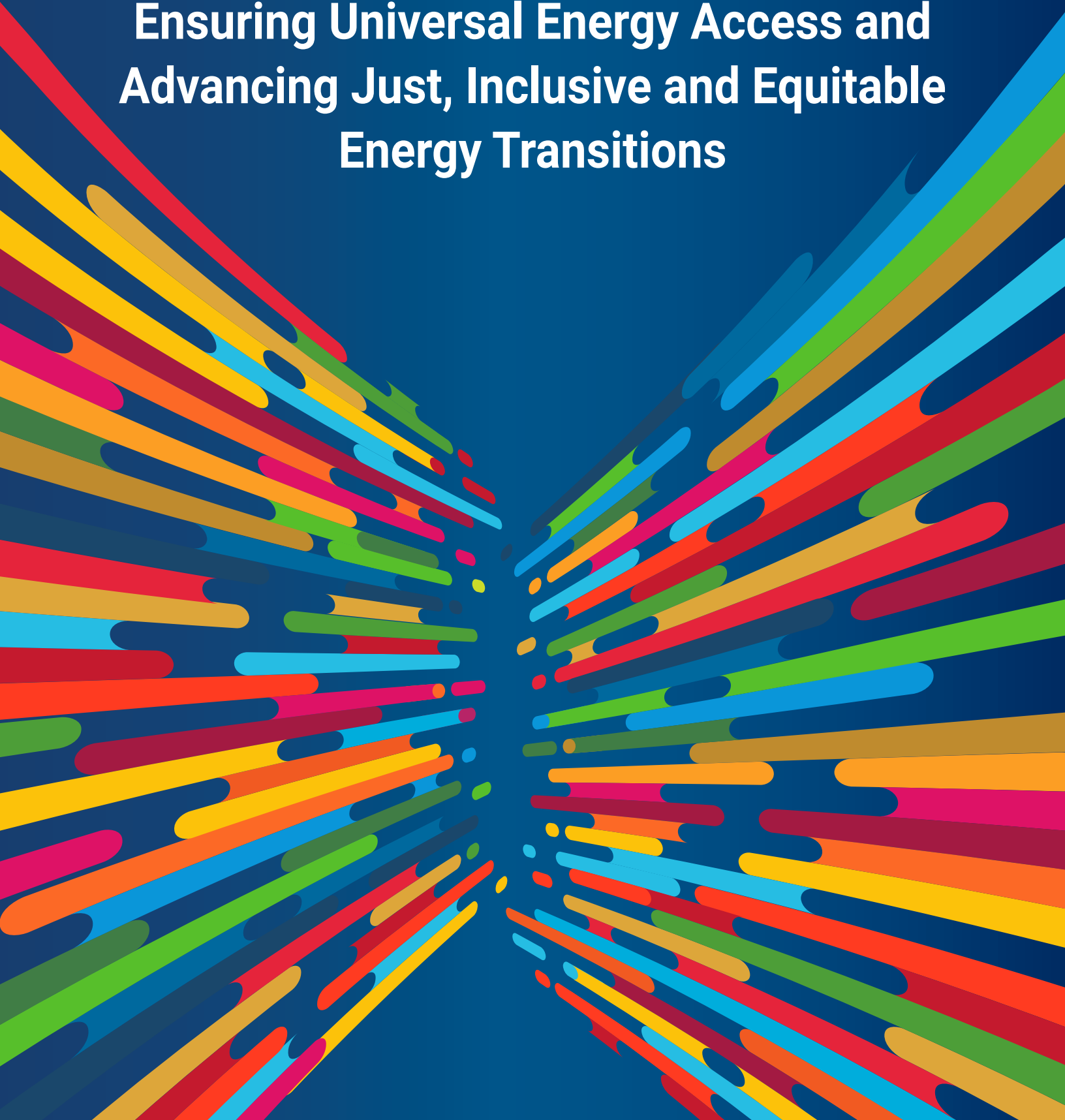




POLICY BRIEFS IN SUPPORT OF THE UN HIGH-LEVEL POLITICAL FORUM 2023

# Ensuring Universal Energy Access and Advancing Just, Inclusive and Equitable Energy Transitions



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# List of Contributing Organizations



Norwegian Ministry of Foreign Affairs  
**Ministry of Foreign Affairs, Norway**



**Global Energy Interconnection Development and Cooperation Organization (GEIDCO)**



**ENERZIA International Network on Gender and Sustainable Energy**



**Global Platform for Action (GPA)**



**Ministry of Foreign Affairs, Denmark**



**Humanist Institute for Development Cooperation (HIVOS)**



**The German Federal Ministry of Economic Cooperation and Development (BMZ)**



**International Energy Agency (IEA)**



**Ministry of Energy, Kenya**



**International Institute for Applied Systems Analysis (IIASA)**



**Ministry of Foreign Affairs of the Netherlands**



**International Labour Organization (ILO)**



**Ministry of Foreign Affairs, Pakistan**



**International Renewable Energy Agency (IRENA)**



**Ministry of Foreign Affairs, UAE**



**PowerForAll**



**European Commission (EC)**



**Clean Cooking Alliance (CCA)**



**Deutsche Gesellschaft fuer Internationale Zusammenarbeit (GIZ)**



**The World Bank**



**African Development Bank (AfDB)**



**SDG7 Youth Constituency**



United Nations Children's  
Emergency Fund (UNICEF)



United Nations Entity for Gender  
Equality and the Empowerment  
of Women (UN WOMEN)



United Nations Development  
Programme (UNDP)



United Nations Environment  
Programme (UNEP)



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



United Nations Industrial Development  
Organization (UNIDO)



United Nations Economic and Social  
Commission for Western Asia  
(UN ESCWA)



United Nations Institute for Training  
and Research (UNITAR)



United Nations Economic Commission  
for Africa (UN ECA)



The United Nations Human Settlements  
Programme (UN HABITAT)



United Nations Economic Commission  
for Europe (UN ECE)



World Health Organization  
(WHO)



Sustainable Energy for All (SEforAll)



United Nations Economic Commission  
for Latin America and the Caribbean  
(UN ECLAC)



Renewable Energy Policy Network  
for the 21<sup>st</sup> Century (REN21)



United Nations Office of the High  
Representative for the Least Developed  
Countries, Landlocked Developing  
Countries and the Small Island  
Developing States (UN-OHRLLS)



Food and Agriculture  
Organization of the  
United Nations



The Swedish International  
Development Cooperation

CONVENED BY:



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# Preface

As we convene at this year's High-level Political Forum, we stand at a pivotal moment for the 2030 Agenda for Sustainable Development. At the midway mark on our journey towards 2030, the promise of the Sustainable Development Goals (SDGs) is in jeopardy. Of the 140 SDG targets that can be evaluated, only about 15% are on track and too few SDG 7 targets are among them.

More people have access to electricity today than ever before, but the pace of progress remains too slow. At the current rate, by 2030 some 660 million people would still be without electricity and near 2 billion would still rely on polluting cooking fuels and technologies. Despite positive and accelerating growth of renewable energy use in developing countries, LDCs, LLDCs, and SIDS continue to lag behind. And international public financing for clean energy in developing countries continues to decline.

This lack of progress raises concerns and places us at significant risk of failing to achieve the SDGs and facing a climate catastrophe. The urgency is clear—we must unite, recommit ourselves, and take immediate action to deliver on the SDGs and rescue the planet and its people from this alarming state.

There is no doubt that the actions we take now can pave the way to success. By accelerating global efforts, fostering stronger cooperation, and taking decisive action, we can attain SDG7 by 2030. This accomplishment would not only ensure universal access to energy but also yield positive impacts across various sectors outlined in the 2030 Agenda.

I encourage you to delve into the valuable insights presented in the 6th edition of the SDG7 Policy Briefs, prepared by the SDG7 Technical Advisory Group (SDG7 TAG). These briefs will play a vital role in informing our discussions on energy and its interlinkages with other SDGs at the HLPF 2023, as well as the SDG Summit, the Climate Ambition Summit, the forthcoming UNFCCC COP28, and beyond. This year's Policy Briefs emphasize that, despite the significant challenges, the opportunities for transformative progress are substantial. The time has come for decisive action towards a sustainable energy future. Let us seize this opportunity to ensure prosperity for all people on a healthy planet.

UN DESA remains fully committed to providing comprehensive support to the SDG7 TAG. Through its outstanding work, the TAG contributes significantly to effective energy action worldwide. I commend the leadership and dedication of the co-facilitators of the SDG7 TAG, Ms. Sheila Oparaocha and Mr. Hans Olav Ibrek, and express my sincere gratitude for their unwavering engagement.



**Li Junhua**

*Under-Secretary-General for Economic and Social Affairs  
United Nations*

# Foreword

We are delighted to introduce the sixth compilation of the SDG 7 Policy Briefs, titled "Ensuring Universal Energy Access and Advancing Just, Inclusive and Equitable Energy Transitions," prepared by the SDG 7 Technical Advisory Group (SDG7 TAG).

The ripple effects of the Ukraine crisis and the COVID-19 pandemic have created a challenging environment for advancing SDG 7 and have resulted in setbacks and delays in achieving universal access to affordable, reliable, sustainable, and modern energy. This current global landscape and the pressing challenges posed by climate change paint a sombre picture.

While much progress has been made since 2015, the world is clearly off track for the achievement of SDG 7. Globally, 675 million people were still lacking access to electricity and 2.3 billion people did not have access to clean cooking fuels and technology in 2021. The share of renewables in global energy consumption is growing slowly, and the rate of improvement in energy efficiency has dropped. Additionally, international financial support for clean energy in developing countries has been declining and is concentrated in a few countries. This affects in particular the least developed countries.

We need a massive course correction to address the recent slowdown in progress on SDG 7 and ensure the swift implementation of the outcomes of the High-level Dialogue on Energy, including the Global Roadmap for Accelerated SDG 7 Action.

Energy transitions play a critical role in the attainment of all SDGs, including poverty eradication, food security, health, education, and gender equality. To optimize the benefits and minimize potential trade-offs, it is essential to adopt an integrated, participatory, and people-centered approach in policy and program decision-making processes for energy transition. This approach ensures equitable sharing of transition benefits, safeguards the well-being of individuals and the environment, and empowers citizens, women, youth, indigenous communities, and civil society economically and socially.

The SDG7 Policy Briefs provide valuable insights and recommendations, shedding light on the necessary actions to drive progress at the regional level and on specific topics such as just, inclusive and equitable energy transitions and energy's interlinkages with other SDGs.

We extend our gratitude to all members of the SDG7 TAG for their firm commitment and active participation in advancing the collective work of the Group, and contributing to the SDG7 Policy Briefs, and to the United Nations Department of Economic and Social Affairs (UNDESA) for their ongoing support and coordination of the SDG7 TAG.

This year is a special year in that the HLPF will include an in-depth review of SDG 7. We firmly believe that this publication will provide valuable insights for Member States and other stakeholders in support of this review, as well as for the SDG Summit and the 28th UN Climate Change Conference of the Parties (COP28) in the United Arab Emirates in late 2023. Meanwhile, the SDG7 TAG will continue its efforts also towards the Global Stocktaking of SDG7 under the United Nations General Assembly in 2024.

### Co-Facilitators of the SDG7 TAG



**Sheila Oparaocha**  
*Executive Director*  
*Energia*



**Hans Olav Ibrekk**  
*Special Envoy for Climate and Security,*  
*Norwegian Ministry of Foreign Affairs*



# Acknowledgements

This document was prepared in support of the review of the SDGs at the United Nations High-Level Political Forum 2023. The views expressed in this publication are those of the experts whose contributions are acknowledged and do not necessarily reflect those of the United Nations or the organizations mentioned in this document.

This document, including the Policy Briefs and the Summary for Policymakers, was developed under the auspices of the multi-stakeholder SDG 7 Technical Advisory Group, convened by UN DESA. Under the leadership and able facilitation of two co-facilitators of the group, Sheila Oparaocha and Hans Olav Ibrekk, the members of the group have demonstrated exemplary commitment and a true spirit of multi-stakeholder collaboration. The group consists of:

**Sheila Oparaocha**, ENERGIA International Network on Gender and Sustainable Energy (Co-facilitator)

**Hans Olav Ibrekk**, Ministry of Foreign Affairs, Norway (Co-facilitator)

**Mira Bergem**, Ministry of Foreign Affairs, Denmark

**Paul Mbuti**, Ministry of Energy and Petroleum, Kenya

**Aleena Majeed**, Pakistan Ministry of Foreign Affairs

**Frank van der Vleuten**, Ministry of Foreign Affairs, The Netherlands

**Dane McQueen**, Ministry of Foreign Affairs, United Arab Emirates

**Stefano Signore**, European Commission

**Sheila Watson**, FIA Foundation

**Shonali Pachauri**, International Institute for Applied Systems Analysis

**Leena Srivastava**, BCG India

**Laura Cozzi**, International Energy Agency

**Dymphna van der Lans**, Clean Cooking Alliance

**Monga Mehlwana**, UNECA

**Dario Liguti**, UNECE

**Rayén Quiroga**, UNECLAC

**Hongpeng Liu**, UNESCAP

**Radia Sedaoui**, UNESCWA

**Michela Morese**, FAO

**Glenn Pearce-Oroz**, SEforAll

**Rabia Ferroukhi**, IRENA

**Riad Meddeb**, UNDP

**Mark Radka**, UNEP

**Daniele Violetti**, UNFCCC

**Vincent Kitio**, UN-Habitat  
**Amy Wickham**, UNICEF  
**Tareq Emtairah**, UNIDO  
**Heidi Schroderus-Fox**, UN-OHRLLS  
**Heather Adair-Rohani**, WHO  
**Demetrios Papathanasiou**, World Bank  
**Moustapha Kamal Gueye**, ILO  
**Mark Gibson**, UNITAR  
**Daniel Schroth**, African Development Bank  
**Rana Adib**, REN21  
**Nebojsa Nakicenovic**, Vienna University of Technology  
**Kristina Skierka**, Power for All  
**Asma Rouabhia & David Arinze**, SDG 7 Youth Constituency  
**Minoru Takada**, UN DESA (ex-officio)

The development of each policy brief was led by a group of organizations, which served as the lead coordinators to facilitate numerous iterations among themselves and with other contributing organizations and multi-stakeholder contributors. Their excellent efforts, and the quality and timely delivery of the products, are gratefully acknowledged.

