

A Just Energy Transition

A just energy transition is key to advancing climate action, expanding sustainable energy access and supporting competitive, resilient and diversified economies.

In a world shaped by climate change and steadily increasing energy demand, there is an urgent need to rethink energy systems across their entire value chain, from production to consumption. The energy sector accounts for nearly 75% of global greenhouse gas emissions, making it a central lever for climate action (IEA, 2023). At the same time, geopolitical disruptions, supply chain constraints and growing climate impacts have exposed the vulnerability of fossil fuel-dependent systems and highlighted the need for more resilient, locally anchored and low-carbon energy systems.

Across many countries, climate impacts, demographic changes, urbanisation and economic transformation are reshaping energy demand while increasing pressure on existing systems. These dynamics are particularly acute in developing, fragile and climate-vulnerable contexts. Persistent energy poverty continues to constrain development outcomes by limiting access to essential services, economic opportunities and resilient livelihoods. Even where electricity access exists, supply is often unreliable, leading to reliance on costly and polluting diesel generators. Dependence on imported fossil fuels further increases exposure to price volatility and external shocks.

Energy challenges extend beyond electricity access. In many emerging and developing countries, traditional biomass remains the dominant source of energy for cooking and heating, contributing to deforestation, air pollution and energy-related emissions as well as health issues and gender inequality. This shows there is a need for approaches that consider the full spectrum of energy uses.

Beyond technical aspects, investment levels remain insufficient. Limited pipelines of bankable projects, high perceived risks, high financing costs and institutional constraints continue to slow progress. The energy transition therefore requires more than technology deployment alone. It calls for a systemic approach to linking energy systems with governance, economic development, market development and social inclusion.

Key Figures

- **Achieving climate goals requires tripling renewable energy capacity and doubling energy efficiency improvements by 2030** (Triple RE / Double EE), (UNFCCC, 2023).
- **In Sub-Saharan Africa, 660 million people lack access to electricity and nearly 1 billion rely on polluting cooking solutions**, contributing to around 800,000 premature deaths annually. (IEA, 2026).
- **Africa attracts less than 2% of global renewable energy investment**, despite strong renewable potential, rising demand and ambitions to increase this share to at least 20% by 2030 (ACS2, 2025) alongside an increase in capacity from 56 GW in 2022 to at least 300 GW by 2030. (ACS, 2023).
- **The rapid deployment of clean energy technologies is creating growing end-of-life management challenges**. The annual waste from decommissioned solar panels globally is projected to exceed 3 million tonnes by 2035, and more than 25 million tonnes by 2050 (IRENA, 2026)

Positioning

For Enabel, a just energy transition is about ensuring that energy investments simultaneously advance climate action, strengthen resilience, promote social inclusion and support sustainable economic development. This requires approaches that generate tangible benefits for people, strengthen local economies, support economic transformation and leave no one behind. Enabel's approach to a just energy transition therefore brings together three interdependent objectives:

- supporting universal access to sustainable and reliable energy;
- accelerating the transition towards low-carbon solutions, in line with climate commitments;
- leveraging energy transition as a driver of economic transformation and green industrialisation.

Beyond its mitigation dimension, the energy transition is also a powerful adaptation lever: resilient energy systems help secure essential services, strengthen livelihoods, and reduce vulnerability to climate and economic shocks, particularly in fragile and climate-vulnerable contexts.

Enabel's approach to a just energy transition



Universal Access to Energy

Closing the gap for millions of people, increasing livelihoods and economic development.



Climate Action & Transition

Meeting global climate goals and transition towards low-carbon solutions.



Economic Transformation

Ensuring the shift to low-carbon economies and support economic diversification and green industrialisation.

Drawing on its operational experience, Enabel promotes an approach that connects energy with productive uses, skills development, just economic opportunities and governance.

