism

State-led capitalist approaches were the most common pathway to political institutionalisation. National governments play a decisive role by providing credible commitments, regulatory clarity, and investment incentives to enable institutionalisation. Additionally, supportive structural conditions such as market-friendly political economy and adequate administrative capacity, further strengthen these processes.

India illustrates this pathway most clearly. For example, large-scale solar parks in different federal states, such as Bhadla Solar Park (2.25 GW), Pavagada (2 GW), Rewa Ultra Mega Solar (750 MW), and Charanka (730 MW) became

possible due to early commitments and streamlined regulatory processes by central and state governments. This created investment security for private developers. Over time, these projects helped position solar power as a viable option and attracted substantial domestic and foreign investment.

Brazil and South Africa also provide further examples. Brazil, among the first few Global South countries to introduce energy auctions at the federal level, could generate significant private investment in the renewable energy sector. South Africa, following the Brazilian experience, developed the Renewable Energy Independent Power Producer Procurement Programme (REIPPPP). This auction programme has enabled large-scale solar energy development in collaboration with private sector actors. Even with the continued dominance – and periodic resistance – of the state-owned and heavily coal-based utility Eskom, national authorities have promoted the REIPPPP as a way of addressing increasing electricity shortages. This support has generated approximately 2.3 GW of new large-scale solar PV capacity (CSIR, 2025).

In Indonesia, the floating solar plant in Cirata (145 MW) represents a rare case of institutionalising solar power in the archipelago. PLN – Indonesia's state-owned electricity company – agreed to a joint venture with Masdar, the UAE's energy company, to form Cirata. This is a unique case, as PLN's often restrictive position has limited the integration of solar power into the grid. Such decisions were the outcome of the ruling elite's entanglement in the fossil fuel sector, particularly in coal extraction, which has curbed any competition from renewable energy and prevented alternatives in the energy mix.

Bangladesh also offers similar examples. In the late 1990s and early 2000s, the country suffered from limited rural electrification. This negatively impacted poverty alleviation, social services, gender empowerment and climate action measures (UNDP, 2022). In response, the government established the Infrastructure Development Company Limited (IDCOL) to promote off-grid solar in rural areas where grid expansion was costly and difficult. With initial support from the World Bank and Global Environment Facility (GEF), and later from bilateral and multilateral donors (Mohazzem Hossain et al., 2024), IDCOL led the Solar Home System (SHS) programme, installing 4.12 million systems by 2017 and providing electricity to 18 million people. IDCOL manages projects, sets technical standards, mobilises concessional finance, and channels grants and loans to partner NGOs, later scaling up to mini-grids, irrigation, and rooftop solar (Kumar et al., 2019).

Cambodia's rural solar development similarly reflects a state-led capitalist model in which the government coordinates markets, finance and private actors. The Royal Government of Cambodia established the Rural Electrification Fund (REF) in 2004 to accelerate rural electrification, initially leveraging World Bank and GEF financing under the Rural Electrification and Transmission Project. After 2012, REF was integrated into the state utility Electricité du Cambodge (EDC), ensuring continued public funding alongside external grants. Through targeted programmes, the state provides subsidised finance, sets institutional frameworks, contracts private firms for implementation, and supports licensed private distributors to expand rural electricity infrastructure (Phoumin, 2015).

Pathway 2: Subnational leadership

Another pathway was evident when subnational actors, such as municipalities, provinces and federal states stepped in to advance renewable energy projects. In most cases, these actors were also elected representatives of the people and accountable for the welfare of the electorate. In these cases, subnational administrations develop the necessary capacities, establish regulatory frameworks and create space for partnerships with private firms, NGOs or development agencies.

South Africa offers striking examples. Eskom and the National Energy Regulator (NERSA) long resisted reforms that would allow municipalities to source electricity independently. However, amid debilitating load shedding, major cities like Cape Town and Johannesburg began to develop their own regulatory and contractual systems, enabling private generators to transmit and sell ("wheel") power to municipalities using existing distribution and transmission networks. These initiatives reduced local energy vulnerabilities and placed pressure on national institutions to adopt regulatory frameworks for grid feed-in from independent power producers (IPPs).

In India, energy policymaking has long been dominated by the national government. Yet, entrepreneurial state-level governments, such as those in Gujarat and Rajasthan, have increasingly shaped innovative solar energy policies. Gujarat, in particular, effectively leveraged its administrative, financial and regulatory capacities to institutionalise solar ambitions. Through targeted policy adjustments and subsidies, the state supported pioneering initiatives such as the Charanka Solar Park and the Chandrasan Solar Canal Project – both illustrative of subnational experimentation and policy learning in India's renewable energy landscape (Marquardt et al., 2024).