The Division for Sustainable Development Goals (DSDG) at UNDESA provided secretariat services, conceptualized the processes and products, mobilized resources, led the drafting of the Summary for Policymakers and the compilation of the policy briefs. The work was spearheaded by the energy and climate team led by Minoru Takada with Martin Niemetz as task manager and support by Bahareh Seyedi, Nadine Salame, Dominika Zahrer, Pragati Pascale, Veronika Ruskova, Jonathan Proksch, Max Yogeshwar, and under the overall guidance of Juwang Zhu, Director of DSDG. The Capacity Development Office at UNDESA provided overall support during the process. Special thanks are extended to Jonathan Gorvett who copy-edited the policy briefs and the summary for policymakers, ensuring accuracy, consistency and readability, and also to Camilo Salomon for the excellent work on the graphic design and production of the report.

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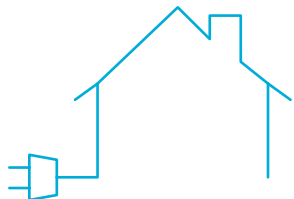
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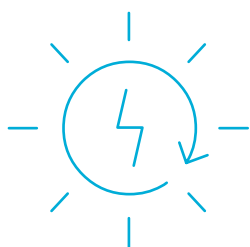
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**Department of Economic and Social Affairs United Nations**  
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# Key numbers



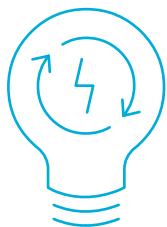
**675 million people**

were still without access to electricity in 2021



**2.3 billion people**

lacked access to clean cooking solutions in 2021



The rate of energy intensity improvement has slowed in recent years and dropped to **0.6%** in 2020. This makes it the worst year for energy intensity improvement since the global financial crisis



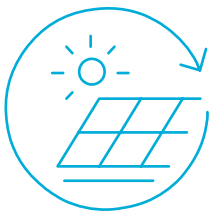
International public financial flows in support of clean energy in developing countries stand at **US\$ 10.8 billion** in 2021, 35% less than the 2010–2019 average and only about 40% of the 2017 peak of US\$ 26.4 billion.



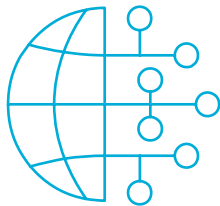
Nearly **600 million people** in Africa still did not have access to electricity in 2021, accounting for more than 88% of the global population without access.



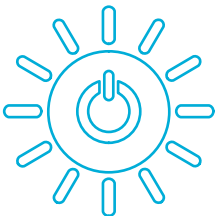
Almost **1.2 billion people** – nearly one quarter of the population of the Asia and the Pacific region – were without access to clean cooking solutions in 2021.



**Only 5.1%** of the Arab region's total final energy consumption was generated by renewables in 2020.



Investments in 17 countries of South-Eastern and Eastern Europe, the Caucasus and Central Asia in 2020 amounted to **only 2.2%** of the global total and much the same as the amount invested 10 years ago.



Progress in improving primary energy intensity during the 2010–2020 period was **only 1.0%** in Latin America and the Caribbean



In 2021, the 92 countries in the LDC, LLDC, SIDS groups combined received **less than a third** of total global financial flows in support of clean energy.

# 1 Key Messages for Policy Makers

Energy is key to accelerating sustainable development and to averting ever-worsening climate disasters. Yet, with this year marking the mid-point of the 2030 Agenda for Sustainable Development, progress on Sustainable Development Goal 7 (SDG7) – is insufficient and countries are far off-track in meeting energy promises and commitments. Indeed, we are now on our way to failing to reach our Sustainable Development Goals (SDGs) overall, while the world heads towards climate catastrophe. Meanwhile, the ripple effects of the Ukraine crisis and the aftermath of the global COVID-19 pandemic also continue to hamper progress.

Now must be the time for ambition and action. People and the planet simply cannot wait. Through rapid acceleration of global efforts in the next 7.5 years, it is still possible to achieve SDG7 by 2030. By taking decisive action and strengthening cooperation at all levels, we can turn the promise of SDG7 into reality. It is high time to step up – to achieve universal access to energy and accelerate just and inclusive energy transitions, which will also create green jobs and economic opportunities, improve health and education, and empower women and young people, among many multiplier effects across the 2030 Agenda.

The following actions must therefore be a priority:

- **Immediately do what is necessary to provide everyone with access to electricity.** Globally, 675 million people still lacked this access in 2021. Ensuring clean, decarbonized energy for all by 2030 must be an urgent political priority at all levels. Electricity access is also one of the areas of sustainable development which has the most co-benefits for other SDGs, thus playing a catalytic role for the entire 2030 Agenda. As the majority of people without access to electricity are located in less developed countries (LDCs) and in sub-Saharan Africa, these places should be at the centre of the international community's efforts.
- **Mobilize decisive global action towards addressing the issue of clean cooking – an area that has seen only minimal progress in recent years.** In 2021, 2.3 billion people still did not have access to clean cooking fuels and technology. If current trends continue, some 1.9 billion people would still be without access in 2030. It is clear that fundamentally new approaches to clean cooking need to be developed and implemented immediately.
- **Urgently accelerate just, inclusive and equitable energy transitions, worldwide.** Without deep energy decarbonization to achieve net-zero by 2050, the 1.5°C goal of the Paris Agreement will fall quickly out of reach. The deployment of renewable energy is lagging, however, especially in transport, industry, heating and cooling. At the same time, global energy efficiency improvements must increase significantly. Energy action must also ensure that it produces just and equitable outcomes while fulfilling its key role in efforts towards achieving net-zero emissions. This will lead to prosperity for both people and planet while leaving no one behind, including vulnerable countries and groups. Notably, Africa accounted for only one percent of additional renewable energy capacity in 2022. Clearly, more support is needed.
- **Triple investment flows for clean energy.** Global investment in renewable energy and energy efficiency needs to be tripled towards 2030. Shifting fossil fuel subsidies to renewables as well as putting a price on carbon will also be crucial in accelerating the energy transition. International cooperation must be dramatically scaled up to catalyse the level of public and private finance and investment necessary to accelerate energy transitions, especially for developing countries. This also requires strengthening enabling environments and building the workforce required for clean energy projects worldwide.

- **Dramatically scale-up investment flows to the most vulnerable countries.** In 2021, international public financial flows in support of clean energy in developing countries amounted to USD 10.8 billion, an 11 percent drop from 2020, 35 percent less than the 2010–19 average and only about 40 percent of the 2017 peak of USD 26.4 billion. Notably, the 92 countries that constitute the LDCs, landlocked developing countries (LLDC) and small island developing states (SIDS) received less than a third of total global financial flows in support of clean energy. A fundamental shift in support for developing nations must put more focus on energy access and climate adaptation. Moreover, increased levels of support for capacity building at all levels are urgently needed, as well as stronger efforts towards technology transfer.
- **Boost the overall impact of energy action by better capitalizing on the links between SDG7 and other SDGs, as well as the links between the SDG7 targets on energy access, efficiency and renewable energy.** SDG7 is a goal that can produce particularly high co-benefits in other areas of sustainable development, bringing many more development synergies than trade-offs for vulnerable populations. At the same time, the achievement of SDG7 also depends on progress made towards other SDGs. These co-benefits do not come about automatically; they require cross-sectoral approaches at the level of policy, planning, and implementation.
- **Invest in transformative partnerships that can rapidly expand progress towards SDG7.** Achieving SDG7 requires the engagement of all stakeholders and the building of trust and partnerships. The Energy Compacts have proven to be an effective mechanism for creating momentum and mobilising commitments towards the implementation of the Secretary-General’s Global Roadmap for Accelerated SDG7 Action. The selection of the Energy Compacts as a High-Impact Initiative in the framework of the SDG Summit provides an opportunity to further strengthen partnerships among all stakeholders, increasing ambition and matchmaking, while also tracking progress on commitments. Other important initiatives, such as the Just Energy Transition Partnerships, must be further utilized to accelerated progress. UN-Energy must be further strengthened and must step up its efforts to increase cooperation among its member organizations. This will enable the United Nations to take a leadership role in mobilizing global multi-stakeholder action, including through the Energy Compacts.
- **Prioritize gender equality and women's empowerment by giving the utmost importance to ensuring equal representation of women in energy sector decision-making and the sector’s workforce.** Emphasize the significance of empowering women as agents of change in the design, production and distribution of modern energy services, including those for productive purposes. Furthermore, integrating gender considerations into investment and international cooperation efforts aimed at achieving SDG7 should be prioritized. It is concerning that only 9 per cent of official development assistance for energy projects focuses on gender equality, while SDG7 lacks gender-specific indicators. To effectively monitor progress and address gender disparities it is imperative that specific indicators that capture the gender dimensions of SDG7 be developed.
- **Strengthen regional cooperation.** This represents an immense opportunity to enhance efficiencies, accelerate economic development, improve reliability and affordability and boost resilience against disruptive events, such as the recent global energy crisis and continuing climate extremities. At the same time, the Africa, Arab, Asia and the Pacific, Latin America and the Caribbean and United Nations Economic Commission for Europe (UNECE) regions all face very particular challenges in achieving SDG7. Differentiated approaches that take these special circumstances into account are therefore required.



- **Establish a permanent platform for intergovernmental dialogues on energy at the United Nations, with the strong engagement of business, civil society, youth and other stakeholders.** The High-level Dialogue on Energy in 2021 highlighted the fact that intergovernmental cooperation on energy is not optional, but a must. The lead up to the global stocktaking on SDG7 in 2024, which marks the completion of the United Nations Decade of Sustainable Energy for All, is a great opportunity to further strengthen intergovernmental cooperation. A fundamental prerequisite for such cooperation is a sustained, global dialogue on energy at the United Nations, including at the technical level, ensuring universality and inclusivity. Such a platform would be an important step towards strengthening inclusive and meaningful multilateral cooperation.

# 2 Advancing SDG7 implementation in support of the 2030 Agenda

### Contributing organizations:

International Energy Agency (IEA)

International Renewable Energy Agency (IRENA)

United Nations Statistics Division (UNSD)

The World Bank

The World Health Organization (WHO)

## KEY MESSAGES

This SDG7 Policy Brief is based on the 2023 edition of Tracking SDG7: The Energy Progress Report which reviews current progress on the key targets of Sustainable Development Goal 7 (SDG7). It also acts as a guide for further policymaking aimed at realizing the SDG7 goal of universal access to affordable, reliable, sustainable and modern energy by the target date of 2030.

The key finding of this year's edition is that despite the use of innovative policies and technologies, recent results show that the world is still falling short of achieving those SDG7 goals. This is particularly so in the field of access to affordable and sustainable energy.

The report also found:

- The flow of public finance in support of clean energy solutions in low- and middle-income countries started to decline even before the COVID-19 pandemic. This flow continued to decrease through 2021, dampening prospects for marked advances in developing countries.
- In contrast, increasing policy support for renewables and energy efficiency did allow both to progress during the pandemic. Continued forward progress is also on the horizon as the energy crisis hastens the shift to more sustainable energy.

As the world takes stock of progress on the SDGs, particularly in the context of the upcoming voluntary review of the SDG7 at the UN High-Level Political Forum, and 2023 SDG Summit, the SDG7 custodial agencies encourage the international community and policymakers to focus on the vulnerable countries, and to call for accelerated action across various SDG7 targets and geographies.

Robust frameworks of indicators and statistical data are essential elements in this collaboration. Cooperative work on accurate data and statistics by the SDG custodial agencies provides transparency with respect to trends, helps track progress towards policy goals and assists in tackling policy issues and determining actions.

The progress report is therefore published by the SDG7 custodian agencies: the IEA, IRENA, the UNSD, the World Bank and the WHO. It aims to provide the international community with a global dashboard showing progress on energy access, energy efficiency, renewable energy and the international cooperation undertaken to advance SDG7.

