

## Key points

**Hundreds of millions of** people in Least Developed Countries (LDCs) still lack access to electricity, yet prevailing just transition frameworks rarely address the specific structural conditions facing these countries.

**Barriers to clean energy** access in LDCs span the entire governance chain and scale, from resource governance and international finance rules to infrastructure deficits and household-level affordability constraints.

**International climate** finance mechanisms, including those administered through multilateral development banks, frequently fail to reach the most energy-poor populations in LDCs due to structural access barriers.

**Addressing energy** injustice in LDCs demands reforms that open policy space for nationally appropriate low-carbon solutions and place intersectional inequalities at the centre of energy governance.

## Towards just energy access in Least Developed Countries

Least Developed Countries (LDCs) confront a distinctive energy challenge: not transitioning from fossil fuels, but building inclusive, low-carbon energy systems from deep structural disadvantage. Energy poverty, indebtedness and weak productive capacity are rooted in colonial histories that reorganised economies for extraction rather than domestic need. Barriers to energy access cut across the governance and value chain, shaped by global trade and finance rules, fiscal constraints, infrastructure deficits and household-level affordability challenges. Prevailing just transition frameworks, designed for the concerns of fossil fuel-dependent economies in the global North and larger emerging economies, offer limited guidance for LDCs. Drawing on academic and grey literature and policy engagement, this briefing examines the structural roots of LDC energy poverty, assesses the limitations of existing frameworks and identifies institutional pathways for more equitable energy governance.

### Structural political economy of energy poverty in LDCs

Around 750 million people worldwide lack access to electricity, and close to 3 billion people lack access to clean cooking facilities.<sup>1</sup> The overwhelming majority of those without modern and reliable energy services live in LDCs, where energy poverty extends far beyond technical or infrastructural deficit and is deeply rooted in the evolution of the global political economy. Colonial and post-colonial patterns of economic development prioritised resource extraction and export-oriented production over meeting domestic social and economic needs. These trajectories shaped infrastructure investment, state capacity and public finance in ways that continue to constrain energy access today. Electricity systems were frequently designed to serve urban centres, industrial enclaves and extractive sectors, while rural populations and poorer communities remained systematically underserved.<sup>2</sup>

Decades after independence, LDCs remain primarily exporters of raw materials, generating limited domestic revenue and leaving little fiscal space for investment in public goods — including energy infrastructure. This is compounded by debt burdens that constrain government borrowing for capital-intensive energy projects, by currency volatility that raises the effective cost of imported technologies and by regulatory environments that, partly reflecting externally driven reform processes, remain fragmented or weakly enforced.<sup>3</sup>

These conditions interact with a global energy governance architecture that has often reflected the priorities of higher-income economies. Rules governing international trade and investment, and climate finance instruments, have been shaped without fully accounting for LDC contexts, which can constrain the policy options available to governments seeking to advance domestic energy development.<sup>4</sup> The result is that energy poverty in LDCs is not primarily a product of domestic policy

failure: it reflects underlying structural conditions, many externally driven, that call for responses at international as well as national level.

Three structural challenges are particularly relevant to LDCs: limited food sovereignty (closely tied to energy access for agriculture); limited energy sovereignty, including high dependency on imported fossil fuels and technologies; and relatively low-value-added exports compared to imports.<sup>5</sup> Together, these reinforce weak currencies and rising debts, in turn raising the real cost of energy investment at every stage.

### Barriers across the energy access value chain

Structural barriers, shaped by international and/or domestic conditions, span each stage of the energy value chain (see Figure 1). Understanding these barriers is essential for identifying appropriate and targeted policy responses.

**Resource governance:** limited state capacity and weak regulatory frameworks, often legacies of externally designed reform programmes, reduce LDC governments' ability to negotiate equitable terms with investors or to translate natural resource revenues into productive energy investment. International trade and investment rules also constrain the industrial policy options available to resource-rich LDCs seeking to build domestic energy industries.<sup>6</sup>

**Finance and investment:** LDCs face structurally higher costs of capital than higher-income economies. Sovereign risk premiums, currency risk and perceptions of institutional fragility significantly increase the cost of debt finance for energy projects. Many LDCs lack the institutional infrastructure needed to aggregate and structure smaller-scale investments (including national development banks and specialist energy finance intermediaries), particularly for distributed renewable energy systems, while de-risking partnerships designed to attract private finance expose governments to liquidity and exchange rate hazards.<sup>7</sup>

**Infrastructure development:** the total power generation capacity of the 48 sub-Saharan African countries, for instance, amounts to only 45 gigawatts, less than that of Spain, with a quarter currently unavailable due to ageing infrastructure and lack of maintenance. Across South and Southeast Asian LDCs, the picture is more varied but equally instructive. Bangladesh achieved near-universal electricity access largely through one of the world's largest solar home systems programmes, demonstrating the potential of decentralised, state-supported renewable deployment to leapfrog centralised grid extension.

