Advancing SDG7 in Least Developed Countries, Landlocked Developing Countries, and Small Island Developing States

SDG7 POLICY BRIEFS IN SUPPORT OF THE UN HLPF 2025

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International Renewable Energy Agency (IRENA)

United Nations Industrial Development Organization (UNIDO)

United Nations Economic and Social Commission for Asia and the Pacific (UN ESCAP)

KEY MESSAGES

- For the least developed countries (LDCs), landlocked developing countries (LLDCs) and small island developing states (SIDS), closing the energy access gap, transitioning to decarbonized energy systems, and climate-resilience remain major challenges. Without urgent and scaled-up efforts in these countries, the world will fall short of its Sustainable Development Goal (SDG) 7 target of universal access to affordable, reliable and modern energy services by 2030.

- LDCs, LLDCs and SIDS are off track in achieving access to electricity by 2030. In 2023, 59 per cent of the population of the LDCs had access to electricity, 61 per cent of the population of the LLDCs and 77 per cent of the population of the SIDS. With the current rate of growth, it will take the LDCs 21 years to reach universal access to electricity and the LLDCs 27 years. The SIDS, meanwhile, will take a massive 67 years.

- In 2023, over 70 per cent of the global population without access to electricity lived in an LDC.

- Persistent disparities between urban and rural areas – as well as remote islands – further complicate progress. Electrification rates remain significantly lower in rural areas, reinforcing broader development inequalities.

- Advances in clean cooking in the LDCs, LLDCs and in some SIDS remain modest. Over the past 10 years, access to clean cooking in these countries has been increasing at a slower rate than electrification.

- The share of modern renewable energy in total final energy consumption (TFEC) remains relatively low in the LDCs, LLDCs and SIDS. This is despite the fact that renewables have the potential to bridge the significant energy access gap between urban and rural communities.

- Urgently addressing the current financing gap -especially so amid declining levels of official development assistance (ODA)- is crucial to scaling sustainable energy solutions and supporting a just energy transition.

- Ensuring that the energy transition is inclusive and benefits all segments of society is equally important. Engaging youth, women and marginalised communities – including the forcibly displaced – in this transition not only broadens employment opportunities, but also plays a crucial role in fostering inclusive growth within the green economy.

- Beyond their vital role in creating resilient and sustainable energy systems, renewables can unlock transformative socio-economic opportunities. They can also foster local value addition through enhanced agricultural productivity, agroprocessing, industrialization and the development of productive capacities.

- The Doha Programme of Action for LDCs, the Antigua and Barbuda Agenda for SIDS, and the Awaza Programme of Action for LLDCs, all place a strong emphasis on access to electricity, energy transition, as well as access to clean cooking.

1. Introduction

Encompassing the three dimensions of access, efficiency and renewable energy, sustainable energy is a key enabler in many SDGs. Yet, despite the enormous potential that sustainable energy has, a major acceleration in progress and financing among the LDCs, LLDCs and SIDS is still required, if they are to achieve SDG7 by 2030.

LDCs, LLDCs and SIDS, comprised of 92 countries and home to 1.4 billion people. These countries are also some of the most vulnerable in the international community. The 44 LDCs are characterized by low levels of socio-economic development and investment. The 32 LLDCs and 39 SIDS face particular challenges stemming from their geographical isolation and distance from global markets. Altogether, they each have their own, unique challenges.

Despite this, since 2015 the LDCs, LLDCs and SIDS have taken strides towards achieving the SDG7 targets. The importance that energy transition plays in these countries' overall development is reflected in the three programmes of action outlined below:

- **The Doha Programme of Action for LDCs (DPOA)**

  Adopted in 2022, the DPOA underlines the importance of access to affordable, reliable, sustainable and modern energy in achieving structural transformation. The DPOA also recognizes the challenges LDCs face in the generation, transmission and utilization of energy. It sets a target of ensuring universal access to affordable, reliable, sustainable and modern energy services by 2030. Furthermore, the DPOA aims to double financing from all sources in support of clean and renewable energy, while also enhancing capacities in energy production, trade and distribution.

- **The Antigua and Barbuda Agenda for SIDS (ABAS)**

  Adopted in 2024, ABAS identifies a just, inclusive, equitable and resilient energy transition as a key development priority through 2034. The agenda also emphasizes the need for investments and partnerships, calling on the international community to support sustainable energy transitions and energy efficiency. By strengthening support, investment and partnerships – while also creating enabling policy, legal, and regulatory frameworks – the agenda aims to improve access to affordable, reliable, sustainable and modern energy, particularly from renewable sources.

- **The Awaza Programme of Action for LLDCs (APOA)**

  Adopted in 2024, the APOA supports the development of inclusive and resilient energy systems to accelerate the LLDCs' progress toward SDG7. Similar to the Doha Programme of Action for LDCs, it aims to achieve universal access to affordable, reliable and modern energy by 2030. It also highlights the importance of cross-border infrastructure and enhanced energy connectivity. With 215 million people in the LLDCs still lacking reliable energy, the APoA emphasizes that energy transitions must be just, inclusive and secure, while highlighting the need to boost both capacity and funding for clean and renewable energy.

As highlighted by these three Programmes of Actions, the LDCs, LLDCs and SIDS all face different sets of energy challenges. The progress achieved also varies depending on which of the three dimensions of sustainable energy – access, efficiency or renewables – is being measured.