## CUSTODIAN TRACKING AND ANALYSIS OF SDG7

The targets being monitored and analysed are indicated in the table below.

**TABLE 1. SDG7 target tracker**

| GOAL 7 TARGETS   | INDICATORS   |
|--|--|
| <b>SDG7.1:</b> Ensure universal access to electricity and clean cooking solutions.   | <b>Indicator 7.1.1:</b> Proportion of population with access to electricity  |
|  | <b>Indicator 7.1.2:</b> Proportion of population with primary reliance on clean fuels and technology   |
| <b>SDG7.2:</b> Substantially increase the share of renewable energy in the global energy mix.  | <b>Indicator 7.2.1:</b> Renewable energy share in the total final energy consumption   |
| <b>SDG7.3:</b> Double the global rate of improvement in energy efficiency.   | <b>Indicator 7.3.1:</b> Energy intensity measured in terms of primary energy and gross domestic product (GDP)  |
| <b>SDG7.A:</b> Enhance international cooperation to facilitate access to clean energy research and technology, and promote investment in energy infrastructure and technology. | <b>Indicator 7.A.1:</b> International financial flows to developing countries in support of clean energy research and development and renewable energy production, including in hybrid systems |
| <b>SDG7.B:</b> Expand infrastructure and upgrade technology for supplying modern and sustainable energy services for all in developing countries.                              | <b>Indicator 7.B.1:</b> Installed renewable energy-generating capacity in developing countries, in watts (W) per capita  |

## SUMMARY OF PROGRESS WITH SDG7 INDICATORS

### SDG7.1.1 Access to electricity

In 2021, 91 per cent of the world's population had access to electricity, while 675 million people remained without. Sub Saharan Africa, where most Least Developed Countries are located, remained the largest access-deficit region. There, 50 per cent of the population were without access to electricity.

If the current pace of development continues, by 2030 about 660 million people, mostly concentrated in sub Saharan Africa, would still be unserved. Given the continued impact of COVID-19 on both global and national economies – an impact expected to be compounded by the energy crisis of 2022 – urgent action must be taken to maintain energy access as a key priority, while also preventing setbacks.

Reaching universal access by 2030 thus requires an almost doubling of the annual access growth rate, up from an average 0.6 percentage points during 2019–2021 to 1 percentage point from 2021 onwards.

### **SDG7.1.2 Access to clean cooking technologies**

In 2021, 71 per cent of the global population had access to clean cooking fuels and technologies, while some 2.3 billion people – around one-third of the world’s population – still lacked access.

If the current trend continues, only a little over three-quarters (77 per cent) of the global population will have access to clean cooking by 2030, leaving some 1.9 billion people unserved, mostly in low- and middle-income countries.

Urban areas continue to have greater access to clean cooking than rural areas, but the divide is narrowing over time. This is due to accelerating access in rural areas while growth in access in urban areas decelerates. Going forward, it will be important to make sure that the trends of increasing access in both urban and rural areas are maintained.

To reach universal access, major progress should be made in Sub Saharan Africa in particular, as population growth there has been outpacing progress in access.

### **SDG7.2 Substantially increasing the global share of renewable energy**

While global energy demand declined in 2020 due to the social and economic impact of COVID-19, development in renewable energy continued to progress at a moderate pace during the pandemic period.

In 2020, the global share of renewable energy sources in total final energy consumption (TFEC) was 19.1 per cent, while modern use of renewables (i.e. excluding inefficient – so called “traditional” - use of biomass) was 12.5 per cent. Such proportions are respectively only 3 and 3.8 percentage points higher than a decade ago. The most rapid growth in the share of renewables is in electricity generation, while the transport and heating sectors continued to see limited progress.

The current trend is neither aligned with the 2030 target ambition, nor on track to meet internationally agreed climate objectives. A much faster uptake of renewables, combined with strong action on energy conservation, is therefore required.

### **SDG7.B.1 Installed renewable electricity-generating capacity in developing countries**

In 2021, developing countries had an average of 268 W of installed renewable energy capacity per capita, with a year-on-year growth rate of 9.8 per cent. This demonstrated a positive and slightly accelerating growth trend, as the compound annual growth rate for these countries over the 2016–2019 period was 9.6 per cent.

The growth rate was lower, however, for Small Island Developing States (8.5 per cent), Least Developed Countries (5.5 per cent) and Landlocked Developing Countries (3.8 per cent). This trend underscores the urgent need for greater policy support and investment to ensure that all developing countries are on track to meet SDG7 objectives.

### **SDG7.3 Energy efficiency**

In 2020, worldwide primary energy intensity was 4.63 megajoules (MJ) per US\$, at 2017 purchasing power parity (PPP), an improvement of only 0.6 per cent compared to 2019. This made 2020 the worst year for energy intensity improvement since the global financial crisis of 2007–2008.

This trend is expected to be short-lived, however. The fall in improvement rates – down to 0.6 per cent from an average of 1.8 per cent over the decade – was largely due to lockdowns, restrictions on travel and radical shifts in the global economy associated with the COVID-19 pandemic.

Yet annual improvement through 2030 now has to average 3.4 per cent to make up for lost ground, if the SDG7.3 target is to be met. This is up from the 2.6 per cent average originally calculated, using a 1990–2010 baseline.

The Eastern and South-Eastern Asia region has come closest to the target, with an annual average growth of 2.3 per cent in 2010–2020. On the other hand, the lowest rates of improvement were found in Western Asia and Northern Africa (0.7 per cent), followed by Latin America and the Caribbean (1.0 per cent) and sub-Saharan Africa (1.0 per cent).

In the wake of the current climate crisis, there has been a renewed policy focus on improving energy efficiency. Policies favouring energy efficiency retrofits, or the installation of efficient appliances such as heat-pumps, have been receiving unprecedented policy support, albeit largely in the advanced economies and China. Such developments contribute not only to the energy transition, but also improve energy security, while shielding consumers from higher energy costs.

### **SDG7.A.1 International public financial flows to developing countries in support of clean energy**

The flow of international public finance in support of clean energy in developing countries started declining before the COVID-19 pandemic and continued to decline through 2021. That year, in United States dollars (US\$), these flows amounted to US\$ 10.8 billion. This represented an 11 per cent drop from 2020 and 35 per cent less than the 2010–2019 average. The 2021 figure was also less than half the 2017 peak of US\$ 26.4 billion. This reflected shifting governmental fiscal priorities in the light of the pandemic and its economic consequences.

Data next year will provide a clearer picture of the impact of the ongoing global energy crisis, escalated by the war in Ukraine, on the flow of public finance. The declining trend in this flow could delay the achievement of SDG7, especially for the Least Developed Countries, Landlocked Developing Countries and Small Island Developing States, adding urgency to the multi-lateral bank reforms currently under discussion.

## **PROGRESS AND PROSPECTS WITH SDG7 INDICATORS**

### **SDG7.1.1 Access to electricity**

#### **Recent progress**

Between 2010 and 2021, the global electricity access rate grew from 84 per cent to 91 per cent of the world's population. Accordingly, the number of people without access fell by almost half over the same period, from around 1.1 billion people to 675 million.

Compared to the annual growth pace of 0.7 percentage points in 2010-19, the pace in electricity access has, however, slowed in recent years, declining to 0.6 percentage points in 2019–2021. That growth rate has, however, bounced back recently, following the subsidence of the COVID-19 pandemic.

Since the access rate in urban areas has plateaued reaching higher access, electrification has generally grown more slowly in urban areas than in rural areas, where the bulk of the population without access to electricity lives.

Region by region, between 2019 and 2021 the annual increase in the number of people with access to electricity grew the most in Central and Southern Asia, where 54 million people a year gained access.

In contrast, the number of people gaining access in sub-Saharan Africa remained stagnant. As of 2021, 567 million people were without access in the region, representing more than four-fifths of the total global population without access to electricity. Indeed, the top three countries with the largest access deficits were all from sub-Saharan Africa. These were Nigeria (86 million), the Democratic Republic of the Congo (76 million) and Ethiopia (55 million).

In addition, according to a recent IEA estimate, due to the COVID-19 pandemic and the global energy crisis, about 75 million people who recently gained access to electricity in the world are likely to lose their ability to pay for extended electricity services.

### **Prospects for meeting the 2030 target**

If progress continues at the current pace, the world will fall short of the 2030 target. Only 92 per cent of the global population are projected to have electricity access by 2030, leaving around 660 million people unserved.

The final stretch mostly requires connecting people living in low-income, remote and vulnerable areas, particularly in sub-Saharan Africa. To meet the target, the share of global population with access to electricity should increase to 1 percentage point annually, with the acceleration needing to be largely driven by sub-Saharan Africa.

Off-grid renewable energy solutions, such as solar mini-grids, can play a key role in expanding electricity access and closing the access gap. Yet, the COVID-19 pandemic caused disruptions in accessing stand-alone off-grid solar solutions. These disruptions saw the number of people with off-grid access fall from 107 million in 2019 to 101 million in 2021.

Since 2021, the sector has begun to recover from the COVID-19 crisis, yet more efforts are still needed to recover to the pre-COVID level. Dedicated financial and regulatory support should therefore be strengthened to recover lost ground and ensure last-mile communities are not left behind when it comes to electricity access.

### **SDG7.1.2 Access to clean cooking solutions**

#### **Recent progress**

Over the past decade, access to clean cooking fuels and technologies has advanced by 14 percentage points worldwide. This has mainly been led by the top five most populous low- and middle-income countries – China, India, Indonesia, Brazil and Pakistan. As of 2021, 71 per cent of the global population had access to clean cooking.

However, some 2.3 billion people, almost one billion of whom are in sub-Saharan Africa, remained without access. Indeed, of the top 20 countries with the lowest access rates, 19 of them were least developed countries in Africa.

Meanwhile, the access deficit has decreased consistently in East and South-East Asia since the year 2000 and in Central Asia and Southern Asia since 2010.

At the same time, only a few SDG sub-regions are close to achieving universal access to clean cooking. These include Northern Africa (92 per cent access), Western Asia (93 per cent) and Europe (94 per cent).

Between 2010 and 2021, the percentage of people with access to clean cooking in rural areas improved at five times the rate seen in urban areas. Indeed, given current trends, urban areas are on course to see progress stall and possibly even regress as soon as 2025. The difference in access rates between urban and rural areas is, however, narrowing in all regions except sub-Saharan Africa, where it is sharply increasing. Twelve countries, most of them in sub-Saharan Africa, have pledged to accelerate access to clean cooking in their energy compacts, mobilized since the United Nations High-Level Dialogue on Energy in September 2021.

### Prospects for meeting the 2030 target

The world is not on track to achieve universal access to clean cooking by 2030. If current trends continue, only a little over three-quarters of the global population – 77 per cent – are projected to have access to clean cooking by 2030. This would leave 1.9 billion people – mainly in low- and middle-income countries – without access.

Indeed, by the target year, only the Australia and New Zealand region is projected to have universal access, while two regions (Northern America and Europe and Western Asia and Northern Africa) are projected to be approaching near universal access (between 90 per cent and 100 per cent).

In contrast, almost 6 out of 10 people without access to clean cooking are expected to reside in sub-Saharan Africa. In this region, the number of unserved people is increasing at a rate of almost 20 million people each year. To reach the 2030 target, the access deficit in sub-Saharan Africa should therefore be urgently addressed. Without new policies or urgent interventions, the access deficit in sub-Saharan Africa is on course to reach 1.1 billion people by 2030, as access growth continues to lag behind population growth. There are also no signs of the deficit slowing beyond that. Scaling up policy actions and investment dedicated to clean cooking is thus urgently required for this region.

### SDG7.2 Substantially increasing the global share of renewable energy

#### Recent progress

In 2020, the COVID-19 pandemic disrupted social and economic activity, resulting in a decline in total energy demand. In this context, the share of renewable energy sources in TFEC increased only modestly, reaching 19.1 per cent in 2020. This was 1.4 percentage points higher than the year before. Excluding the inefficient – so-called “traditional” – uses of biomass, the share of renewables in TFEC amounted to 12.5 per cent.

While the electricity sector accounts for one-fifth of global TFEC, over the past decade this sector has also consistently made the largest contribution to growth in the share of renewables. In 2020, supported by stable final electricity consumption, the share of renewables in global electricity consumption increased to 28.2 per cent, up 1.9 percentage points in comparison to the share in 2019 and 5.3 percentage points in comparison to the share in 2015.

In contrast, the pace of progress in the transport and heating sectors has been much slower. In the heating sector, which represents almost half of global TFEC, renewable sources accounted for 24 per cent of the energy used, more than half of which corresponded to the traditional use of biomass. Excluding traditional uses of biomass, the share of modern renewables in global heat consumption reached just 10.4 per cent in 2020 – only 1.2 percentage points higher than in 2015.

Meanwhile, the transport sector represents almost one-third of global TFEC, but accounts for only 10 per cent of global renewable energy consumption. This is because renewables meet only 4 per cent of final energy consumption for transport – the lowest share of all sectors.