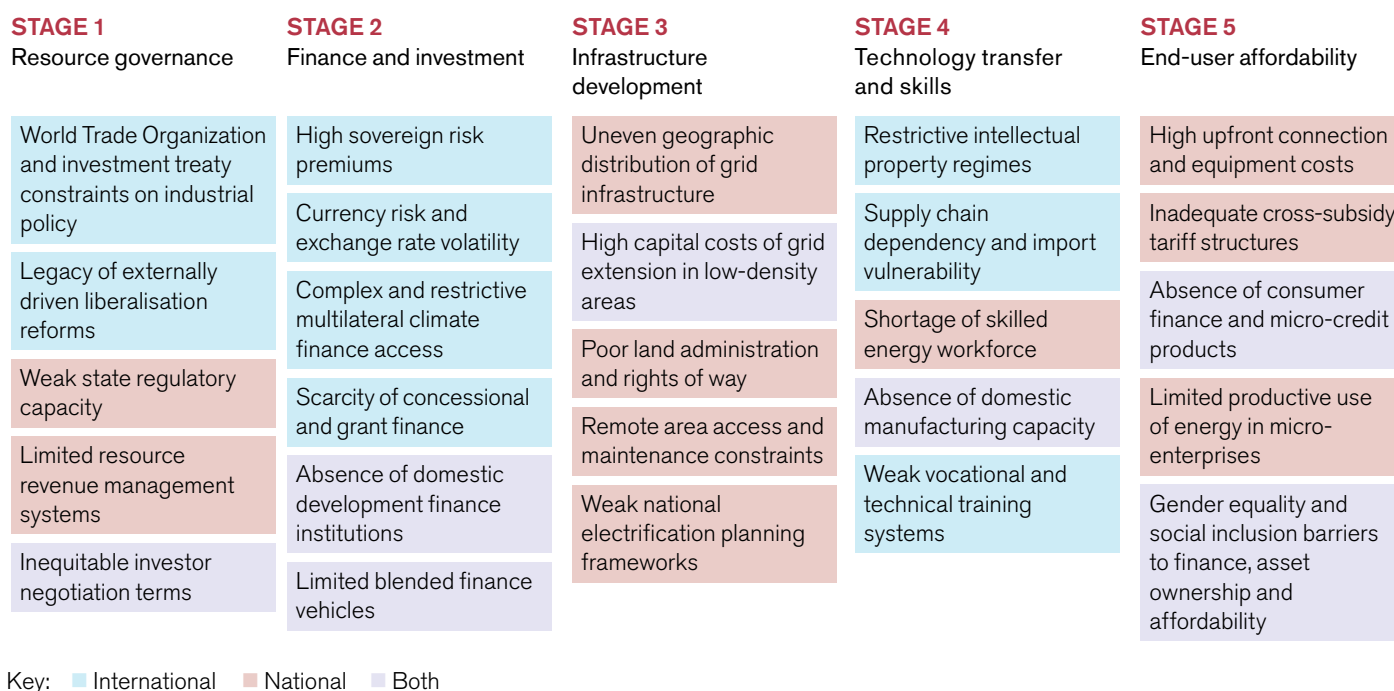
Yet Myanmar, where less than 65% of households have electricity access, illustrates that proximity to regional economic corridors does not automatically translate into energy access gains for the poorest populations. Grid coverage in many LDCs remains highly uneven, with rural and peri-urban areas underserved. The capital requirements for grid extension are substantial, and in lower-density settlements the economics of centralised grid delivery are often unfavourable.<sup>8</sup> This creates a structural reliance on decentralised off-grid and mini-grid solutions, which are themselves constrained by financing gaps and by the absence of appropriate regulatory frameworks. With most of their energy infrastructure yet to be built, LDCs have the opportunity to leapfrog to modern, people-centred, decentralised renewable energy systems — just as mobile technology bypassed landlines.

**Technology transfer and skills:** LDCs generally have limited domestic manufacturing capacity for clean energy technologies, rendering them import-dependent and exposed to supply chain disruptions and price volatility. Skills shortages in energy engineering, project management and financial structuring further constrain deployment. Regional industrial policy targeting renewables manufacturing could address both constraints simultaneously, supporting LDC industrialisation alongside genuine energy sovereignty.