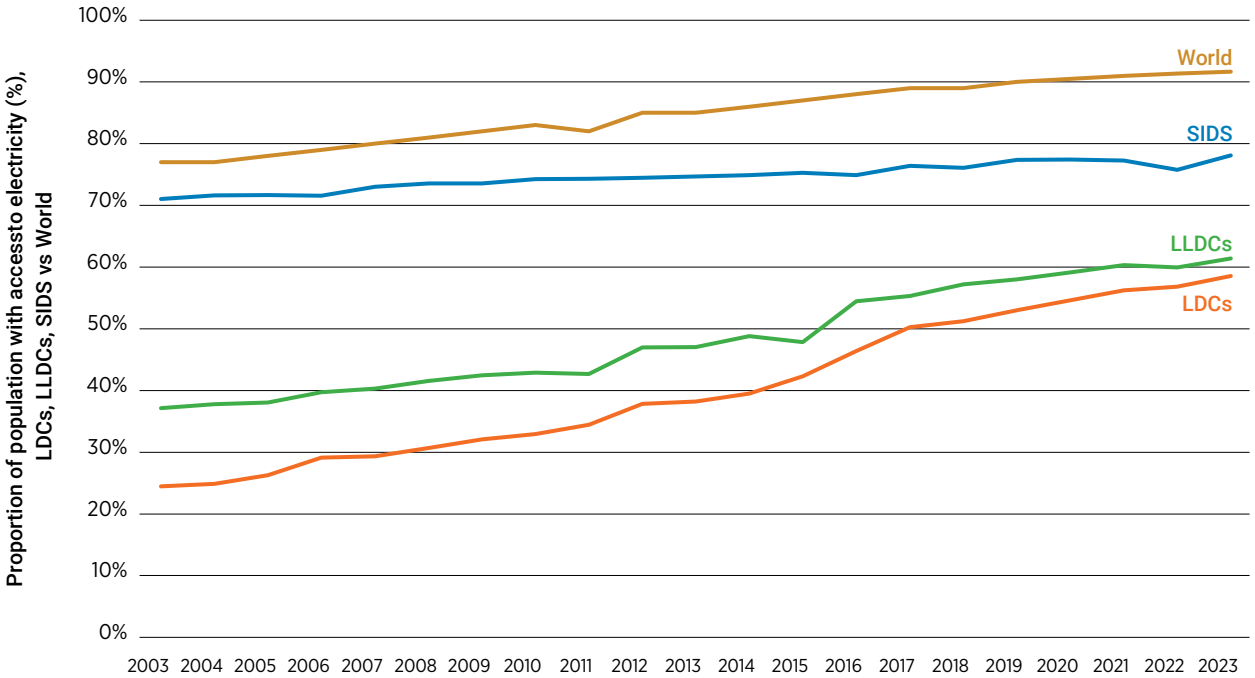
This policy brief provides a snapshot of how vulnerable countries are progressing towards achieving SDG7 and what is needed to accelerate their energy transition. This brief also provides some best practices from vulnerable countries that have made rapid progress in achieving the targets set by SDG7, while also identifying some key policy recommendations for fast-tracking progress and addressing key challenges.

2. Summary of Progress According to SDG7 Indicator

SDG7.1.1: Access to electricity

In the LDCs, after a decline in 2022, the electrification rate increased to 59% in 2023, up from 42% in 2015. In the LLDCs, 61 per cent of the population had access to electricity in 2023, up from 48 per cent in 2015. In the SIDS, access to electricity has historically been higher than in the LDCs and LLDCs, standing at 77 per cent in 2023, and has remained largely unchanged since 2015 (see Figure 1). The majority of LDCs, LLDCs and SIDS have wide disparities between urban and rural access, calling for more targeted efforts to be made in reaching rural areas and, in the case of the SIDS, outer island communities.

FIGURE 1
Population with access to electricity



Source: The World Bank

SDG7.1.2: Access to clean cooking fuels and technologies

In terms of achieving this target by 2030, all three groups of countries are off track. In 2023, the World Health Organization (WHO) estimated that 74 per cent of the world's population relied primarily on clean cooking fuels and technologies.[1] In the LDCs and LLDCs, however, the access rates remained much lower, at 21 per cent and 28 per cent respectively. In the SIDS, access to clean cooking was at a higher rate in 2023 – 60 per cent – although this figure had shown no growth since 2015.[2]

SDG7.2: Substantially increasing the share of renewable energy

In 2022, renewable energy – including traditional uses of biomass – accounted for 17.9 per cent of global TFEC. This was an increase of 2.3 percentage points on 2015. The shares taken by renewables in the LDCs and LLDCs were significantly higher, at 69.1 per cent and 40.8 per cent, respectively. This was largely due to a continued reliance on the traditional use of biomass in these countries. In contrast, when including biomass, the SIDS had a renewable energy share of 16.6 per cent, which was roughly in line with the global average.[3]

While traditional biomass remains a major energy source, it often has negative health and environmental impacts. Transitioning to sustainable bioenergy solutions, such as the use of biogas and improved cookstoves, is therefore critical for all three groups of countries.

SDG7.3.1: Energy efficiency

Improving energy efficiency is also a priority for vulnerable countries and plays a significant role in accelerating the energy transition. Vulnerable countries, however, trail behind the global average when it comes to progress on SDG7.3.1, which calls for a doubling of the global rate of improvement in energy efficiency by 2030. Globally, in 2022, primary energy intensity – which is defined as the ratio of total energy supply to gross domestic product (GDP) – improved 2.1 per cent, from 2021. In the LDCs, it improved (i.e. decreased) 1.9 per cent, in the LLDCs 1.4 per cent and in the SIDS, 1.5 per cent.

SDG7.A.1: Increasing international financial flows to developing countries in support of clean energy research and development and renewable energy production, including hybrid systems

The rebound in international public financial flows after the COVID-19 pandemic has not reached the LDCs, LLDCs and SIDS. Financing for these vulnerable countries still lags behind their real needs. In 2023, in US dollar (US$) terms, the global level of international public financial flows in support of in support of clean energy in developing countries reached US$ 21.6 billion. LDCs received US$ 3 billion, which was an increase on the US$ 1.7 billion received in 2020, but still far behind the peak achieved in 2016, when investment flows to LDCs reached US$ 8.5 billion.[4]

The LLDCs and SIDS have fared better in attracting public financial flows in support of renewable energy. In 2023, flows to the LLDCs reached US$ 3.62 billion, which was more than 30 per cent up on the previous year. Similarly, inflows to the SIDS increased by over 30 per cent over the same period, reaching US$ 401 million in 2023.

SDG7.B.1: Increasing installed renewable energy-generating capacity in developing and developed countries

When the LDCs, LLDCs and SIDS are compared to either developing countries or developed countries, it is clear that the renewable energy revolution has not yet reached the world's most vulnerable nations. It also becomes evident that the limited growth experienced by the LDCs, LLDCs and SIDS compared to other developing countries reflects the particular structural challenges these countries face.

When measured in terms of watts of renewable energy generating capacity per capita, in 2023, the developed countries averaged a figure of 1,162. That same year, the developing countries averaged 341. In the LDCs, however, the figure was a constant 40 in both 2022 and 2023. In the LLDCs, there was a slight increase – from 104 to 107 – while in the SIDS, the figure rose from 97 to 110 over the same period.

The renewable energy revolution has therefore not yet arrived in these most vulnerable countries. As a result, they are not reaping the benefits of the green energy transition. These benefits include curbs on emissions, the creation of new jobs and the enhancing of resilience to climate change.