Brazil shows a different variant. South Brazilian cities such as Curitiba and São Paulo, long known for environmental leadership, launched ambitious solar initiatives independently of the federal government. These projects, carried out in collaboration with nongovernmental organisations (e.g. São Paulo) or receiving support from bi- and multilateral development partners and networks (e.g. Curitiba), became showcases of what local governments can achieve, and inspired replication elsewhere. This pathway also underscores the importance of multi-level governance. While national inertia can in some cases be a barrier to decarbonisation efforts, elected actors at municipal or provincial levels show leadership by partnering with civil society and the private sector to generate bottom-up momentum. Development partners can find value in engaging with subnational actors who have the capacity to shape local-level policies.

Pathway 3: Alliances between development partners and communities

A third pathway emerges when development partners and community actors join forces in the absence of government leadership. Development partners provide access to funding, technical expertise and policy design advice, while communities offer local legitimacy, contextual knowledge networks and demand. Together, they create "functional equivalents" of domestic state support at the national and subnational levels.

In South Africa, the Upper Blinkwater Minigrid illustrates this model. Supported by the German Development Agency (GIZ), the project combined external expertise and funding with strong community involvement (GIZ, 2020). The project demonstrated the viability of decentralised, off-grid solar in rural areas and served as a template for replication across the country. The national electricity company Eskom, for instance, emulated this success story and has now installed containerised mini-grid solutions to address energy poverty challenges arising from the inaccessibility of energy infrastructures.

In India, the Solar Power as Remunerative Crop initiative, led by the International Water Management Institute (IWMI), stands out as a case of effective collaboration among development partners, community actors and state institutions. This project enabled farmers to generate and sell surplus electricity from solar irrigation pumps. By combining technical assistance, financing and local participation, IWMI and its partners institutionalised a decentralised solar model that influenced Gujarat's state policy.

In other cases, development partners acted as crucial intermediaries, translating national policy ambitions into operational realities at local levels. For example, in Bangladesh's SHS programme, development partners worked as linking entities to communities, providing concessional finance, technical expertise and organisational support.

Simultaneously, locally embedded organisations, such as Grameen Shakti, connected rural households with solar suppliers, credit schemes and maintenance services (Hellqvist & Heubaum, 2023). Together, this partnership created implementation networks that neither state actors, including IDCOL, nor communities could have established on their own. This illustrates how development partners can impact the replication and scaling up of renewable energy solutions by embedding them in local contexts.

This is, however, not a clear pathway in all countries, and success is not universal. Cases show the limits of alliances between development partners and communities. In Indonesia, development partners have struggled to institutionalise similar efforts through community engagement. Despite numerous local solar initiatives, these projects are often constrained by national veto players such as the state-owned utility PLN, which retains tight control over grid access and energy planning. For example, the Sumba Iconic Island initiative, launched to make Sumba fully renewable, has become emblematic of these challenges, demonstrating how centralised governance and institutional resistance can hinder the long-term embedding of community-based solar projects (Marquardt et al., 2025).

Pathway 4: Crisis-driven coalitions

The fourth pathway is triggered by crises that disrupt existing energy systems. Although crises do not automatically present opportunities for change, they can catalyse actor coalitions of subnational governments, private firms, NGOs and, sometimes, development partners that emerge to fill governance gaps and advance institutionalisation jointly.

South Africa exemplifies this pathway. Persistent electricity shortages and the collapse of coal-fired generation created intense pressure for alternatives. In response, provinces, municipalities, businesses and NGOs mobilised to advance renewable projects. While Eskom initially resisted, the scale of the crisis forced the national government to unbundle the utility's monopoly on generation, transmission and distribution to open space for innovation. This coalition-driven dynamic has accelerated the uptake of embedded generation and IPPs.

Additionally, multi-stakeholder projects in India have been able to trigger political institutionalisation despite challenging settings. For example, the Banasura Sagar Dam Floating Solar Power project represents a collaborative effort in which the federal state government of Kerala contracted a private company to operate the project, which was then supported by academic research and expert advice. Commissioned in December 2017, the project remained a single pilot for several years and is now often used as a reference project for floating solar power plants in India.