Among the different regions, the share of renewables in final energy consumption is greatest in sub-Saharan Africa. This is due to widespread traditional use of biomass for heating and cooking. Taking only modern use of renewables into account, Latin America and the Caribbean showed the highest share among all regions, owing to significant reliance on hydropower generation, consumption of bioenergy in industrial processes and biofuels for transport.

### Prospects for meeting the 2030 target

Target 7.2 aims to accelerate the deployment of renewable energy sources in the different conventional sectoral categories, including electricity, heat and transport. While there is no quantitative milestone set for the target, the share of renewable energy in TFE is the main indicator used for monitoring and assessing progress toward this goal. This share has remained relatively steady over the past three decades, with growth between 2010 and 2020 just 3 percentage points.

The custodial agencies find that the current trend in this indicator is therefore neither in line with the target's ambition, nor with internationally agreed climate objectives. Much faster progress in energy conservation is required, combined with much faster renewable energy uptake. Indeed, to put renewable development on track for achieving SDG7.2 and the Paris Agreement, more ambitious targets, stronger and more sustained policy support and more effective mobilization of public and private capital for renewables and energy conservation should be implemented in all sectors.

### SDG7.B.1 Installed renewable energy-generating capacity in developing countries

#### Recent progress

In developing countries, renewable installed capacity per capita has continuously advanced over the past decade. In 2021, these countries saw a record-breaking installation of 268 W per capita of renewable capacity, representing 9.8 per cent growth from the 2020 figure.

Yet, when looking at the underlying value of the renewable power added, developing countries saw a 6 per cent contraction between 2021 and 2020 in megawatts. The severe impact of the COVID-19 pandemic on economic activity and supply chains, coupled with increasing commodity, energy and shipping prices, heightened uncertainty about future renewable energy projects.

Geographically, the 2010–2021 period also saw growth in renewables-fuelled capacity vary according to region.

The Eastern and South-Eastern Asia region witnessed the largest growth in per capita capacity, rising from 135 W per capita in 2010 to 525 W per capita in 2021. This growth was largely driven by additions of solar and wind power. In recent years, these have increased their price competitiveness relative to fossil fuel.

For similar reasons, Western Asia and Northern America, and Central and Southern Asia more than doubled their per capita capacity over the same period. In Latin America and the Caribbean, per capita capacity grew by 57 per cent, from 285 W to 446 W per capita.

In contrast, there was a lagging trend in Oceania and Sub-Saharan Africa, despite growth. In 2021, in these two regions renewable capacity stood at only 72 W and 38 W per capita, respectively.

Meanwhile, in 2021 the same four countries as in 2020 had more than 1 megawatt (MW) capacity per capita: Bhutan (3.004 MW), Paraguay (1.317 MW), the Lao People's Democratic Republic (1.143 MW) and Uruguay (1.092 MW).

## Prospects for meeting the 2030 target

While there is no quantifiable target for capacity per capita by 2030, the world is not on track to meet the 2030 ambition of expanding infrastructure and upgrading technology for the supply of modern and sustainable energy services for all in developing countries. The positive trajectory of growing installed renewable-energy generating capacity at the global and regional levels hides that – even among the developing countries – some of the countries most in need are falling behind. While developing countries enhanced renewable capacity by an average 9.6 per cent per year over the 2016–2021 period, the pace of growth was slower in small island developing states (8.5 per cent), least developed countries (5.5 per cent) and landlocked developing countries (3.8 per cent). At current annual growth rates, these country groups would need between 13 and 40 years – timelines stretching far beyond 2030 – to reach the average deployment level of developing countries in 2021.

Greater investments, including enhanced international financial flows from donors across all sectors, are urgently required, along with enabling policy frameworks. These are necessary to empower developing countries and enable them to benefit from renewable deployment – a key pre-condition to realising SDG7 and the broader 2030 Agenda.

## SDG7.3 Energy efficiency

### Recent progress

Progress in improving primary energy intensity – defined as the percentage decrease in the ratio of energy supply per unit of GDP – has been slow in recent years. Indeed, in 2020, the rate of improvement dropped to 0.6 per cent. This was largely because of lockdowns, restrictions on travel and radical shifts in the global economy associated with the COVID-19 pandemic. This made 2020 the worst year for energy intensity improvement since the global financial crisis of 2007–2008, with worldwide primary energy intensity reaching only 4.63 MJ per US dollar, at 2017 PPP.

In terms of regions, during the 2010–2020 period, Western Asia and Northern Africa showed the lowest annual average rate of improvement, at 0.7 per cent. This was followed by Latin America and the Caribbean (1.0 per cent) and sub-Saharan Africa (1.0 per cent).

In contrast, other regions were above the global average and historical trends. Eastern and South-Eastern Asia showed the most progress, with a rate of 2.3 per cent driven by strong efforts to phase out older, inefficient industrial capacity and improve the energy efficiency of buildings and industry.

At the same time, data on absolute energy intensity present wide regional disparities. Energy intensity in sub-Saharan Africa, and especially in regions with low access levels, and where households must rely on the traditional use of biomass for cooking, is almost double the level in Latin America and the Caribbean. This highlights the strong interlinkages between improving energy supply efficiency and other SDG7 targets, notably increasing access to clean cooking and the share of renewables in electricity generation.

## Prospects for meeting the 2030 target

Despite a gradual improvement since 1990, developments in primary energy intensity have been below the SDG7.3 target of 2.6 per cent per year.

Between 2010 and 2020, the average annual rate of improvement in global primary energy intensity was 1.8 per cent. This was higher than the 1990–2010 rate of 1.2 per cent, but is still below the target required over the entire SDG time period (2010–2030). Given this slow progress, future improvements would need to climb to over 3.4 per cent per year to achieve the target by 2030. Under the IEA's Net Zero Emissions by

2050 Scenario, this rate would need to be even higher – at a level consistently over 4.2 per cent for the rest of this decade – to put the world on track to reach the target of net-zero energy sector emissions by 2050.

Considering the impact of the COVID-19 crisis, estimates for 2021 point to continued slow progress in intensity improvement. Early estimates for 2022, however, show a rebound to higher levels of improvement, aided by renewed policy support and urgency in the wake of the energy crisis.

Energy efficiency incentives, regulations and information campaigns have received a boost in investment in recent years, with overall energy efficiency investment only dropping slightly in 2020, to nearly US\$ 380 billion, despite the pandemic.

Governments worldwide mobilized around two-thirds of clean energy recovery spending on energy efficiency between 2020 and 2022, though much more investment is needed to meet the net-zero emissions target by 2050.

### **SDG7.A.1 International public financial flows to developing countries in support of clean energy**

#### **Recent progress**

Tracking of SDG indicator 7.A.1 shows that international public financial flows in support of clean energy in developing countries started decreasing before the COVID-19 pandemic and continued through 2021. In 2021, these flows amounted to US\$ 10.8 billion—an 11 per cent drop from 2020 (further to a 13 per cent decrease in public financial flows in 2020 compared to 2019). This was 35 per cent less than the 2010–19 decade-long average of USD16.7 billion and less than half the 2017 peak of US\$ 26.4 billion. This downward trend in public investments is expected to have continued in 2022. Data next year will provide a clearer picture of the impact on public financial flows of the current global energy crisis, escalated by the conflict in Ukraine.

The distribution of flows by technology continued the trend of shifting from hydropower to solar energy. Indeed, solar energy attracted the most flows, at 43 per cent, followed by flows to multiple/other renewables (33 per cent) and hydropower (16 per cent). Wind and geothermal energy received less than 10 per cent of total commitments.

While some geographical regions saw increases, other regions were drivers of an overall decrease in financial flows. Latin America and the Caribbean experienced the largest drop, with a decrease of US\$ 2.295 billion, or 62 per cent, compared to 2020. Other regions also saw significant annual decreases, including a decline of over 59 per cent (US\$ 582 million) in Western Asia and Northern Africa, 42 per cent (US\$ 9 million) in Oceania, and 8 per cent (US\$ 232 million) in Central Asia and Southern Asia.

This declining trend in international public financial flows might delay the achievement of SDG7, especially for the least developed countries, landlocked developing countries and small island developing states.

#### **Prospects for meeting the 2030 target**

While there is no quantitative target for international public financial flows under indicator 7.A.1, the recent declining trend indicates that the world is not on track to meet its goal of enhancing international cooperation to facilitate access to clean energy research and technologies for countries in need.

Given the important role of financing in securing progress towards SDG7 as a whole, it is critical that international public financial flows increase substantially, and be targeted to countries in most need of financial aid.

## PRIORITY ACTIONS TO ACCELERATE SDG7 IMPLEMENTATION

### Summary

While innovative policies and technologies continue to benefit the energy sector, the COVID-19 pandemic has impeded progress on SDG7, particularly affecting the most vulnerable countries and undermining the pace of progress in electrification, clean cooking and energy efficiency. Although efforts to increase renewables have been consistent during the pandemic, they are still below SDG7 ambitions, especially in the heat and transport sectors.

Meanwhile, inequalities have widened in access to reliable energy for quality education and health care for remote and poor areas. Due to the COVID-19 pandemic and the current energy crisis, a recent IEA estimate, for example, shows that 75 million people currently with access to electricity are no longer able to afford an extension of basic electricity services. This situation emphasizes the significance of expanding affordable clean energy access to help people cope with economic, health and climate challenges.

Under the IEA's Stated Policies Scenario, the perspective for renewables and efficiency was positive. Periods of low oil and gas prices have historically been challenging for clean energy technologies and energy efficiency. The recent rise in oil and gas prices, which continued in 2022, has, in contrast, increased focus on renewables and efficiency, when set alongside recovery plans in key economies. Recent price spikes and the Ukraine crisis have also increased uncertainty in global oil and gas markets, reviving energy security concerns for many net oil and gas importers.

In response to the COVID-19 pandemic, many governments have also strengthened policies to support energy-related SDGs, especially in the advanced economies.

In this context – and in light of the upcoming voluntary review at the UN High-Level Political Forum and 2023 SDG Summit – the SDG7 custodial agencies have encouraged the international community and policymakers to safeguard existing gains, be aware of the need for continued action on universal access to affordable, reliable, sustainable and modern energy, as well as keep a strategic focus on vulnerable countries.

Moreover, to align with the ambition of net zero by 2050 and the 1.5 °C scenarios, more policy support for renewable integration, electrification and de-carbonization is needed. The following highlights provide further insights into measures to accelerate the implementation of the SDG7 targets.

### SDG7.1.1 Access to electricity

Upholding the acceleration of access to affordable, reliable and modern energy as a key political priority is not just an end in itself; it is also a prerequisite for advancing many other SDGs.

It is important to consider the interlinkages between electricity access and other goals and strengthen synergies between them. Modern and dependable energy access in healthcare facilities and schools can improve health outcomes (SDG3) and education (SDG4), which are in turn crucial for poverty reduction (SDG1).

Governments, donors and development partners should increase cooperation and integrate their specialized knowledge to reach the most marginalized groups. As electricity access is integral to the empowerment of women (SDG5), policies should take on a gender-sensitive approach by increasing female leadership and voice. Other vulnerable populations, including those in fragile, conflict-prone and violence-prone areas, should also be integrated in an inclusive manner.

Effective implementation of policies and regulations should be accompanied by strong governance, institutional frameworks and improved data that promote transparency, ensure accountability and de-risk investments. This is so that energy access can continue to be at the core of industrial infrastructure driving innovative advances (SDG9), provide employment opportunities and support income generation (SDG8).

In anticipation of an increasing impact from climate change on energy access (SDG13), national energy access policies, strategies and planning should take place in the framework of the Paris Agreement. Renewable energy solutions should be integrated into the adaptation agenda to meet rising demand for energy.

In summary, policies for energy access should demonstrate ambitious political commitment, support the acquisition and use of improved data, enable new delivery models, expand access to finance and innovation and maximize the social and economic benefits of access. Above all, the most vulnerable populations should be placed at the forefront of all efforts to ensure that no one is left behind.

### **SDG7.1.2 Access to clean cooking technologies**

As seen in Nationally Determined Contributions (NDCs) and energy compacts, national clean cooking strategies and commitments can serve as opportunities or vehicles to pair political and financial commitments for scaled-up actions on clean cooking.

National governments should elevate their political ambitions and ramp up development aid and financing. This should be done while ensuring sustained programmes to improve the affordability and adoption of clean cooking for the most vulnerable people, particularly those in low- and middle-income countries. These efforts could be made with the support of non-state actors, such as companies, regional/local governments and non-governmental organizations. All actors could join together in committing to accelerate clean cooking access and to ensuring that no one is left behind.

Maximizing efficiency in planning and return on investment could be achieved by targeting priority geographical areas for the expansion of energy access and determining the least-cost technology to be deployed.

To successfully scale clean cooking solutions, women should be better represented in all processes, from policy decision-making to programme implementation. Moreover, policymakers and the public should engage in ongoing dialogues to enhance understanding of the wide ranging benefits of clean cooking.

### **SDG7.2 Substantially increasing the global share of renewable energy**

The global energy crisis has spotlighted concerns around stable and affordable energy supply which have been persistent challenges for developing countries for decades.