3. Progress and Prospects in Achieving SDG7 In The LDCs, LLDCs and SIDS

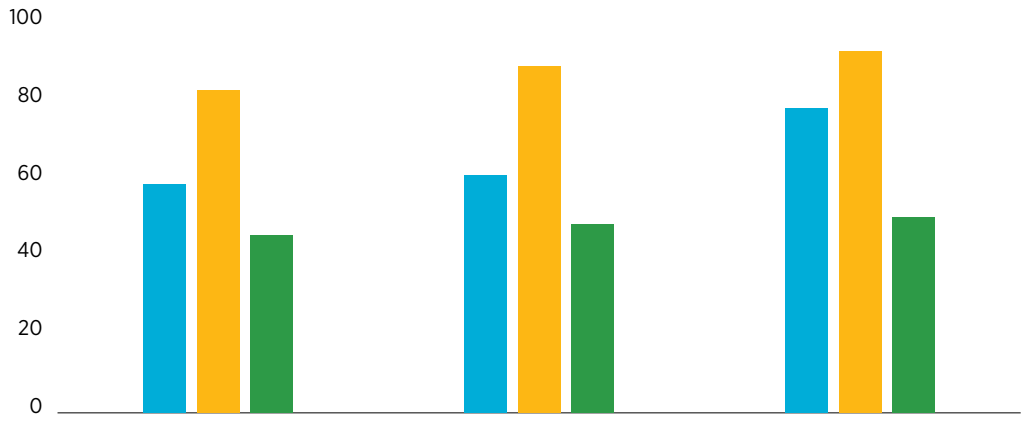
SDG7.1.1: Access to electricity

In 2023, the global rate of access to electricity reached 91.7 per cent. In contrast, the electrification rate in the LDCs was 59 per cent that same year, although this was up from the 42 per cent level recorded in 2015. In the LLDCs, 61 per cent of the population had access to electricity in 2023, up from 48 percent in 2015. In the SIDS, access to electricity has generally been higher and stood at 77 per cent in 2023, after remaining largely unchanged since 2015.

Globally, in 2023 665.9 million people were without electricity. Of these, 70 per cent – or 477 million people – were living in LDCs. In LLDCs, 223 million people are without access to electricity, and in SIDS, there are 14.8 million people without access (see Figure 2). Extrapolating from the growth rates of the past 20 years, the LDCs are projected to achieve universal access to electricity in 2046, the LLDCs in 2052 and the SIDS as late as 2092. The latter forecast is the result of their consistently and comparatively higher rate of access to electricity over the past 20 years.

FIGURE 2

Access to electricity in all areas, urban areas and rural areas, LDCs, LLDCs and SIDS, 2023 (percentage of population)



	LDCs	LLDCs	SIDS
All Areas	58.6	61.0	78.1
Urban	82.9	88.9	92.9
Rural	45.6	48.3	50.2

Source: The World Bank

There are wide disparities between urban and rural electricity access in the majority of LDCs and LLDCs, and in some SIDS. In 2023, for example, the rural access rate in the LDCs stood at the low level of 45 per cent, while in the LLDCs it stood at 48 per cent. At the same time, there were 6 LDCs[5] -out of which 5 LLDCs- where the rural access was below 5 per cent. These disparities underline the fact that in order to achieve the SDG7 target on access, more focus needs to be placed on the rapid implementation of decentralized solutions in more dispersed and remote rural areas. In order to make progress in areas that have now been left behind, it will also be important to better understand the needs of end users and find solutions that match local demand.

There are also wide disparities in access rates between LDCs from Africa and from the Asia-Pacific region. Three countries from the latter region – Bangladesh, Timor-Leste and Tuvalu – have reached full electrification. As recently as 2012, however, Bangladesh had an access rate of 66 per cent and Timor-Leste 56 per cent, showing how rapidly both were able to expand and accelerate their access to electricity. Meanwhile, in Africa, 8 LDCs still have access rates below 25 per cent. These include Burkina Faso (22 per cent), Burundi (12 per cent), the Central African Republic (18 per cent), the Democratic Republic of the Congo (22 per cent), Malawi (16 per cent), Niger (20 per cent) and South Sudan (5 per cent). Except for the Democratic Republic of Congo, all of these countries are also LLDCs.

Among African LDCs, the fastest growth has taken place in Rwanda. There, access increased from 18 per cent in 2012 to 64 per cent in 2023. Over the same period, Lesotho and Uganda also increased their access to electricity by 20 percentage points.

At the same time, in many vulnerable countries the affordability of electricity remains a challenge, even when there is formal access. Dependence on imported fossil fuels can lead to high electricity prices, hampering the competitiveness and productivity of key economic sectors, in addition to burdening households. Indeed, accelerating the transition to sustainable energy is not only about providing energy at that household level, but also about igniting economic growth and human potential. National-level energy plans and a fostering of policy coherence are both vital in ensuring that enhanced access to energy contributes to job creation and economic diversification while enabling value-chain development in key sectors, such as, agriculture, fisheries, tourism and manufacturing.

SDG7.1.2: Clean cooking

Lack of access to clean fuel and technology for cooking remains a major concern in the LDCs, LLDCs and SIDS. While in 2023, an estimated 74 per cent of the global population relied primarily on clean cooking fuels and technologies, in the LDCs and LLDCs the rates remained low, at 21 per cent and 28 per cent respectively.

In terms of rates of improvement, between 2015 and 2023, the LDCs increased their clean cooking access by 6.4 percentage points, whereas the LLDCs increased their access by only 1.8 percentage points. The gap between rural and urban access to clean cooking also remains significant in both LDCs and LLDCs, with rural access trailing as low as 11 per cent in the LDCs and 16 per cent in the LLDC (see Figure 3).

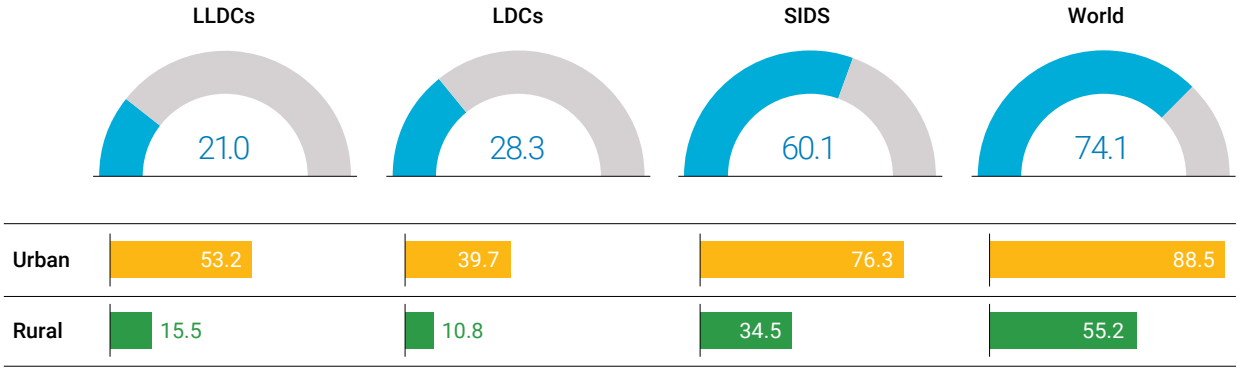
In the SIDS, access to clean cooking is higher, and in 2023, stood at 60 per cent. However, growth had stagnated, with no significant improvement between 2015 and 2023. In terms of the urban/rural divide, in 2023, access to clean cooking in the SIDS was 76 per cent in urban areas and 34 per cent in rural areas. Regional disparities also exist. Most SIDS in the Caribbean (except Haiti) have high access rates to clean cooking devices and fuels, while Pacific islands or countries, such as Guinea Bissau and Sao Tome and Principe, have very low access rates.