**Household and enterprise affordability remains the most immediate barrier:** even where grid connections or off-grid systems are physically accessible, connection and upfront equipment costs and tariff levels often place clean energy services beyond the reach of low-income households and micro-enterprises.<sup>9</sup> In many LDCs, residential tariffs are relatively high — sometimes exceeding prices in advanced economies, partly because cost-recovery pressures mean that residential consumers cross-subsidise industrial electricity use, inverting the intended equity logic.<sup>10</sup>

### Where just transition frameworks fall short

The just transition concept has gained considerable traction in international climate policy, notably through the just transition work programme (JTWP) under the United Nations Framework Convention on Climate Change. Yet framings remain rooted primarily in the concerns of fossil fuel-dependent economies in the global North and, to a lesser extent, emerging economies like South Africa, where managing the decline of coal-intensive industries is politically and economically contentious.<sup>11</sup> For LDCs, the more pressing challenge is building inclusive,

**Figure 1. The energy access value chain and challenges**

low-carbon energy systems from a position of limited institutional capacity and constrained fiscal space, reflecting a fundamentally different political economy of transition. The JTWP and the 2025 UN Climate Change Conference (COP30) decision to develop a just transition mechanism provides an opportunity to better address LDC priorities through practical, implementation-oriented measures that support climate-resilient, development-centred pathways.

International climate finance architecture reflects this misalignment. The Green Climate Fund and similar mechanisms have been widely criticised for complex accreditation and application processes that favour larger institutions with established international partnerships, while their project portfolios have historically directed more resources to middle-income countries than to LDCs.<sup>12</sup> Bilateral climate finance likewise continues to reflect geopolitical and commercial interests that do not consistently align with the energy access needs of the most vulnerable economies. The gap between commitment and disbursement, and between available finance and the investment required to achieve the seventh Sustainable Development Goal — “Ensure access to affordable, reliable, sustainable and modern energy for all” — remains considerable.

Structural barriers to energy access are also experienced unevenly within LDC populations. Women, people with disabilities, rural communities and other marginalised groups face overlapping disadvantages that are often obscured in aggregate energy statistics and

mainstream policy debates. Women typically spend far more time than men collecting biomass and on cooking tasks that expose them to harmful indoor air pollution.<sup>13</sup> Women's more limited access to finance and land tenure also restricts their ability to invest in or benefit from clean energy technologies. People with disabilities face additional barriers to energy access, including physical access constraints, the cost of electricity-dependent assistive technologies and systematic exclusion from programme design processes. These challenges remain largely invisible in both research and policy, underscoring the need for disaggregated data and more inclusive energy governance.

## Policy and institutional pathways

Addressing these structural barriers requires coordinated action at the international, regional and national levels, across multiple policy domains simultaneously. Expanding energy access in LDCs is not simply a matter of increasing investment or deploying new technologies. It requires reforms to the institutions, financing mechanisms and governance arrangements that shape how energy systems are planned, financed and implemented. Progress will therefore depend on aligning international support with national priorities while strengthening regional cooperation and domestic institutional capacity.

**International level:** reforming climate finance architecture to improve LDC access should be a priority. This includes simplifying accreditation processes for national implementing entities, increasing concessional and grant finance for

energy access and expanding direct budget support for national energy programmes where project-financing is inefficient and administratively burdensome. Wealthy countries and historical big emitters must also provide adequate finance for adaptation and loss and damage, not only mitigation.

International trade and investment rules should likewise be reformed to expand policy space for LDC energy and industrial strategies. Recent IIED research on critical minerals governance shows that existing treaty frameworks often restrict the very measures LDCs need to promote domestic development.<sup>14</sup> Ongoing discussions about World Trade Organization reform and the revision of bilateral investment treaties provide an important opportunity to incorporate provisions supporting LDC energy access, building on the approach adopted in the 2023 Investment Protocol to the African Continental Free Trade Area.

**Regional level:** regional institutions, including the African Union and Economic Community of West African States, have developed energy access frameworks that support cooperation on cross-border infrastructure, technology procurement and regulatory harmonisation. In Asia, the Association of Southeast Asian Nations Plan of Action for Energy Cooperation provides a similar platform, although implementation for the region's LDCs, including Cambodia, Laos, Myanmar and Nepal, remains uneven. Stronger political commitment, backed by adequate concessional finance, would significantly strengthen the enabling environment for energy development. Regional industrial policies aiming to capture higher-value segments of renewable energy supply chains also deserve greater attention, creating economies of scale and stronger bargaining power in technology access negotiations.