Positioned at the interface between policy, markets and finance, Enabel supports countries in creating enabling environments, developing sustainable markets and mobilising investment. Enabel's added value lies in its ability to combine policy support, technical assistance and investment preparation through a sequenced approach. By linking early-stage activities with market development and access to finance, Enabel helps scale up sustainable energy solutions and mobilise additional public and private investment.

Through this approach, Enabel contributes to energy transitions that are low-carbon, inclusive, resilient and economically transformative, in line with the European Union's Global Gateway strategy.

Experience in the energy sector

Enabel implements energy programmes since 2011. They range from rural electrification and renewable energy deployment to productive uses of energy, clean cooking, energy transition and climate finance. They include experiences in Mozambique, Rwanda, Democratic Republic of Congo, Guinea, Côte d'Ivoire, Senegal, Tanzania and Uganda, as well as in fragile and crisis-affected settings such as Palestine and Ukraine. More recently, Enabel has further strengthened its role in climate finance through the implementation of a Green Climate Fund-financed programme focused on energy access and climate resilience, demonstrating its capacity to mobilise large-scale climate finance.

These projects and initiatives have generated operational lessons on how to translate the principles of a just energy transition into sustainable and scalable actions.

Decentralised solutions as a key lever for resilience and access

Decentralised renewable energy solutions can rapidly extend access to remote and underserved populations, while strengthening resilience to climate shocks and limiting disruptions of centralised systems. In Mozambique, solar mini-grids expanded electricity access, supported local economic activities and helped ensure the continuity of essential services. In Ukraine, ongoing decentralised energy and backup power initiatives are helping to maintain essential services, strengthen energy security and reduce vulnerability to disruptions of centralised infrastructure.

Decentralised solutions deliver their strongest impact when they are embedded in national planning frameworks and long-term investment strategies, rather than implemented as standalone initiatives. They also highlight the critical role of decentralised systems in ensuring continuity of essential services and strengthening resilience in both development and crisis contexts.

Linking energy access to productive uses to ensure sustainability

Access to energy alone is not sufficient to deliver lasting development outcomes. Greater impacts are achieved when energy access is linked to productive uses and local economic development: projects in Guinea, Senegal, Tanzania and Mozambique illustrate how energy can strengthen agricultural value chains, support local businesses and create employment opportunities. By stimulating demand and revenue-generating activities, these approaches can improve the financial viability of energy assets, strengthen local ownership and enhance economic resilience, underlining the importance of connecting energy projects with broader development objectives.

Clean Cooking as a strategic climate and market pillar

Clean cooking remains a critical yet under-prioritised component of the energy transition, despite its significant impacts on health, gender equality, climate mitigation and

sustainable natural resource management. In many emerging and developing economies, unsustainable biomass remains the dominant household energy source, making clean cooking a strategic development and climate priority. Scaling up clean cooking requires market-based approaches that combine value chain development, private-sector engagement, targeted public support and innovative financing mechanisms, including carbon finance. Experiences in Côte d'Ivoire and Mozambique highlight the importance of enabling ecosystems that connect policy, finance, markets and demand.

From publicly driven pilot projects to market-based approaches

A recurring lesson across Enabel's energy portfolio is the need to move beyond publicly driven pilot projects towards scalable and financially sustainable approaches. Experiences in Mozambique, Guinea and Senegal underscore the relevance of viable business models, market structuring and productive-use approaches. Scaling up sustainable energy solutions requires bankable projects capable of attracting public, private and climate finance. Public support plays a catalytic role in de-risking investments and crowding in private capital.

Energy transition as a driver of competitive low-carbon economies

When embedded within broader industrial and infrastructure development strategies, the energy transition can act as a powerful lever for economic transformation and competitiveness. In Namibia, initiatives in green hydrogen, port development and strategic corridors illustrate how decarbonisation efforts can support the emergence of low-carbon value chains and sustainable industrial development.