Inefficient traditional cooking methods can have wide-ranging and harmful consequences. These include poor health, gender inequality, environmental degradation, deforestation, air pollution and a worsening of climate change. The lack of clean cooking solutions also disproportionately affects the most vulnerable, especially women and children. New momentum is therefore needed in addressing the access deficit in vulnerable countries. This requires enhanced efforts to boost public awareness, scale up investment and find new, innovative approaches to addressing the challenge.

Advances in clean cooking in the LDCs, LLDCs and SIDS remain modest, however. Over the past 10 years, access to clean cooking has advanced more slowly than growth in electrification. Yet some vulnerable countries have managed to make rapid progress.

FIGURE 3

Access to clean fuels and technology for cooking in 2023 (percentage of population)



Source: World Health Organization

Access to clean cooking in Cambodia, for example, rose from 15 per cent to 52 per cent between 2012 and 2022.[6]

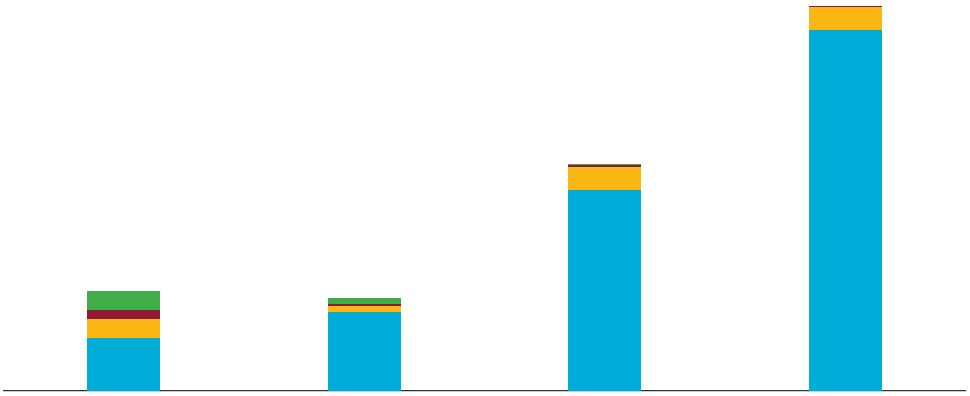
SDG7.2: Renewable energy

While per capita global renewable energy capacity has steadily increased since 2000, the LDCs, LLDCs and SIDS have continued to lag behind, with minimal to no growth. This highlights the urgent need for a greater effort to accelerate the deployment of renewable energy in these countries.

Excluding traditional biomass sources, such as wood for fuel, crop and animal residues, in 2022, the global average share of modern renewables in TFEC was 8.5 per cent. In the LDCs, however, it was 4.3 per cent, in the LLDCs, 4.8 per cent, and in the SIDS, 2.4 per cent. Yet, when biomass was included in the same data, while the global figure rose to 17.9 per cent, the figure in the LDCs rose to 69.1 per cent, in the LLDCs to 40.8 per cent, and in the SIDS to 16.6 per cent. This highlights the disproportionately heavy reliance on biomass in the LDCs and LLDCs (see Figure 4).

FIGURE 4

Share of renewable energy sources in total final energy consumption (TFEC)



	World	SIDS	LLDCs	LDCs
Other renewable energy	3.5	1.0	0.3	0.1
Solar	1.5	0.5	0.2	0.2
Hydro	3.5	0.9	4.3	4.0
Solid biofuels	9.4	14.2	36.0	64.9

Source: Data provided by the International Energy Agency (IEA)

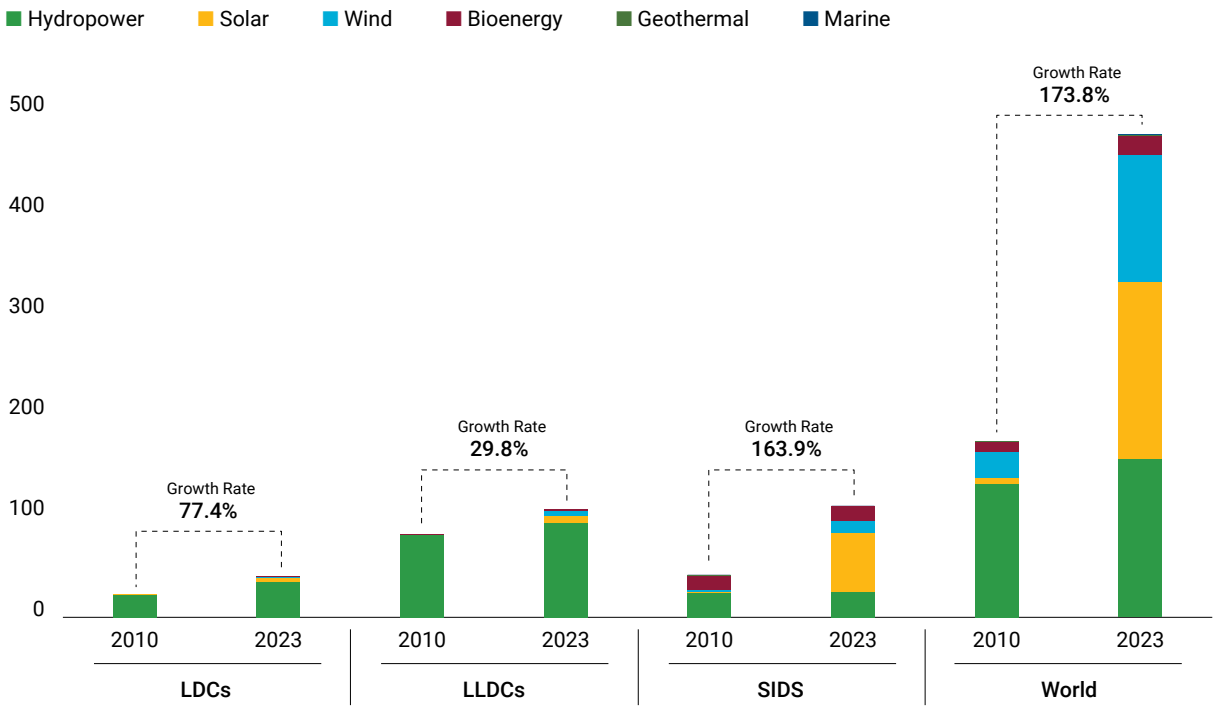
At the same time, however, many LDCs, LLDCs and SIDS have great potential for non-biomass renewables, supported by the declining costs for solar and wind power. Hydropower, for example, continues to play a significant role in generation in both the LDCs and LLDCs. Yet the share of TFEC taken by modern renewable energy remains comparatively low in these countries. Indeed, all three country groups saw this share decline between 2015 and 2022, while globally, that share increased.