**National level:** LDC governments require sustained support to develop and implement tailored energy access strategies, supported by clear regulatory frameworks for distributed energy and safeguards to ensure marginalised groups are not left behind. Many LDCs have set ambitious nationally determined contributions, including commitments on renewable energy expansion, electrification, energy efficiency,

hydropower, clean cooking and institutional strengthening. However, stronger and deeper capacity in energy planning, regulatory design and public financial management is essential if these commitments are to be implemented. Energy access initiatives should be developed with, rather than for, domestic actors to ensure they reflect local priorities and realities.

Finally, energy access programme design and governance must meaningfully involve civil society, community organisations and vulnerable groups. Experience across sub-Saharan Africa consistently shows that initiatives developed without sustained community participation underperform technically and reproduce existing inequalities. Inclusive governance, supported by transparent accountability mechanisms and disaggregated outcome monitoring, is essential to ensuring that expanded energy access contributes to not only higher connection rates but also more equitable and people-centred energy systems.

## Conclusion

Energy poverty in LDCs is a structural condition embedded in the global political economy, shaped by colonial legacies, unequal patterns of economic integration, international trade and finance architectures and persistent misalignment between the needs of the world's most vulnerable economies and the priorities of global climate governance. As such, expanding energy access demands more than increased investment or technological innovation. It requires reforms to the institutions and governance arrangements that continue to reproduce energy inequality at both national and international levels. Addressing these challenges, therefore, calls for an approach that moves beyond mainstream just transition frameworks to account for historical experiences and long-term development aspirations of people across the LDCs, recognising that universal energy access is both a development imperative and a matter of global justice.

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## FIND OUT MORE

Our work on just energy access is being undertaken as part of IIED's project, 'Advancing just transitions in least developed and developing nations through global diplomacy, research and climate-trade-development solutions'. Find out more about our work on this issue at [www.iied.org/advancing-just-transitions-least-developed-developing-nations-through-global-diplomacy-research](https://www.iied.org/advancing-just-transitions-least-developed-developing-nations-through-global-diplomacy-research)

## Notes

<sup>1</sup> IEA, IRENA, UNSD, World Bank and WHO (2024) Tracking SDG 7: the energy progress report. World Bank, Washington DC. / <sup>2</sup> Sokona, Y, Mulugetta, Y, Tesfamichael, M, Kaboub, F, Hällström, N, Stilwell, M, Adow, M and Besaans, C (2023) Just Transition: A Climate, Energy and Development Vision for Africa. Independent Expert Group on Just Transition and Development. / <sup>3</sup> Newell, P and Mulvaney, D (2013) The political economy of the just transition, *The Geographical Journal*, 179(2), pp.132–140. doi:10.1111/geoj.12008. / <sup>4</sup> Heffron, R and McCauley, D (2017) The concept of energy justice across the disciplines, *Energy Policy*, 105, pp.658–667. doi:10.1016/j.enpol.2017.03.018. / <sup>5</sup> See note 2. / <sup>6</sup> Cotula, L, Coleman, J and Moma, L (2026) Critical minerals, trade rules and industrial strategies: who benefits? IIED, London. [www.iied.org/22695iied](https://www.iied.org/22695iied) / <sup>7</sup> Nakhooda, S, Watson, C and Schalteck, L (2014) The global climate finance architecture. *Climate Finance Fundamentals 2*. Overseas Development Institute and Heinrich Böll Stiftung. / <sup>8</sup> Practical Action (2019) Poor People's Energy Outlook 2019. Rugby. / <sup>9</sup> Baker, L, Newell, P and Phillips, J (2014) The political economy of energy transitions: the case of South Africa, *New Political Economy*, 19(6), pp.791–818. doi:10.1080/13563467.2013.849674. / <sup>10</sup> Bos, K, Chaplin, D and Mamun, A (2018) Benefits and challenges of expanding grid electricity in Africa: A review of rigorous evidence on household impacts in developing countries, *Energy for Sustainable Development*, 44, pp.64–77. doi:10.1016/j.esd.2018.02.007. / <sup>11</sup> See note 9. / <sup>12</sup> Independent Evaluation Unit (2022) Independent evaluation of the relevance and effectiveness of the GCF's investments in the least developed countries. Green Climate Fund, Songdo. / <sup>13</sup> ENERGIA (2020) Gender and energy: policy brief – what we know so far and policy considerations. The Hague. / <sup>14</sup> See note 6.