High fossil fuel prices worldwide have improved the competitiveness of solar photovoltaic and wind generation. Yet, soaring prices for energy and materials and shortages of critical minerals, semiconductors and other components pose potential roadblocks for the scale-up of renewable energy. Comprehensive and concerted policy strategies are thus key to diversifying and strengthening renewable technology supply chains. They are also key to sustainably accelerating the uptake of renewable energy in the electricity, heating and transport sectors and to creating value locally and regionally. Such frameworks should demonstrate political commitment through clearly defined short-, medium- and long-term renewable energy targets and strategies. Policy frameworks should also provide an effective institutional structure facilitating coordination between jurisdictions and sectors and should ensure streamlined, clear and transparent permitting procedures.

It is also essential to level the playing field for renewables. This could be done, for example, by phasing out fossil fuel subsidies while ensuring adequate support to vulnerable communities. In addition, dedicated measures are needed to shape positive socio-economic outcomes and promote equality within and across countries.

Improving data collection is also key to assessing renewable energy opportunities, long-term planning, improving investor visibility, and monitoring progress on reaching SDG7.2.1, as well as the ambitions of the Paris Agreement.

### **SDG7.B.1 Installed renewable electricity-generating capacity in developing countries**

Population growth, development patterns and evolving lifestyles continue to increase electricity demand in developing countries. Meeting this demand while phasing out fossil fuels requires a rapid increase in renewable power generation. Sub-Saharan Africa, the least developed countries, landlocked developing countries and the small island developing states remain farthest behind in progress, even within the group of developing countries. This trend underscores the urgent need to close the geographical gap to ensure a just and sustainable energy transition. All developing countries should have the capability to contribute to global climate change mitigation efforts and meet the SDG7 objectives. Comprehensive tailored policies and investments commensurate with the needs of developing countries, bolstered by strong international cooperation, are essential.

### **SDG7.3 Energy efficiency**

Improvements in energy intensity are below the rates needed to reach the SDG7.3 target. Continued shortfalls, especially in 2020, bear witness to the need for advanced government policies and increased investment in energy efficiency, in combination with the employment of innovative technologies. Governments have a range of policies available to them to enable this, including energy efficiency performance standards, financial incentives, market-based mechanisms, capacity-building initiatives and regulatory measures. Digitalization can also reshape the energy landscape, improve progress in energy efficiency and support deep de-carbonization.

Numerous national and subnational governments have already established policies to meet their energy efficiency goals. Energy efficiency standards and labels, building codes, energy efficiency and energy efficiency obligation schemes should be continually updated and expanded in coverage to reflect the latest technology and market trends. Analysis of long-established programmes has demonstrated that doing so can achieve substantial reductions in energy consumption, delivering annual savings of about 15 per cent.

Meanwhile, strong policy actions encourage investment in energy efficiency and catalyse transformative energy markets in favour of cleaner, more efficient operations.

Well-designed and well-implemented energy efficiency policies can deliver a range of benefits beyond energy and emissions savings. These include more energy security, lessened impacts from the vicissitudes of global energy prices and reduced energy bills for households and businesses. In addition, they bring job creation in energy efficiency retrofits and improved health, due to better air quality.

### **SDG7.A.1 International financial flows to developing countries in support of renewable energy**

Overall, achieving SDG7 by 2030 will require substantial investments in renewable energy. Redirecting investments from fossil fuels, increasing official development assistance (ODA) commitments, innovating funding mechanisms, making commitment reporting more transparent through robust international collaboration, and introducing structural reforms in international public finance are all necessary steps.

This will require strong political will and collaboration among global stakeholders. Beyond supporting investments in technologies, policymakers also need to work on implementing the enabling policy and regulatory framework for the energy transition, including for the wide-scale integration of renewables in energy systems, while putting the focus on social justice. Beyond investments in technologies, policymakers also need to invest in putting in place the required policy and regulatory framework to enable the energy transition. This includes deployment policies, policies that support the integration of energy transition-related technologies into the energy system, enabling policies that create to a conducive environment for the energy transition as well as structural and just transition policies.



# 3 A framework for a Just, Inclusive and Equitable Energy Transition: Advancing the SDGs and a net-zero, climate-resilient future



### Contributing organizations:

United Nations Department of Economic and Social Affairs (UNDESA)

United Nations Economic Commission for Europe (UNECE)

United Nations Economic and Social Commission for Western Asia (UNESCWA)

Sustainable Energy for All (SEforAll)

## KEY MESSAGES

The global energy transition provides a tremendous opportunity for accelerating the achievement of the SDGs and ensuring a net-zero, climate-resilient 'future we want'.

- Energy transition strategies must prioritize justice, equity, inclusiveness, and sustainability. This means ensuring a fair distribution of costs, benefits, and risks among stakeholders, while expanding economic opportunities, protecting livelihoods, and minimizing hardships. Social protection should be ensured, and the needs of vulnerable groups should be addressed.
- A framework for a just, inclusive, and equitable energy transition should focus on four objective clusters: universal energy access, achieving net-zero emissions, promoting SDG synergies, and leaving no one behind. Aligning the framework of objective clusters with the 2030 Agenda and the Paris Agreement can effectively inform and guide partnerships, transformative actions and the investments necessary to achieve the SDGs and a sustainable, inclusive and equitable future for all.
- Energy transition strategies can only succeed if we set strong ambitions, implement strategies effectively, forge transformational partnerships and establish robust accountability mechanisms that are fully aligned with the visions of the 2030 Agenda and the Paris Agreement. The four pillars of ambition, effective implementation, transformational partnerships and robust accountability work synergistically to drive progress and ensure the successful transformation of energy systems towards sustainability.

## CONTEXT: PRINCIPLES OF ENERGY TRANSITION

**The global energy transition provides a tremendous opportunity for accelerating the achievement of the SDGs and ensuring a net-zero, climate-resilient 'future we want'.** Energy is inextricably interlinked to climate change and many other SDGs. A deep and rapid energy transition is essential to realizing net-zero emissions by mid-century, a key requirement of the Paris Agreement and its goal of a 1.5°C limit on global warming. Achieving SDG7 – ensuring access to affordable, reliable, sustainable and modern energy – will also enhance and accelerate poverty eradication, provide food security, and improve health and education. It will also improve water and sanitation, boost prosperity and economy, conservation and the sustainable use of the oceans, as well as provide jobs, more sustainable transport, the empowerment of women and youth and further gender equality. The energy transition can enhance human well-being, health and human potential. It can increase resilience and drive innovation towards a sustainable society at all levels. It can also drive huge investments. At the same time, progress made towards achieving the other SDGs can assist in the achievement of SDG7. Meanwhile, vulnerabilities in existing energy systems have also been revealed by recent events, including the Ukraine conflict, COVID-19 and the climate crisis. This further highlights the need for energy transitions that not only address these weaknesses, but also enhance resilience to current and future shocks and crises.

**At the core of the energy transition should be the principles of justice, equity, inclusiveness and sustainability.** The energy transition should maximize benefits for people, the planet and prosperity. It means that while we must dramatically accelerate the transition to decarbonized energy systems to meet the 1.5°C objective, that transition should also ensure universal access to clean and modern energy services. The transition needs to expand economic opportunity, protect the livelihoods of local communities, minimize hardships for workers and protect the fragile state of our ecosystems.

The energy transition should also ensure social protection while minimizing trade-offs with other development priorities. An energy transition is by nature a participatory process that relies on the active engagement and contribution of all the relevant stakeholders – particularly those at-risk populations with the most to gain or lose from the energy transition. To leave no one behind, a people-centred approach is necessary that ensures the benefits and costs involved in the transformation of our energy system are distributed fairly and in a way that protects the most vulnerable in society.

**At present, however, there is no universally accepted definition of the energy transition that is fully aligned and consistent with the visions of the 2030 Agenda and the Paris Agreement.** Attention has been growing recently to the idea of a ‘just transition’ away from the incumbent fossil fuel energy paradigm and towards sustainable energy systems. This has led to some diverse definitions, understandings and views of what ‘energy transition’ and ‘just energy transition’ mean. These concepts now vary across different countries, regions and stakeholders. A wide range of policies, strategies and initiatives, all with a different focus, have been developed by governments and other stakeholders to facilitate their energy transitions, with these varying concepts increasingly being put into practice.

Against this backdrop, this paper proposes four interlinked principles as the foundations of an energy transition that is aligned and consistent with the visions of the 2030 Agenda and the Paris Agreement. The principles are:

- **Justice:** Energy transition should prioritize justice to ensure a fair distribution of costs, benefits and risks among different stakeholders. This includes addressing energy poverty and ensuring universal access to clean and affordable energy. It also involves considering the social, economic and environmental impacts of energy transition, actively engaging affected communities to prevent disproportionate burdens or injustices, and to adequately respond to their ambitions and expectations. Energy transitions must identify and address potential trade-offs and advance the rights of local communities, indigenous people and other vulnerable groups if they are to be just. This entails addressing not only the economic requirements of individuals but also safeguarding their profound needs associated with their identities, community belonging, cultures, and heritage preservation. While an overall net gain in jobs is expected in the energy sector due to the growth in renewables, strategic design of energy transitions should ensure adequate policies and programmes to minimize negative employment disruptions and maximize opportunities for new and quality jobs. These programmes and policies should include the training and reskilling of workers, among other measures.
- **Equity:** Energy transition has the potential to exacerbate existing inequalities, if not approached through the lens of equity. Energy transition should be intentionally designed to ensure equal opportunities and benefits for all individuals and communities. This involves providing inclusive access to job and entrepreneurship opportunities, essential services, innovative technologies, financial resources, knowledge and reliable data. A truly equitable energy transition must advance gender equality and empower women economically and socially. Additionally, prioritizing equity requires addressing the unique needs and challenges faced by vulnerable and historically marginalized groups, ensuring their full participation and inclusion in decision-making and implementation processes.

- **Inclusiveness:** Energy transition must involve diverse stakeholders and perspectives in its decision-making processes. This means engaging all stakeholders – including women, youth, local communities, indigenous peoples, marginalized groups and civil society organizations – in the planning, implementation and monitoring of energy transitions. This would enable more informed and effective solutions, help address the specific needs of different stakeholders and increase the representation of currently underrepresented groups, including women, youth, indigenous peoples and other minorities.
- **Sustainability:** Energy transition plays a vital role in enhancing sustainability across the three dimensions of sustainable development: the social, economic, and environmental. Without deep energy decarbonization, the 1.5°C goal of the Paris Agreement will fall quickly out of reach, jeopardizing the well-being of current and future generations. Energy transition is crucial for strengthening resilience, enabling societies to withstand and recover from shocks and stresses – such as climate change and geopolitical conflicts – while enhancing long-term sustainability. By promoting renewable energy sources and sustainable practices, we can help preserve our planet's resources, lands, waters and biodiversity, ensuring a healthier and more sustainable future for all.

**The energy transition is not a uniform, one-size-fits-all process and no two national energy transition pathways will be identical.** The most vulnerable countries – in particular, those in Africa, the least developed countries (LDCs), landlocked developing countries (LLDCs) and small island developing states (SIDS) – deserve special attention. While the specific path to the end goal depends on the individual needs and circumstances of countries and regions, the destination is common. All pathways must be just, equitable and inclusive to accelerate collective action in delivering the SDGs and the Paris Agreement.

## FROM CONCEPT TO PRACTICE: A FRAMEWORK FOR A JUST, INCLUSIVE AND EQUITABLE ENERGY TRANSITION THAT ENABLES THE SDGS AND A NET-ZERO, CLIMATE-RESILIENT FUTURE FOR ALL

**Increased ambition and transformative interventions are needed to accelerate just, inclusive, and equitable energy transitions.** Given the theoretical and indivisible nature of the four principles outlined above, as well as the diversity of goals and objectives to be achieved, an integrated, holistic, coherent and pragmatic approach to the transition is needed. Such an approach would facilitate a comprehensive strategy, planning and implementation encompassing all aspects of transition, putting the wellbeing of people and communities at the centre, and aiming for a long-term development, avoiding silos while strengthening coordination to ensure sustainability of the results. It would also identify practical actions that advance positive cross-sectoral synergies while reducing potential negative trade-offs. It would also ensure the participation and engagement of all stakeholders.

**An organizing framework for just, inclusive and equitable energy transition strategies should prioritize four objective clusters: universal energy access, net-zero emissions, SDG synergies/impacts and ensuring that no one is left behind.** The aim of such a framework is to help translate the principles of justice, equity, inclusiveness and sustainability into practical operational streams (see Figure 1). It is important to emphasize that the objective clusters are interlinked. Due attention should be given to the identification of interlinkages that are intrinsic to these clusters and to facilitating at every level the synergies between them.

**FIGURE 6.** A framework for just, inclusive and equitable energy transition that enables the SDGs and a net-zero, climate-resilient future for all

|                    |                | PRINCIPLES<br>Just/Equitable/Inclusive/Sustainable |          |                         |                    |
|--------------------|----------------|--|----------|-------------------------|--------------------|
| Objective-clusters |                | Universal Energy Access                            | Net-Zero | SDG Synergies & Impacts | No one Left Behind |
| Objective-clusters | Ambition       |  |          |                         |                    |
|                    | Implementation |  |          |                         |                    |
|                    | Partnership    |  |          |                         |                    |
|                    | Accountability |  |          |                         |                    |

To succeed in the transformation, energy transition strategies should not only fully align with the visions of the 2030 Agenda and the Paris Agreement, but also maintain consistency and demonstrate coherence with them in their ambition, implementation, partnership and accountability arrangements. The strategic focuses of just, inclusive and equitable energy transition strategies must be fully integrated into national development strategies and policies, including Nationally Determined Contributions (NDCs) and those related to the SDGs.