For developing countries, installed renewable energy generating capacity was 341 watts per capita in 2023. Yet for the SIDS, that figure was 110 watts per capita and for the LLDCs it was 106 watts per capita. For the LDCs overall, the figure was just 40 watts per capita. Indeed, despite growth in renewable generating capacity in the LDCs and SIDS in particular, the gap between the rest of the world and the LDCs, LLDCs and SIDS has been widening (see Figure 5).

The national leaders of many SIDS have been frontrunners in the global energy transition and in climate action, emerging at the global level as voices calling for a secure and resilient future. This political commitment, combined with strong partnerships, has resulted in a significant increase in installed, renewables-based electricity capacity in the SIDS.

FIGURE 5

Installed renewable electricity generation capacity in the LDCs, LLDCs and SIDS (watts per capita)



Source: United Nations Statistics Division-SDG global database, 2025

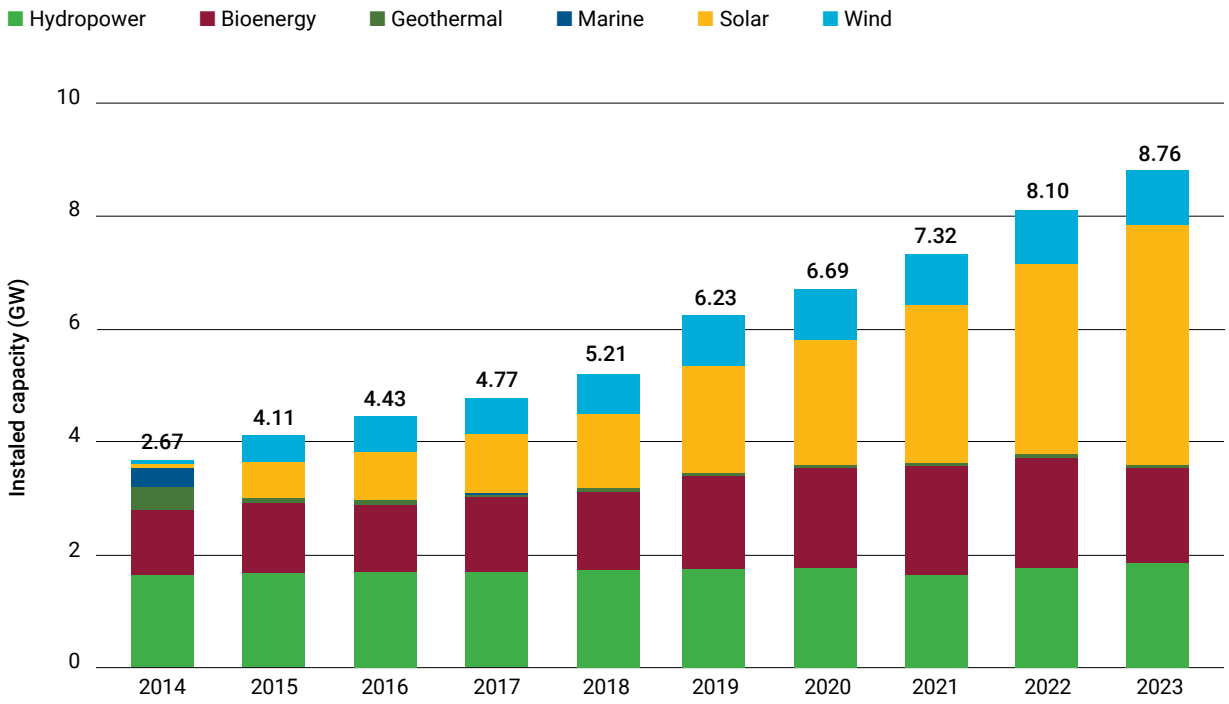
Between 2014 and 2023, that capacity more than doubled – from 3.67 gigawatts (GW) to 8.76 GW. Within that, solar electricity saw the most rapid growth, increasing from 0.1 GW in 2014 to 4.2 GW in 2023.[7]

Decentralized renewable energy has great potential when it comes to expanding energy access in remote and underserved rural areas. These areas are also where the majority of people lacking access are now concentrated. As an example, in 2023, 41.4 per cent of the population in the LDCs had no access to electricity. Yet in rural areas, the figure was 54.4 per cent – much higher than the figure for urban areas, where it was 17.1 per cent. Similar disparities were evident in the LLDCs (51.7 per cent rural, 11.1 per cent urban) and the SIDS (49.8 per cent rural, 7.1 per cent urban).

This makes decentralized energy an essential step toward achieving SDG7. Distributed renewable energy technologies, such as off-grid or mini-grid solar photovoltaic (PV) and wind systems, offer scalable, cost-effective and adaptable solutions. These technologies require relatively low initial investment, can be deployed rapidly and are more adaptable to local conditions and the needs of the end user.

FIGURE 6

Total installed renewables-based electricity capacity, by technology, SIDS, 2014-2023 (GW)



Source: IRENA

To accelerate progress, future efforts must increasingly prioritize these distributed energy technologies. While doing this, it is also important to look beyond the energy needs of the household, ensuring that energy for productive uses is also part of energy planning.

Beyond improved energy access, renewables provide broad socio-economic opportunities. They enable affordable power for remote communities, create jobs, enhance productivity and reduce dependency on costly fuel imports. They thereby strengthen energy security, improve climate resilience and support long-term sustainable development.

SDG7.3.1: Energy efficiency

For vulnerable countries, improving energy efficiency is a priority that also plays a significant role in accelerating their overall energy transition. Yet, in terms of primary energy intensity – a measure of efficiency defined as the ratio of total energy supply to gross domestic product (GDP) – the LDCs, LLDCs and SIDS all trail behind the global average. In 2022, for example, while global-average primary energy intensity improved by 2.1 per cent, year-on-year, in the LDCs it improved only 1.9 per cent, in the LLDCs, 1.4 per cent and in the SIDS, 1.5 per cent.

Improving the efficiency of electricity generation can lower energy intensity by reducing primary energy use. At the same time, modernizing infrastructure to reduce transmission and distribution losses is also key. Therefore, a combination of more renewable energy sources in the electricity mix, an improvement in the efficiency of fossil fuel generation, and a phasing out of inefficient power plants are all critical elements in improving efficiency. In this regard, public utilities have an important role to play. Reforming and addressing their inefficiencies is a central part of the energy transition.

The LDCs, LLDCs and SIDS also have great potential in terms of leapfrogging to more efficient energy systems. Promoting and encouraging the adoption of new technologies and promoting technology transfer are of critical importance in this regard. Experience has also shown that improving energy efficiency and implementing demand-side management programmes can be cheaper alternatives to building new supply.