The transition is also driving growing global demand for critical raw materials, essential for renewable energy technologies, batteries and clean industrial value chains, creating opportunities for resource-rich countries to increase local value and participate in emerging green value chains (Enabel, 2025). These opportunities are reinforced by evolving frameworks such as the Carbon Border Adjustment Mechanism (CBAM), underlying the importance of low-carbon production for access to international markets. Emerging demand drivers such as digitalisation, artificial intelligence and data centres may further create opportunities for investment in sustainable energy infrastructure - provided that associated sustainability challenges are adequately addressed.

Energy transition as a catalyst for skills and job creation

The energy transition is not only a technological shift. It's also a structural transformation of economies, creating demand for skills across emerging energy value chains. In Tanzania and Namibia, integrating skills development, vocational training, curriculum adaptation and the strengthening of institutional capabilities into energy projects enhance sustainability, local ownership and the long-term performance of energy systems. These experiences highlight the potential of the energy transition to generate skilled employment and support inclusive economic development.

Integrating lifecycle management and circular economy approaches

The rapid deployment of renewable technologies creates growing challenges related to maintenance, waste management and end-of-life treatment of equipment. Experience highlights the need to integrate lifecycle management, battery recycling and circular economy principles into policies, regulations and project design from the outset. These are increasingly recognised as an integral part of a just energy transition.

Recommendations

Strategic recommendations

- 1. Embed decentralised energy solutions, including clean cooking, and end of life equipment management, within national planning, regulatory and financing frameworks** to ensure coherence, sustainability, scalability and long-term impact.
- 2. Promote integrated energy approaches** that maximise socio-economic impact by supporting productive uses, economic diversification, skills development, entrepreneurship support and territorial development, in line with national strategies and climate commitments.
- 3. Strengthen energy transition governance and institutional capabilities** by improving coordination, ensuring coherence between energy, climate, economic and social policies and reinforcing planning and regulatory frameworks.
- 4. Mobilise public, private and climate finance through sequenced approaches** that link early-stage support, project preparation, development of bankable projects and investment mobilisation. Public and concessional resources should be used strategically to reduce risks, improve affordability and crowd in private investment at scale.
- 5. Recognise private finance as a key pillar of a just energy transition**, acknowledging that achieving energy access and decarbonisation objectives will require substantial private -sector participation aligned with development outcomes.
- 6. Integrate social inclusion, gender equality and safeguards** across all energy transition programmes, ensuring that the energy transition is just, inclusive and leaves no one behind.

Operational and technical recommendations

- 1. Link energy investments to productive use** (agriculture, SMEs, services) **and viable business models** to maximise socio economic impacts and ensure the long-term sustainability of energy systems.
- 2. Position clean cooking as a core pillar of a just energy transition**, fully integrated into energy access, public health, gender equality, climate resilience and climate finance strategies.

- 3. Invest in skills development and institutional capabilities** by aligning education systems, curricula and public capacities with emerging energy sectors.
- 4. Integrate circular economy principles and strong environmental and social safeguards** throughout the design, implementation and monitoring of energy projects, including maintenance, recycling and end of life management.
- 5. Deploy tailored indicators to monitor progress towards a just energy transition**, covering access, affordability, economic viability, employment, resilience and emissions, in alignment with Nationally Determined Contributions and national frameworks.

Conclusion

Supporting a just energy transition goes beyond deploying renewable energy technologies alone. It relies on the ability of energy systems to deliver reliable and affordable access, create economic opportunities and ensure environmental and economic sustainability. Drawing on lessons from its field operations, Enabel promotes a just energy transition that integrates mitigation and adaptation, strengthens resilience, creates economic opportunities and supports inclusive development pathways for present and future generations.

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**Belgian agency
for international cooperation**
Public-law company
with social purposes

Rue Haute 147
1000 Brussels, Belgium
T + 32 (0)2 505 37 00
info@enabel.be
www.enabel.be



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Sophie-Bénédicte Jacques

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Sonia Gsir

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Belgium
partner in development