Aligning the framework of objective clusters with the 2030 Agenda and Paris Agreement can effectively inform and guide partnerships, transformative actions and the investments necessary to achieve the SDGs and a sustainable, inclusive and equitable future for all. The transformative shifts required for each objective cluster are summarized below:

- Universal energy access:** Energy access is a fundamental prerequisite for a just, equitable and inclusive energy transition. Without affordable, reliable and clean energy at a level and quantity that goes beyond basic levels of access and enables a decent life and productive activity, the transition cannot truly embody these principles. Energy access serves as the foundation upon which a fair and sustainable energy transition can be built, ensuring that no one is left behind and enabling individuals and communities to fully participate in the transition and its benefits.

At present, 675 million people still lack access to electricity, while 2.3 billion people rely on harmful cooking fuels. This compromises their development prospects and exposes them to substantial health risks. By ensuring universal access to electricity and clean cooking, we can unlock numerous co-benefits that significantly accelerate progress towards the SDGs and climate objectives. The global transition to clean cooking significantly enhances health and well-being, reduces emissions and preserves ecosystems.

Prioritizing and investing in renewable energy advances both energy access and energy transition while enhancing energy security and resilience. Understanding the modern energy minimum that meets country's development needs would also be important. Universal energy access must be a top political priority for all countries in their energy transition strategies.

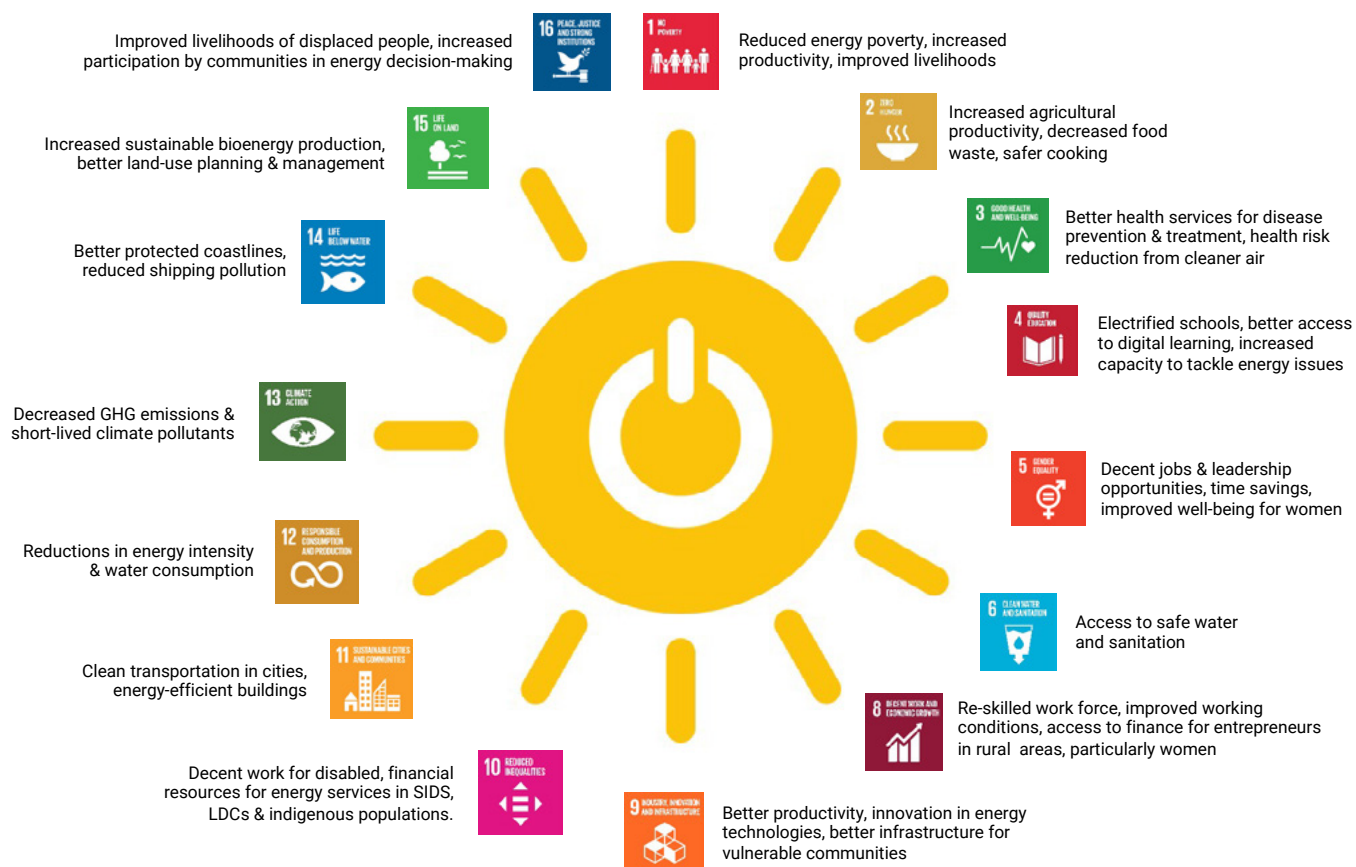
- **Net-zero emissions:** Net-zero is the essential cornerstone of an energy transition strategy that aims for decarbonization and the achievement of the 1.5°C goal of the Paris Agreement. Globally, limiting the temperature rise necessitates a 45 per cent reduction in greenhouse gas emissions (GHG) below 2010 levels by 2030 and the achievement of net zero emissions by 2050. To be compatible with next-zero pathways, annual global investments for renewable energy and energy efficiency need to triple towards 2030. However, currently, the deployment of renewable energy is lagging, particularly in the transport, industry, heating and cooling sectors. Global energy efficiency improvements must be significantly accelerated. We must expedite the phase-out of coal and other fossil fuels in a manner that is globally and domestically just, while strengthening the transition to renewables by increasing energy efficiency and encouraging behavioural change. High-income countries should lead international cooperation in phasing out fossil fuel subsidies and promoting carbon pricing. Efforts to push for energy transitions and discourage the use of fossil fuels must consider how they can not only avoid impeding development but also promote it to secure the well-being and resilience of all.

The focus should go beyond decarbonization alone, however. Ensuring energy security and resilience is crucial, requiring a diversified energy mix, aggressive renewable energy deployment and investment in storage technologies to enhance system stability. Responsible sourcing and sustainable extraction of critical raw materials and transparent and ethical supply chains are also essential. Cross-border connectivity and cooperation play a vital role in advancing collaborative efforts to facilitate the sharing of renewable energy resources, the optimization of infrastructure development and the strengthening of resilience. Promoting gender equality and women's economic empowerment are also critical. These are all essential elements in the creation of an equitable, resilient and sustainable energy future.

- **SDG synergies and impacts:** The SDGs embody the principles of justice, equity, inclusiveness and sustainability in the most comprehensive manner. Achievement of the SDGs should be placed at the heart of energy transition strategies in every country and region. Given the strong interlinkages between energy and other SDGs (see Figure 2), the achievement of SDG7 can produce significant co-benefits for other SDGs. These include: poverty eradication (SDG1); food security (SDG2 and some of the water-energy-food nexus of SDG6); advances in health and education (SDG3 and SDG4); gender equity and women's empowerment (SDG5); decent work opportunities and sustainable economic growth (SDG8 and SDG11); innovation (SDG9); and reducing inequalities and the principle of 'leaving no one behind' (SDG10).

Yet, while energy transitions can dramatically accelerate the achievement of these other SDGs, this will only happen if the policies and programmes for these transitions are deliberately designed to enable this linkage. Indeed, while the costs of transitioning to a sustainable energy system are outweighed by the societal, economic and environmental benefits, it is crucial to ensure that the energy transition is sustainably designed and implemented to enhance synergies and reduce trade-offs with other SDGs. As an example, energy transitions have the potential to improve livelihoods and create more jobs. However, some of the many new job opportunities created by the transition to clean energy will be in different areas from the jobs that will be lost, as fossil fuels decline. These new jobs may also require different skill sets. Governments therefore need to design transitions that minimize negative impacts on employment and maximize opportunities by leveraging existing strengths, infrastructure and skills.

**FIGURE 2. Examples of energy as an enabler of the Sustainable Development Goals**



Clear long-term strategies and the alignment of industrial and climate policies can stimulate private investment and foster innovation. They can also promote job creation in energy services, renewables, energy efficiency and green energy technologies.

- **No one left behind:** Participation and engagement are not just means to achieve efficient results, but development objectives in their own right. They empower citizens, women, youth, indigenous communities, local governments and civil society to lead the energy transition. Policy and programmatic decision-making processes for energy transition must therefore adopt an integrated, participatory and people-centred approach. Open and transparent dialogues of all stakeholders must also be fostered, allowing for public oversight of decision-making processes. This ensures equitable sharing of the transition's benefits, safeguards people and the planet and promotes prosperity.

In energy transition initiatives, citizens and communities should actively participate as decision makers, innovators and beneficiaries. The voices of younger generations are vital in shaping the energy debate, as they will inherit its consequences. Gender-transformative approaches should be integrated into all energy transition plans to close gender gaps and empower women. This can be done by, among other things, ensuring gender parity in the policy- and decision-making process and in employment. Clean energy policy design should prioritize equality and inclusion to prevent disproportionate impacts, avoid exacerbating inequalities and uphold human rights principles.



Meaningful engagement and consultation with vulnerable and marginalized groups, including children, youth, local communities, indigenous peoples and other vulnerable populations, is crucial in order to put their needs first. Multiple stakeholders, including businesses and civil society, must actively contribute to the transition's implementation.

**Prioritizing gender equality and addressing the needs of the most vulnerable groups is paramount across all objective clusters.** Gender equality is not only a matter of fairness, but also a prerequisite for sustainable development. Addressing the needs of the most vulnerable groups is crucial to avoid exacerbating existing inequalities during the transition. This involves providing targeted support, capacity building and access to finance. It also requires inclusive participation mechanisms to empower and include these groups in decision-making and benefit-sharing processes.

## DRIVING CHANGE: AMBITION, IMPLEMENTATION, PARTNERSHIP AND ACCOUNTABILITY

**Energy transition strategies can only succeed if we set strong ambitions, implement strategies effectively, forge transformational partnerships and establish robust accountability mechanisms that are fully aligned with the visions of the 2030 Agenda and the Paris Agreement.** The four pillars of ambition, effective implementation, transformational partnerships and robust accountability work synergistically to drive progress and ensure the successful transformation of energy systems towards sustainability.

- **Aligning ambition:** Every country and region should integrate achievement of the SDGs, as well as the net-zero objective of the Paris Agreement, into their energy transition strategies. Sustainable energy transitions can dramatically accelerate the development and the achievement of the SDGs, but only if they are designed to be fully just, inclusive and equitable.

The priority focuses of just, inclusive and equitable energy transition strategies must be fully integrated into national development strategies and policies. This includes their integration into NDCs and policies and strategies related to the SDGs. At the same time, a bottom-up decentralized approach should also be promoted to align to the maximum extent possible the energy transition strategies and national plans with capabilities, ambitions, and expectations of the affected people, communities, and regions. Development preferences are often shaped by powerful interests that determine the direction of change, the anticipated benefits and what trade-offs are acceptable and unacceptable. Addressing the uneven distribution of voice and power is thus critical to the success of societal transformation via the energy transition.

- **Accelerating implementation:** Implementing just, inclusive and equitable energy transition strategies to deliver on the SDGs and net zero requires bold action. It is a participatory process that requires long-term planning and well-designed holistic policies and regulations that engage all stakeholders. We must go beyond siloed decision-making in sectoral areas to facilitate positive cross-sectoral synergies and address negative trade-offs.

Only if strategic finance and investments in the energy transition by the public and private sectors – combined with smart policies – are explicitly aligned to the SDGs and the Paris Agreement can implementation be dramatically advanced. National governments must provide a stable policy framework to de-risk investment, encourage transparency and facilitate the seamless flow of private capital into energy transition investments. Governments must also shape markets with incentives

and regulatory measures, whilst also ensuring that such actions align with local needs. Private-sector entities must step up to invest throughout their value chain and demand innovation. Financial guarantees from multilateral institutions can support private investors in vulnerable countries. Civil society organizations also play a crucial role in promoting transparency. Capacity-building efforts, including training, education and knowledge sharing, are essential to maximize the co-benefits of the energy transition.

- **Strengthening multi-stakeholder partnership, international cooperation and collective action:** The 2030 Agenda and the Paris Agreement demand transformational shifts in how we think, plan and integrate energy into development priorities. As the SDGs span numerous sectors and places, sustained, systemic change in the global energy system cannot be achieved through a single-sector and single-goal approach. Such change requires holistic, multi-stakeholder partnerships calling for collective action at the local, national, regional, and global level.