In many LDCs, LLDCs and some SIDS technical and commercial grid losses remain high – in some cases exceeding 25 per cent. There is therefore a need to improve efficiency standards for electric appliances, such as lighting, air conditioning and refrigeration, as well as for transport and buildings. The deployment and effectiveness of distributed renewable energy solutions in rural areas also depends greatly on efficient and high-performing productive-use appliances, such as those used in pumping water and other types of irrigation. With mini-grids, deployment and effectiveness also depends greatly on demand-side management.

Enhanced efforts to improve energy efficiency can deliver a range of positive outcomes, including – but not limited to – emissions reduction. Given this, a stronger focus on this area of SDG7 is necessary in the LDCs, LLDCs and SIDS. Increased support for innovation and technology transfer can also help drive the adoption of new and more efficient technologies.

SDG7.A.1: Increasing international financial flows

The post-COVID-19 rebound in international public financial flows has not impacted the LDCs, LLDCs and SIDS. In these vulnerable countries, financing continues to lag behind current need.

In 2023, public global international financial flows in support of clean energy in developing countries reached a total of US$ 21.6 billion. The LDCs received US$ 3 billion of this, which was an increase from the US$ 1.7 billion received in 2020, but still far below the peak that came in 2016, when the level was US$ 8.5 billion.

In addition, in 2023, the lion's share of inflows into the LDCs went to just a few countries. Top recipients included the United Republic of Tanzania (US$ 558 million), Bangladesh (US$ 396 million), Madagascar (US$ 315 million) and Rwanda (US$ 315 million).

On the other hand, the LLDCs and SIDS are faring better in attracting public financial flows in support of clean energy. In 2023, inflows to the LLDCs reached US$ 3.62 billion, an increase of more than 30 per cent on the previous year. However, most of the total went to only a few countries. Uzbekistan, for example, attracted robust investment from a variety of partners, including the Asian Development Bank (ADB), Asian Infrastructure Investment Bank (AIIB) and the European Bank of Reconstruction and Development (EBRD).

Similarly, 2023 saw inflows into the SIDS increase by over 31.5 per cent, year-on-year, to reach US$ 401 million. In absolute terms, the SIDS have historically received the lowest levels of investment, per capita, but have recently been able to reverse that pattern.

Given the unique set of challenges faced by the SIDS, innovative financing mechanisms – such as blended finance, green bonds and climate resilience funds – can help to unlock new sources of capital, attract private investment and scale up renewable energy projects, while also reducing risk and financing costs.[8]

4. Best Practices in Accelerating the LDC, LLDC and SIDS Energy Transitions

The energy sectors of the LDCs, LLDCs and SIDS have an extraordinary potential for growth. This, in turn, can have a wide range of impacts on the overall development of these countries.

Many of these vulnerable countries have also already tapped into this growth potential, with several success stories already emerging. This section highlights some of the best practices, ranging from enhancing regional collaboration to country-level innovation.

Improving regional collaboration

Regarding the LDCs, LLDCs and SIDS, the United Nations Industrial Development Organization (UNIDO) has given its support to the establishment and operation of Regional Sustainable Energy Centres (GN-SEC).[9] This has been done in order to enhance regional collaboration and accelerate just energy transitions on a region-wide basis. The centres now serve 120 member states – including 40 of the 44 LDCs, 35 of the 39 SIDS and many LLDCs.

The centres operate according to a "from the region, for the region" approach and are key enablers of SDG7. This is because they facilitate the transfer of innovative technologies, business models and capacity to the Global South. In partnership with regional stakeholders — such as power pools, regulatory bodies and financial institutions — the centres support a wide range of activities related to policy and regulation, quality infrastructure, knowledge and skills development, awareness raising, and business and investment promotion.

One example of the GN-SEC platform's work is its joint development of transformative regional policies, roadmaps and standards for energy-efficient appliances and renewable energy equipment. UNIDO also fosters South-South and triangular cooperation under the GN-SEC platform. It does this by connecting centres across regions and facilitating collaboration with partners from the Global North, as well as with international organizations.

Similarly, the Accelerated Partnership for Renewables in Africa (APRA) initiative has been structured to drive rapid energy transition while also securing energy access and sustainable livelihoods. In this way, it is helping to drive green industrialisation on the

continent. Supported by IRENA, APRA brings together a number of LDCs and LLDCs in collaborative work under African leadership and vision. In this way, it aims to rapidly scale up all forms of renewable energy in order to underpin resilient and inclusive green growth.

Tailored support for the specific contexts of LDCs, LLDCs and SIDS

The Asia-Pacific region has seen substantial improvements in electricity access over the past decade. As part of this effort, the United Nations Economic and Social Commission for Asia and the Pacific (ESCAP) has supported the development and implementation of SDG7 roadmaps – strategic planning tools designed to help countries achieve global and national targets on affordable and clean energy. These roadmaps are tailored to the specific contexts of LDCs, LLDCs and SIDS. This means taking into account their unique challenges, such as geographical remoteness, limited infrastructure, energy import dependence and vulnerability to climate change.

Bangladesh and Nepal, for example, have received ESCAP support in aligning their national energy planning with SDG7 targets, emphasizing the integration of renewable energy and off-grid solutions. Elsewhere, the Lao People's Democratic Republic, Mongolia and Kazakhstan now benefit from roadmaps that address energy connectivity challenges and promote regional cooperation in the energy trade. Whereas, Fiji, Vanuatu and Kiribati have focused their roadmaps on building resilient, decentralized renewable energy systems.

In addition, through online knowledge hubs – such as the Asia-Pacific Energy Portal[10] – ESCAP monitors and reports on the progress the LDCs, LLDCs and SIDS have made towards achieving SDG7.

Focused support for the LDCs

To accelerate a cross-sectoral sustainable energy transition in the LDCs, the United Nations Economic and Social Commission for Western Asia (ESCWA), has been providing targeted support to the Comoros, Djibouti, Mauritania, Somalia, Sudan and Yemen through a holistic approach focused on capacity building, policy development and innovative financing. Through initiatives such as the Arab Climate Change Capacity Building Project and the Regional Initiative to Promote Small-Scale Renewable Energy Applications in Rural Areas of the Arab Region (REGEND), ESCWA has been addressing critical challenges. These include low levels of access to modern energy, a heavy reliance on traditional biomass, limited clean cooking solutions and acute climate vulnerabilities.

In 2025, ESCWA organized workshops in Egypt and Mauritania that brought together government representatives, private sector stakeholders and development partners. These workshops looked at how to spread the knowledge of de-risking strategies and financial mechanisms – including blended finance and pay-as-you-go. These events also looked at policy alignment for small-scale renewable energy and clean cooking technologies. Such efforts aim to unlock concessional climate finance, foster inclusive rural energy

access and promote women's empowerment in the energy transition. Training components also emphasized the integration of energy-climate priorities within national development plans and support for the implementation of Nationally Determined Contributions (NDCs). Such a multifaceted approach not only promotes energy resilience and climate adaptation, but also generates socio-economic co-benefits. These include job creation, which is key for women in agriculture and for rural livelihoods in particular.