Bangladesh offers a related example at the local level especially in far-flung rural areas. In one remote village, a crisis driven by corruption among local political elites – whose actions disrupted local energy provision – prompted villagers and a local NGO to work closely to secure energy access. Together, they established community-owned cooperatives to operate and maintain solar energy systems and solar-powered water purification facilities, demonstrating how local communities responded to a crisis triggered by corruption among village-level political elites (Yi et al., 2024).

Crisis-driven coalitions demonstrate that even in structurally adverse environments, institutionalisation can occur when pressures mount and diverse actors mobilise collectively. However, these pathways are often unstable after the immediate crisis abates unless new institutions stabilise the change. At the same time, they frequently generate critical learning effects, creating precedents that can inform and enable replication in other contexts.

Policy lessons for development cooperation

The four pathways described highlight that there is no single route to political institutionalisation: different mixes of structural conditions and actor coalitions can make renewable energy projects stick. In these processes, development partners act in different roles and their influence is highly context-dependent.

The following distils key policy lessons for development cooperation on how to move beyond short-term project logics toward supporting lasting institutional change.

Development cooperation as an enabler of political institutionalisation

1. Acting as potential amplifiers or catalysts for local decarbonisation dynamics

Development partners can act as potential amplifiers or catalysts, connecting local initiatives with (sub-)national decision-makers and thereby contributing to strengthening political institutionalisation. They can amplify community voices, channel civil society concerns into policymaking processes, and lend legitimacy to bottom-up initiatives. South Africa provides a clear example. As energy insecurity worsened and the costs of rooftop PV systems declined, households and businesses began installing solar units at an unprecedented rate. Development partners, including GIZ, played an important role in catalysing this shift. Together with the Green Climate Fund and the Development Bank of Southern Africa, GIZ provided critical advisory support for feed-in tariff design and regulatory frameworks, alongside financing for broader implementation especially for municipalities that wanted to pursue more autonomous energy strategies.

2. Financing and de-risking investments

Renewable energy projects in emerging economies often face hesitant private investors, particularly in regions where regulatory frameworks are weak or utilities are financially fragile. Development agencies and multilateral development banks can help bridge this gap by offering concessional finance, blended finance arrangements or guarantees. This not only mobilises private capital but also signals political commitment and confidence, making projects more bankable. In India, for instance, a large-scale project like the Charanka Solar Park benefited from World Bank funding to support the park's transmission infrastructure as early as 2010. Donors can help support institutional arrangements that effectively de-risk broader private investment and gradually lead to sustainable energy finance, while avoiding the trap of long-term subsidisation.

3. Building capacity and providing expertise

Institutionalisation requires more than money; it depends on stable regulatory systems, technical standards and planning capacities. Development partners have often supported governments, utilities and regulators in developing renewable energy frameworks, grid codes and auction designs. In Brazil, development partners such as GIZ and KfW played a key role in supporting municipal photovoltaic initiatives in cities such as Curitiba (e.g. Solar Pyramid) and Florianópolis (e.g. Eletrosul). These projects catalysed regulatory innovation around embedded generation through the introduction of a net metering system. Beyond creating standalone pilots, this approach not only helped integrate renewable energy procurement strategies into local governance structures but also enabled regulatory uptake at the national level. Such support proved most effective where local utilities and administrations possessed the baseline capacity to absorb and implement new frameworks.

Taken together, these functions – **amplifying or catalysing**, **financing, and capacity-building** – illustrate the positive potential of development partners in institutionalisation processes. Yet they also point to an important caveat: their impact depends on how well interventions align with domestic dynamics and are embedded in existing institutional arrangements.

Constraints for development cooperation in supporting institutionalisation

1. Policy challenges

Even when development partners build trustful personal relationships, **frequent turnover** among government officials and resulting **policy discontinuity** can undo progress. Electoral cycles, internal reshuffles and political instability often result in the replacement of civil servants and political appointees just as cooperation begins to yield results. Capacity-building efforts have to restart, and carefully negotiated reforms risk being abandoned by successors with different priorities. In Indonesia, for example, development partners regularly engage with the Directorate General of the Renewable Energy and Energy Conservation (EBTKE) within the Ministry of Energy and Mineral Resources. Despite good relations with EBTKE, development partners lack regular direct interactions with key players, such as PLN or other ministries, which has led to policy proposals being blocked within the administrative environment.

2. Temporal challenges

Time is a critical factor in development cooperation – and a frequent source of friction. In the context of our research, two temporal challenges stand out: **short-termism** and misaligned **local sequencing**.