A just, inclusive and equitable energy transition also demands that old partnerships be strengthened and new multi-stakeholder partnerships be built. This will encourage active participation and engagement among all relevant stakeholders in the planning and implementation of the energy-transition strategies. Those stakeholders include government, the private sector, civil society and affected populations. Regional and sub-regional cooperation is crucial to effectively address unique challenges in specific areas or communities.

As an example, *Just Energy Transition Partnerships (JETPs)* exemplify bold action and international collaboration, bringing together governments, businesses and civil society to address the challenges of transitioning to sustainable energy systems. JETPs aim to foster inclusive and equitable transitions, combining policy frameworks, financial support and knowledge sharing. Expanding JETP-type cooperation to many other countries can amplify the collective impact of stakeholders and create a global network of expertise and resources dedicated to advancing a just, inclusive and equitable energy transition.

Another example is the *Energy Compacts*, voluntary commitments of action by Member States and non-state actors, with specific targets and timelines to drive the progress on the achievement of SDG7 and net zero emissions. Over 185 Energy Compacts have been registered to-date, and these commitments contribute to Nationally Determined Contributions and achievement of the broader 2030 Agenda. The Energy Compacts offer a unified global platform facilitated by UN-Energy to bring together all energy commitments that raise ambition, accelerate implementation, foster mutual learning and matchmaking, and strengthen accountability for results. Implementation of these commitments is being tracked through transparent monitoring processes. Within a year of being launched, the Energy Compact community reported USD 46 billion towards commitments.

- **Strengthening accountability:** For an energy transition to genuinely uphold the principles of justice, equity, inclusiveness and sustainability, the transition should not be measured by GHG reductions alone. Rather, equal weight should be given to evaluating and addressing the transition's impact on the SDGs, alongside its climate impacts. Robust accountability frameworks establish clear indicators, reporting mechanisms and review processes to track the implementation of energy transition strategies. They enhance transparency, promote data-driven decision-making and enable course corrections when necessary. Accountability frameworks should foster trust among stakeholders, encourage participation and drive continuous improvement in energy transition efforts. Such frameworks should



present the disparities faced by different sectors of the population, such as women, children and youth, indigenous people, and urban and rural communities. Data access, collection and analysis – disaggregated by gender, age, ethnicity, disability and other relevant factors – will be essential, as will effective communications.

As examples, the *Energy for SDG Impact Framework* (see Annex 1) offers a useful approach that includes a set of potential energy-SDG nexus targets and indicators tailored to specific circumstances and conditions. It also helps with the design, implementation and monitoring of a just, inclusive energy transition as an enabler of the SDGs.

In addition, the *Multi-Tier Framework for Energy Access* (MTF) offers a tool for measuring energy access using a spectrum which ranges from Tier 0 (no access) to Tier 5 (the highest level of access). This can assist governments and other stakeholders in better designing and implementing the policies, programmes and investments necessary to accelerate energy access and a just, inclusive and equitable energy transition.

The recommendations of the *United Nations Secretary-General's High-Level Expert Group on the Net-Zero Emissions Commitments of Non-State Entities* also presents a guide for credible, accountable net-zero pledges. It also details what non-state actors need to consider through each stage of their progress towards achieving their net-zero ambitions and addressing the climate crisis, while avoiding net-zero greenwashing.

**We must step up and accelerate action to transform our economies and societies with the clear goal of achieving the SDGs by 2030 and net-zero emissions by 2050, while leaving no one behind.** Through the proposed framework for a just, inclusive, and equitable energy transition, we must facilitate accelerated SDG7 action while maximising momentum and impacts on the SDGs and the Paris Agreement. A regular stock-taking at the national, regional and global levels will be important in assessing the impacts of energy transition strategies on the SDG implementation and climate action. International cooperation must be dramatically enhanced to support energy transitions, especially for poorest and most vulnerable countries – to help them recover from the pandemic, as well as from ongoing conflicts, and the cost-of-living crisis. Global solidarity and international cooperation are central to building an inclusive, equitable and peaceful world.

## ANNEX 1: ENERGY FOR SDG IMPACT FRAMEWORK: EXAMPLES OF POSSIBLE INDICATORS OF AN INCLUSIVE, JUST ENERGY TRANSITION AND ITS IMPACT ON THE SDGS

| SDG   | INDICATORS  |
|---|---|
|    | <ul style="list-style-type: none"> <li>Percentage of low-income households spending more than or equal to 5% of their household expenditure to meet all of their energy demands (by region, gender of head of household, and indigenous populations)</li> <li>Percentage increase in income of marginalized communities due to access to electricity for productive uses (including rural farmers, artisans)</li> </ul>   |
|    | <ul style="list-style-type: none"> <li>Percentage increase in agricultural productivity due to electricity access in rural and low-income countries (e.g. solar-powered irrigation systems)</li> <li>Percentage of food waste due to electricity access for cold-chain food conservation</li> </ul>   |
|    | <ul style="list-style-type: none"> <li>Number (or percentage) of health-care facilities with access to reliable and sufficient supply of energy (by energy end-use, e.g., electricity, cooking)</li> <li>Percentage of population with access to clean energy for all basic end-uses in the community (cooking, heating, lighting), disaggregated by type of settings (household, school, health care facility)</li> </ul>  |
|  | <ul style="list-style-type: none"> <li>Percentage of educational institutions (school, university, vocational) with access to a reliable and adequate supply of electricity for all needs (lighting, digital learning, ICTs) (by type of institution, educational level, gender, income, and geographic area).</li> <li>Number (or percentage) of students in energy-oriented educational programmes (formal and non-formal education) (by type and level of institution, gender, and geographic area)</li> </ul> |
|  | <ul style="list-style-type: none"> <li>Share (%) of women employed in the energy value chain for technical jobs related to renewable energy, energy efficiency, and energy access</li> <li>Share (%) of women in senior positions in relevant ministries, national energy agencies, and programmes</li> </ul>   |
|  | <ul style="list-style-type: none"> <li>Percentage of improved sanitation facilities powered by electricity (by electricity source, gender, geographic location)</li> <li>Percentage increase of population with access to quality water services due to increase in access to electricity (by electricity source, geographic location, gender)</li> </ul>   |
|  | <ul style="list-style-type: none"> <li>Percentage of fossil fuel-sector employees reskilled for employment in sustainable energy (disaggregated by gender)</li> <li>Increase (%) in finance available for women-led energy businesses, disaggregated by geographic area, educational level</li> </ul>   |

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**SDG****INDICATORS**

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- Percentage in increase in productivity from improvements in energy efficiency
- Amount (USD) spent on R&DD programmes for rural/urban infrastructure and agriculture, based on international collaboration



- Percentage of people with disabilities employed by the energy industry in vocational or technical roles
- Increase in funding (%) to support sustainable energy deployment in small island developing states, least-developed countries, and Indigenous people's needs



- Percentage of clean transportation in cities (cars, public transportation) (disaggregated by energy source and technology)
- Percentage reduction in emissions via improvements in energy efficiency and/or increased reliance on renewable energy in buildings



- Percentage reduction in energy intensity by economic sector
- Percentage reduction in water (m3) withdrawn/consumed/discharged by energy source (and cooling technology) at the energy production facility level



- Reduction in GHG emissions from the energy sector
- Reduction in short-lived climate pollutants (black carbon, HFCs, methane, tropospheric ozone) from energy sector (disaggregated by economic sector, geographic location)



- Share of coastal and marine areas used for offshore and onshore oil and gas infrastructure
- Percentage reduction in emissions due to clean energy of shipping sector



- Percentage growth in the share of sustainable wood-forest harvesting for energy use
- Percentage change in arable land for agriculture due to land use for energy production (including for biofuels, ground-mounted solar parks, etc)



- Percentage of displaced people and affected communities with access to sustainable energy (disaggregated by energy end-use, gender, geographic location)
- Number of countries using environmental impact assessment and a participatory process in land use planning related to the production and distribution of energy, involving indigenous populations and other affected communities (disaggregated by geographic location, wealth quintile)

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Source: United Nations (2021), Theme report on enabling the SDGs through just and inclusive energy transitions.

## REFERENCES

This document extensively draws on the following:

United Nations (2021), [Theme Report on Energy Transition Towards the Achievement of SDG 7 and Net-Zero Emissions](#)

In addition, the following materials were reviewed to help inform the development of this policy brief.

African Development Bank (2022), [The African Development Bank's Just Transition Initiative to Address Climate Change in the African Context: Discussion Paper](#)

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# 4 Advancing SDG7 in Africa

### Contributing organizations:

United Nations Economic Commission for Africa (UNECA)

African Development Bank (AfDB)

Global Energy Interconnection Development and Cooperation Organization (GEIDCO)

Food and Agriculture Organization (FAO)

Swedish International Development Cooperation Agency (SIDA)

International Renewable Energy Agency (IRENA)

## KEY MESSAGES

The constraints on African economies and communities brought on by the continent's persistent energy access deficit have recently been made worse by the global energy crisis. This, in turn, has been brought on by the COVID-19 pandemic, the Russia-Ukraine conflict and the growing impact of climate change.

If Africa is to achieve the development goals outlined in the United Nations 2030 Agenda for Sustainable Development and the larger African Union (AU) Agenda 2063, the continent needs a radical shift in how it views energy. It also needs urgent action to address its long-standing energy access issues. Such action must include increased financial support from donor countries and multilateral institutions.

Many African countries are not on track to achieve the Sustainable Development Goal 7 (SDG7) target of ensuring everyone can access affordable, dependable, sustainable and modern energy. Access to reasonably priced and reliable modern energy services is also a crucial prerequisite for progress in many other development goals.

The following priority actions are therefore recommended over the next three years:

- The rapid implementation of comprehensive policies and creating a supportive environment in which Member States of the United Nations can make the most of their constrained public resources. At the same time, private sector investment must be mobilised to enable countries to make the most of their domestic resources. Member States should also take advantage of rapidly declining technology costs for renewable energy to advance the realisation of SDG7.
- The United Nations and other organisations should assist the region's countries in implementing a comprehensive framework that enables international and domestic private sector institutions to lead in bringing investments into the continent's energy transition and transformation. This would enhance the implementation of Nationally Determined Contributions (NDCs).
- The United Nations and its development partners should support Member States with bankable actions that promote SDG7 targets in developing their energy transition plans and enhanced implementation of their NDCs.
- UNECA, other United Nations entities and development partners should support Member States with knowledge and technology transfers to secure the deployment and sustainable operation of new energy systems.

- Development partners should support Member States in advancing power sector reform. These reforms should aim to accelerate African power utilities' progress towards creditworthiness to ensure the sustainability and financial viability of the sector. This will increase the utility-based provision and attract private sector participation in energy infrastructure.
- Development partners should support Member States in developing human capital in the electricity sector. This should include support for developing national skills and technical assistance for capacity building in specific areas. These areas should consist of renewable energy and the transmission and distribution infrastructure.

Furthermore, the following priority actions towards 2030 should also be taken:

- Member States should promote investment in strengthening the grid for greater efficiency and increased penetration of variable renewable power. This should include promoting utility-scale battery storage and cross-border interconnections to accelerate access to electricity through investment in Africa's power pools.
- Member States should step up efforts to tap low-hanging fruit in energy efficiency. This should occur in all sectors and capitalise on quick wins in cities, industries, buildings and transportation, recognising that energy efficiency gains are the most cost-efficient way to increase available generation capacity and enhance energy access.
- Member States and development partners should promote sharing good practices and experiences with grid and off-grid systems. This should include regulatory frameworks, business models and instruments to attract private sector investment.
- Development partners should support Member States in harnessing the energy transition as a catalyst for socio-economic development and local value creation. This should be done through industrial policies, including developing and implementing local content enhancement throughout the renewable energy value chain. Such policies should also include regional trade cooperation, skills and educational policies to create the workforce of the future and labour market policies to support decent, well-paying jobs.

## SUMMARY OF PROGRESS WITH SDG7

Efforts to achieve the SDG targets should be seen in the light of several factors. These include the changing climate, costing African economies an average of 5 per cent of their gross domestic product (GDP) annually. Some countries, however, are losing three times that amount.

At the same time, a massive energy access deficit on the continent must be closed urgently and at scale if the SDGs are to be achieved. The continent has an abundance of energy resources, both renewable and fossil, yet public resources are highly constrained. At the same time, there are low levels of private sector investment in Africa's energy transformation and limited support for recovery from financial hardship.