Best Practices From the SIDS: Wind and Green Hydrogen in Trinidad and Tobago

The small Caribbean island nation of Trinidad and Tobago has recently taken some significant steps forward in its energy transition. The nation has leveraged its established energy expertise, infrastructure and industrial capacity to diversify its energy mix and industrial sector, focusing on wind energy and green hydrogen development.

Wind energy strategy and offshore potential

Recognizing the potential of wind as a key driver in large-scale renewable energy deployment, Trinidad and Tobago has developed a national wind energy strategy.[11] This looks at both onshore and offshore wind resources. When these are combined, the country's wind energy potential is potentially substantial, with estimates indicating approximately 2.75 GW of onshore and 32 GW of offshore capacity.

The national strategy is also underpinned by a comprehensive implementation plan, which lays out the necessary technical, legal and regulatory steps to enable utility-scale wind development. This includes the execution of a wind resource assessment programme (WRAP) to identify viable sites. In January 2025, Trinidad and Tobago also joined the Global Offshore Wind Alliance (GOWA),[12] committing to international cooperation in unlocking offshore wind potential.

The government now aims to have at least 2 GW of installed wind energy capacity by 2035. This will contribute significantly to the country's renewable energy targets and support the development of a green hydrogen economy. Indeed, Trinidad and Tobago is now building on its legacy as a petrochemical and liquefied natural gas (LNG) hub to position itself as a regional leader for green hydrogen and its derivatives, including green ammonia and methanol. The Point Lisas Industrial Estate, with its extensive energy infrastructure and export facilities, has been identified as a strategic site for green hydrogen production, storage and trade.

This dovetails with the Government of Trinidad and Tobago's comprehensive Roadmap for a Green Hydrogen Economy,[13] written in collaboration with the Inter-American Development Bank (IDB) and KBR Inc. This 35-year strategy outlines a phased approach in establishing a green hydrogen market. While green hydrogen is not yet cost-competitive with natural gas, the aim is to produce up to 4 million tonnes of green hydrogen per annum by 2065. In this regard, in December 2024, the government approved its first green hydrogen pilot project at Point Lisas, supported by the Development Bank of Latin America and the Caribbean (CAF).

Through an integrated approach that combines wind energy development, offshore wind alliances and green hydrogen pathways, Trinidad and Tobago is now a showcase for how SIDS and resource-rich developing countries can shift toward cleaner energy systems, while also leveraging existing industrial strengths.

5. Policy Recommendations for Fast-Tracking Progress and Addressing Key Challenges

The progress described in this policy brief highlights the need for dedicated efforts to ensure that the LLDCs, LDCs and SIDS are not left behind in the energy transition. Urgent international attention is needed to address inequalities in access to sustainable energy, if the ambitions set forward in SDG7, the Doha Programme of Action for LDCs, the Antigua and Barbuda Agenda for SIDS, and the Awaza Programme of Action for LLDCs are to be realized.

Moreover, there is a need to pay more attention to a just and fair energy transition. This is one in which domestic green jobs and revenues are created by promoting productive uses, and/or by localizing parts of the renewable energy value chain. It is also a transition that takes into account the poorest and most marginalised groups, ensuring no one is left behind.

The urgency of doing this is further underscored by the decline in ODA registered in 2024. This decline is particularly alarming, given that levels of ODA were already significantly short of those needed by developing countries.[14] As a result, many vulnerable countries have resorted to discussing how to maximize their use of insufficient funding. Unless financing efforts are scaled up significantly and rapidly in these countries, the world will fall short of its target of universal access to affordable, reliable and modern energy services by 2030. Furthermore, the impacts of climate change will only increase the need for investment in energy generation, transmission and distribution infrastructure.

To bring SDG7 within reach of the LDCs, LLDCs and SIDS, a transformative change is therefore required in the energy sectors of these countries. To accelerate the energy transition, LDCs, LLDCs and SIDS and their development partners need to focus on the following areas:

- **The creation of an enabling environment, together with the building of predictable demand and supply**

  Well-functioning institutions and transparent regulatory frameworks are required to help build the necessary credibility with investors and scale up long-term private investment. A clearer understanding of the most critical areas of development is needed for more efficient and targeted private investment. Fostering policy coherence can play a significant role in accelerating reforms and mobilizing partners and financing.

- **The undertaking of long-term energy sector planning at the national level, focusing on least-cost pathways and socioeconomic benefits**

  Today's decisions will shape the energy landscape of vulnerable countries for decades to come. While making long-term energy sector plans, consideration should be given to the new realities. These include the fact that renewables are not only environmentally sound, but also currently the most cost-effective power source.[15] National level planning should also be closely aligned with the development of ambitious Nationally Determined Contributions (NDCs).

  Access to an affordable, reliable and sustainable energy infrastructure is a key enabler for inclusive and sustainable urban and rural industrial development in the LDCs, LLDCs and SIDS. It is a prerequisite for their economic diversification and the shift towards higher value-added manufacturing and servicing. A just energy transition needs to create local green jobs and revenues by promoting productive uses and localizing parts of the renewable energy manufacturing and servicing value chain. Through economic and renewable energy corridors and access to critical minerals, some industrial agglomerates in the LDCs and LLDCs have the opportunity to become future hubs for sustainable energy manufacturing. This could be in areas such as components, batteries, electric vehicles and in the export of green hydrogen. In this regard, various capacity-building and training opportunities should be provided to prepare people for these new opportunities.

- **The development of financing solutions that match the needs of both large scale and smaller projects**

  International public financing plays a critical role in accelerating the energy transition. Yet, as detailed above, the current level of international public financial flows to the LDCs, LLDCs and SIDS for clean energy is insufficient to spur larger volumes of investments from the private sector.

  Also, the consequences of high interest rates and increased capital costs can be alarming for the energy transition in vulnerable countries. Such developments discourage investment in green transitions, as they make financing capital-heavy renewable energy projects costlier.

  As international public finance remains an important driver for the energy transition in LDCs, LLDCs and SIDS, there is a need to incentivize additional financing and investment. This should include grants, bonds, guarantees and blended finance. At the same time, rather than concentrating public resources in a few countries and large-scale projects, it is crucial to support local enterprises and community-based initiatives. This is particularly so in regard to decentralized energy solutions, such as off-grid developers and micro, small and medium-sized energy enterprises.

Since most energy transition investments need to come from the private sector, there is a need to look into new, innovative financing and risk mitigation instruments. These could include green bonds, debt-for-climate swaps, carbon finance and forms of guarantees. Due to typically small project sizes in the LDCs, LLDCs and SIDS and the increasing impact of climate change upon them, there is also a greater need for financial instruments and insurance regimes that are tailored specifically to these countries.