First, donor-funded projects frequently begin as pilots or proof-of-concept initiatives. While they may generate temporary enthusiasm, many vanish once external support ends if they are not embedded in (sub-)national frameworks. This leads to fragmented progress and a lack of continuity, where each new project starts from scratch rather than building on previous efforts. In Indonesia, for instance, several donor-supported solar initiatives that ran for more than ten years struggled to persist beyond the project cycle because they were not supported by the state-owned utility company, PLN, or integrated into the country's long-term planning (see also Marquardt et al., 2025). Without conducive structural environments and relevant actor support, innovations risk becoming isolated islands of progress and failing to institutionalise.

Second, development partners often pursue global agendas – such as rapid solar deployment for climate mitigation – that do not always align with local needs. In practice, this can distort priorities. For example, development partners may support generation capacity without addressing transmission bottlenecks or grid integration. South Africa illustrates these tensions well: Under the Just Energy Transition Partnership (JETP), development partners pledged USD 8.5 billion to support the phase-down of coal and the scale-up of renewables. Much of this finance is channelled through the national government and Eskom to fund coal plant decommissioning, national grid expansion, and debt restructuring. However, municipalities faced more pressing challenges, including everyday load shedding that affected people and their livelihoods. As a result, they prioritised feed-in tariffs for embedded generation, local ownership models through electricity "wheeling", and urgent upgrades to municipal grids to reduce dependency on Eskom (Elsässer et al., 2018; von Lüpke, 2025). When external support does not adequately account for these multi-level governance dynamics and sequencing constraints, it risks reinforcing existing institutional bottlenecks. This underscores the importance of aligning international support with domestic realities, particularly the roles, capacities and incentives of subnational actors who are often central to sustaining energy transitions over time.

3. Distributive and procedural challenges

Large-scale solar projects are land- and capital-intensive. If issues such as land rights, affordability or access are not addressed upfront, such projects can deepen existing inequalities, provoke resistance, or even lead to open conflict. Our research shows that political institutionalisation does not automatically ensure normatively desirable, equitable outcomes – in some cases, it may even further **entrench exclusionary practices**.

In India, some utility-scale solar parks faced protests from communities that felt excluded from decision-making or displaced without adequate compensation. Although development partners are not in the driver's seat of these projects, the aforementioned Charanka case illustrates that they are integral to these initiatives. Despite being located near solar parks, local communities remain excluded from the very energy systems they help support (Stock, 2021). Not surprisingly, communities across India are increasingly mobilising against new solar installations, often experiencing excessive use of force by law enforcement.

Conclusion and policy recommendations

- **Political institutionalisation is essential**, as stable, conducive governance frameworks help make renewable energy projects sustainable in the long run. Isolated, donor-driven initiatives are at risk of fading away, provoking resistance and backlash once external support ends.
- **Multiple pathways for institutionalisation exist**. State leadership, subnational action, development partner–community alliances, and crisis-driven coalitions can enable institutionalisation in different conditions. Policies should be tailored to the institutional realities of each context rather than using one-size-fits-all solutions. Similarly, development partners should assess local realities and adapt their strategies accordingly.
- **Distributive justice and participation must be actively supported**. Political institutionalisation can lead to inequitable outcomes and reinforce exclusionary practices. A key risk is not that development cooperation actors are unaware of the political implications of their interventions, but that project routines and incentive structures can still privilege technical deliverables over attention to distributional effects and political feasibility.
- **Development partners have a crucial role to play in socially just transitions** by proactively creating inclusive mechanisms that amplify marginalised voices and strengthen public legitimacy.
- **Crises represent opportunities**. Energy shortages and climate shocks can disrupt fossil-fuel lock-ins and open the door to innovation. Development partners need flexible instruments and strategies to help translate crisis-driven experiments into durable institutional change.
- **Development partners are catalytic, not decisive**. German and EU development cooperation should place greater emphasis on providing finance, technical expertise and legitimacy, especially when aligned with relevant domestic actors beyond national governments. This could be particularly relevant for implementing the BMZ's Reform Plan, Shaping the Future Together Globally (BMZ, 2026) and the EU's Global Gateway Strategy. The initiatives should place greater emphasis on the domestic institutional environments that allow renewable energy innovations to endure and be scaled up – such as stable regulatory frameworks, sufficient administrative capacities across governance levels, and actor coalitions that can carry projects forward and embed them in broader policy and organisational frameworks and implementation routines, ensuring continuity beyond initial project cycles. Strengthening these institutional foundations helps ensure that donor interventions contribute to sustained, long term low-carbon transitions.

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