- **The enhancement of technology transfer**

  In addition to increasing the flow of finance, the LDCs, LLDCs and SIDS should also be supported in technological leapfrogging by the promotion and encouragement of technology transfer. Green hydrogen, for example, could transform the energy sector. It has the potential to help many African LDCs leapfrog outdated technologies and leverage their solar and wind power potential. Clean energy solutions should be designed, however, with specific country needs taken into account. These include, for example, the geographical remoteness of many SIDS and LLDCs.

- **A strengthening of the linkage between climate action and energy transition**

  Mitigating the impacts of climate change will also contribute to the energy transition agenda. The challenges posed by climate change far surpass the capacity of any single country to address them. This is particularly so in regard to the most vulnerable countries, which have comparatively limited means and much greater exposure to climate impacts. Mitigating rising sea levels and averting the catastrophic impacts of climate-induced weather events requires global cooperation and a concerted effort.

  Energy insecurity caused by the immediate and long-term impacts of climate change on energy generation, transmission and distribution is also a challenge for vulnerable countries. It also endangers previous successes. Heatwaves and water scarcity impact the efficiency, output and cooling systems of power plants and increase cooling demand and the number of peak hours. Energy systems in LDCs, LLDCs and SIDS therefore need to improve their ability to anticipate, accommodate, manage and recover from climate change-based disasters. Moreover, they need to increase their robustness when responding to the long-term impact of climate change on energy generation, transmission, distribution and consumption.

  By embracing solutions such as solar, wind and ocean energy – in combination with battery energy storage systems – the LDCs, LLDCs and SIDS can diversify their energy mix, reduce their reliance on fossil fuels and cut costs, while also enhancing their energy security. The implementation of NDCs and National Adaptation Plans (NAPs) will be critical in this regard.

Energy transition in vulnerable countries can be assisted by supporting these countries' access to climate financing facilities. The capacity constraints of LDCs, LLDCs and SIDS in accessing and navigating multiple financing facilities must also be addressed. Similarly, their capacity to prepare bankable projects must be enhanced.

- **The enhancement of regional cooperation and strengthening of partnerships with the private sector and other development partners.**

  Going forward, enhanced regional collaboration and partnerships will play a critical role in unlocking the potential that the energy transition in the LDCs, LLDCs and SIDS holds.

  Promising examples of increased regional collaboration have already started to emerge. These include, for example, the GN-SEC programme mentioned above, or the Eastern Africa Power Pool (EAPP), which seeks to optimize the usage of energy resources available in the region.

  Similarly, the private sector and other development partners need to stay engaged and further strengthen their support. The private sector could further develop and drive innovation. It could deploy business models that reduce costs and increase affordability in order to provide "last mile energy access" in the LDCs, LLDCs and SIDS, for example.

  In addition, for the SIDS, platforms like the Centre of Excellence and the SIDS Global Business Network play a key role in mobilizing investment and new public-private partnerships (PPPs). They also help promote technology transfers and the sharing of knowledge on sustainable practices in energy.

  Such regional collaborations should also include strong partnerships with organizations that focus on gender and youth. In this context, the GN-SEC programme, coordinated by UNIDO in partnership with regional economic communities, has established a network of gender and youth focal points that works on south-south and triangular programmes and projects.

6. Priority Actions Going Forward

To bring SDG7 within reach of the LDCs, LLDCs and SIDS, a transformative change is needed in the energy sectors of these countries. To do this, the pace and scale of deployment of renewables and energy efficiency must increase significantly between now and 2030. In the light of this conclusion, this brief now lists below a series of observations and recommendations for priority action:

1. There is no one-size-fits-all solution to ending energy poverty in the LDCs, LLDCs and SIDS. In these countries there are instead many ways to bridge the gaps in access to affordable, reliable, sustainable and modern energy. One critical element, however, is for these vulnerable countries to seize the opportunities offered by renewables. By doing this, they can leapfrog to renewable technologies and energy systems that not only contribute to global climate goals, but also meet these countries' growing demand for energy.

2. A critical starting point for accelerated access is the creation of an enabling environment and the introduction of comprehensive energy-sector planning at the national and regional level. This can identify the least-cost pathways and enable the financing that is appropriate in the ensuring of universal access to sustainable energy in the shortest time possible. A successful energy transition hinges on strong political support, long-term energy planning and inclusive financing mechanisms. Such planning frameworks also need to address the immediate and long-term impacts of climate change on energy generation, transmission and distribution.

3. Those with the least access should be put first. This can be done by focusing on blended financing and fostering a positive enabling environment. Reaching rural areas in the LDCs, LLDCs and SIDS with the lowest access rates and where progress has often stagnated, needs to be put at the centre of focus.

4. There should be an enhanced focus on access that not only provides energy at the household level, but also ignites economic growth and human potential. National-level energy plans and policy coherence are needed to ensure that enhanced access to energy enables value-chain development in key sectors, such as agriculture and manufacturing. Increased access should also contribute to job creation and economic diversification. A just energy transition needs to create local green jobs and revenues by promoting productive uses and localizing parts of the renewable energy manufacturing and servicing value chain.

5. Integrating renewable energy solutions across agrifood systems is critical to advancing food and nutrition security and sustainable development in the LDCs, LLDCs and SIDS. The use of clean energy throughout agrifood value chains can help these countries strengthen food and energy security simultaneously, while also enhancing rural livelihoods. Targeted investments in solar photovoltaic-powered irrigation, cold storage, agroprocessing, or sustainable bioenergy generation can reduce post-harvest losses, increase agricultural productivity and support local value addition.

6. Public finance remains a significant source of global renewables investments and is key to leveraging private finance. There is also an urgent need to turbocharge business deals and investment to accelerate energy access in the LDCs, LLDCs and SIDS.

   To respond to the energy challenges of the LDCs, LLDCs and SIDS, urgent international attention, increased focus on regional sustainable energy cooperation and enhanced partnerships with public and private actors are needed to realize the ambitions set out in the Doha Programme of Action for LDCs, the Antigua and Barbuda Agenda for SIDS, and the Awaza Programme of Action. Such efforts should include strong focus on the promotion of gender and youth engagement and the inclusion of marginalised peoples.

7. The strengthening of data collection – including disaggregated energy access data – can aid in more targeted interventions and the monitoring of progress.

Responding to the urgent need to achieve SDG7 in the LDCs, LLDCs and SIDS, it is imperative that current efforts to meet the 2030 targets are significantly intensified. As we look ahead to the post 2030 Agenda, discussions must be firmly anchored in a comprehensive and evidence-based analysis of the persistent barriers that have impeded these countries' progress in the global energy transition. In the post-2030 era, this approach will be essential in ensuring that more effective and targeted strategies, policies and programmes are identified and implemented. Such initiatives can then accelerate access to affordable, reliable, sustainable and modern energy for all in the LDCs, LLDCs and SIDS.

Endnotes

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