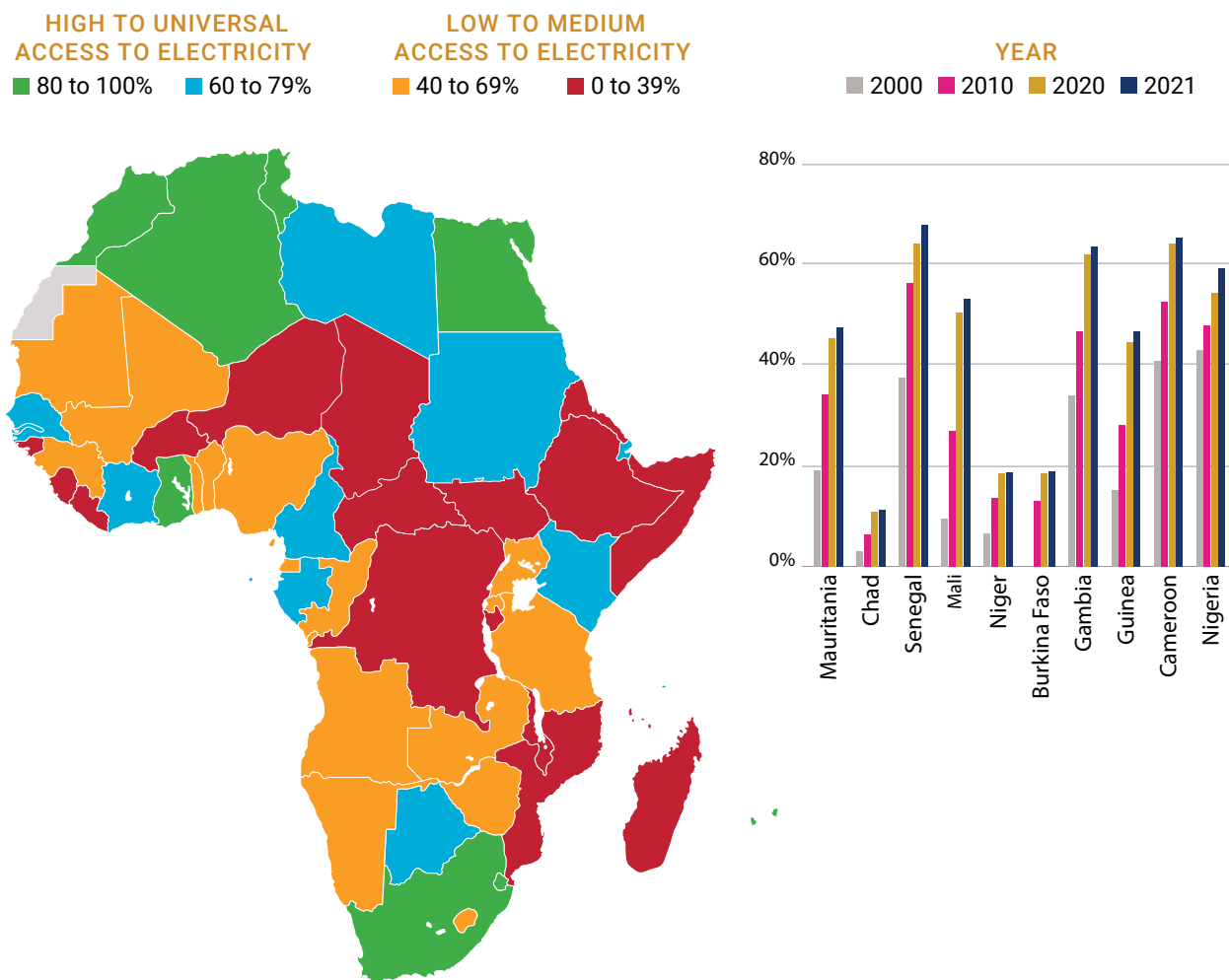


### SDG7.1.1: Access to electricity

According to “Africa Energy Outlook 2022”, produced by the International Energy Agency (IEA), the continent has made progress towards universal energy access in recent years. Electricity coverage increased from 44–56 per cent of the continent’s population between 2010 and 2023.

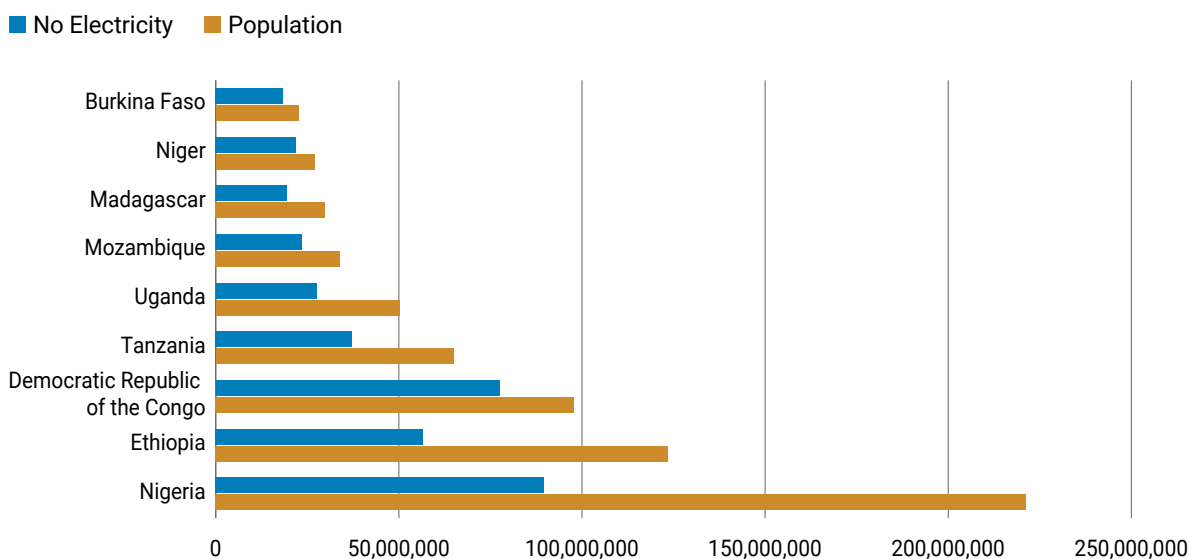
However, nearly 600 million Africans – equivalent to 43 per cent of the continent’s population – lacked access to electricity in 2021. Most of these people lived in rural areas, and indeed, despite numerous national initiatives, rural electrification remains a significant difficulty for most African nations. There is, therefore, a substantial urban-rural difference in electricity access, with electrification in urban areas averaging 82 per cent (78 per cent in sub-Saharan Africa) and rural areas electrified on average at 37 per cent (28 per cent in sub-Saharan countries). As most people only have basic Tier 1 access to electricity, it has no beneficial effects on economic growth.<sup>1</sup>

**FIGURE 1. Electricity access in Africa**



Source: UNECA analysis from data supplied by World Bank, 2023.

**FIGURE 2. African countries with most people without access to electricity, 2021**



Source: UNECA analysis based on data supplied by the World Bank, 2023, and [www.worldometers.info/world-population](http://www.worldometers.info/world-population).

While some countries – most notably Ethiopia, Ghana, Kenya, Rwanda and Uganda – have been steadily increasing their electrification rate and could achieve universal access, others – including Algeria, Cabo Verde, Egypt, Mauritius, Morocco, Seychelles, and Tunisia – are already at or nearly at the point of universal access.

In contrast, the countries with the most significant numbers of people without access to electricity are Malawi, Burkina Faso, Chad, Niger, Nigeria and the Democratic Republic of the Congo, in that order.

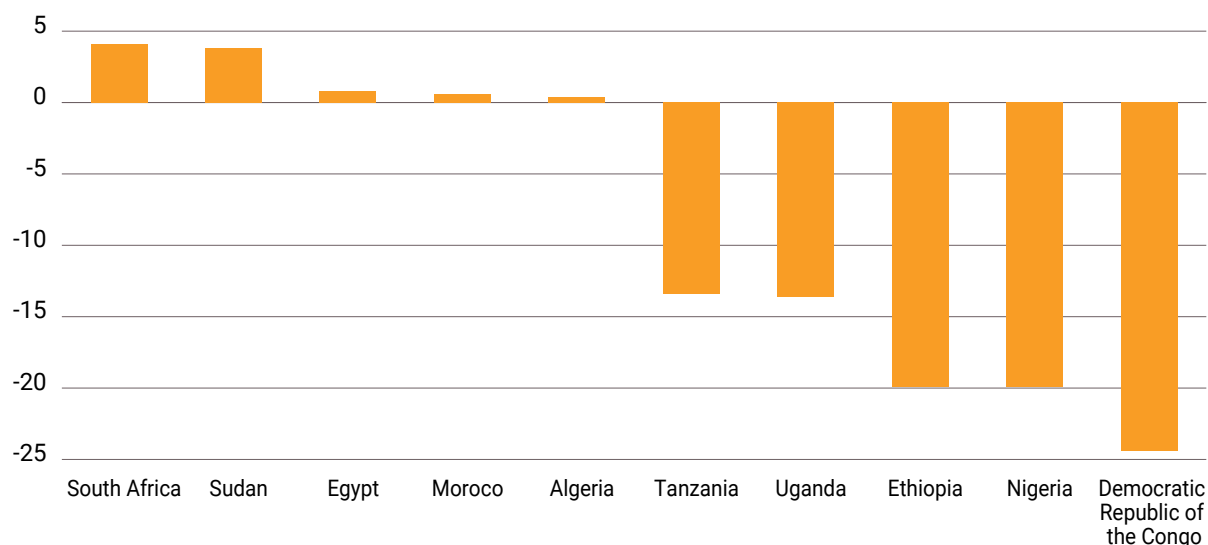
The continent's situation will worsen if existing policies and levels of ambition are maintained. At the current rate of progress, 595 million Africans will remain unconnected in 2030.<sup>2</sup> Nigeria, the Democratic Republic of the Congo and Ethiopia will need to receive the most attention to significantly increase the number of people with access to electricity. Moreover, other countries like Chad, South Sudan, Malawi, Burkina Faso, Niger, and Burundi will also need attention to ensure no one is left behind.

### **SDG7.1.2: Access to clean fuels and technologies for cooking**

Africa does poorly compared to all other regions except Oceania regarding access to clean cooking.<sup>3</sup> This is because more than 80 per cent of the population relies on traditional biomass for preparing food. This results in more than 500,000 annual deaths linked to indoor pollution.<sup>4</sup>

Between 2010 and 2020, the number of Africans needing access to clean cooking solutions increased by 170 million to around 937 million due to population growth and insufficient investment in clean cooking options. Globally, 3 billion people worldwide have no access to clean fuels or technologies for cooking.<sup>5</sup> In 41 African countries, including the Democratic Republic of the Congo, Nigeria, Ethiopia, Uganda, and Tanzania, the number of people without access increased significantly. Only 11 countries, including South Africa, Sudan, Egypt, Morocco, and Algeria, saw significant improvements in the number of people gaining access.

**FIGURE 3. Increase in population without access to clean cooking between 2010 and 2020**



Source: Data provided to UNECA by World Bank/ESMAP Tracking SDG7 Database, 2022.

The persistent shortage of clean cooking options in Africa is worse in rural areas. Indeed, except for a few nations, such as Algeria, Cape Verde, Gabon, Egypt, Mauritius, Morocco, Seychelles, South Africa, Sudan, and Tunisia, the gap between access rates in urban and rural areas still needs to be addressed.

According to an analysis by Sustainable Energy for All (SEforALL), there is a significant overlap between the lack of access to electricity and clean cooking solutions. Eighty per cent of the countries in the region that are challenged by access to electricity are also challenged by access to clean cooking, indicating persistent difficulties in achieving both goals in these countries.

### **SDG7.2: Increased share of renewable energy in the global energy mix**

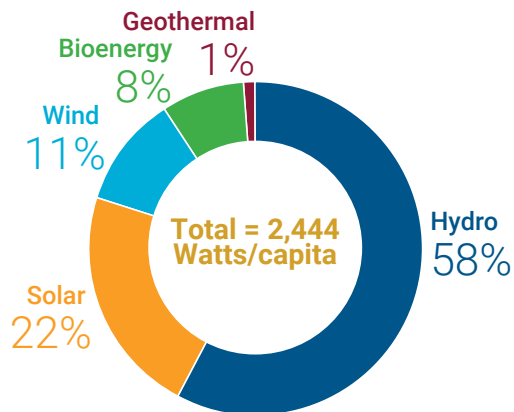
Due to the continent's heavy reliance on the usage of solid biomass, the proportion of renewable energy in total energy consumption increased slightly, from 56.6 per cent to 57.1 per cent, between 2010 and 2020.

This proportion was significantly higher than the global average of 19.1 per cent. Yet, Africa has the lowest share of modern renewable energy compared to other continents and the world, at 7.6 per cent of total final energy consumption (TFEC). Meanwhile, total installed renewable power capacity (including hydropower) rose by 107 per cent between 2010 and 2020, from 27 gigawatts (GW) to 56 GW.

In Africa, wind and solar power have dominated non-hydro renewable energy generation and installed capacity.

Between 2010 and 2020, wind power capacity increased from 865 megawatts (MW) to 7.3 GW, while solar power capacity increased from a meagre 233 MW in 2010 to 11.6 GW in 2021. Although natural gas and coal still account for most of Africa's power mix, the proportion of renewable energy sources in installed capacity climbed from 19.2 per cent in 2010 to 22.5 per cent in 2020. In terms of generation capacity, this

**FIGURE 4. Installed renewable electricity-generating capacity (watts per capita) in Africa, 2021**



Source: UNECA analysis based on data supplied by the World Bank, 2023.

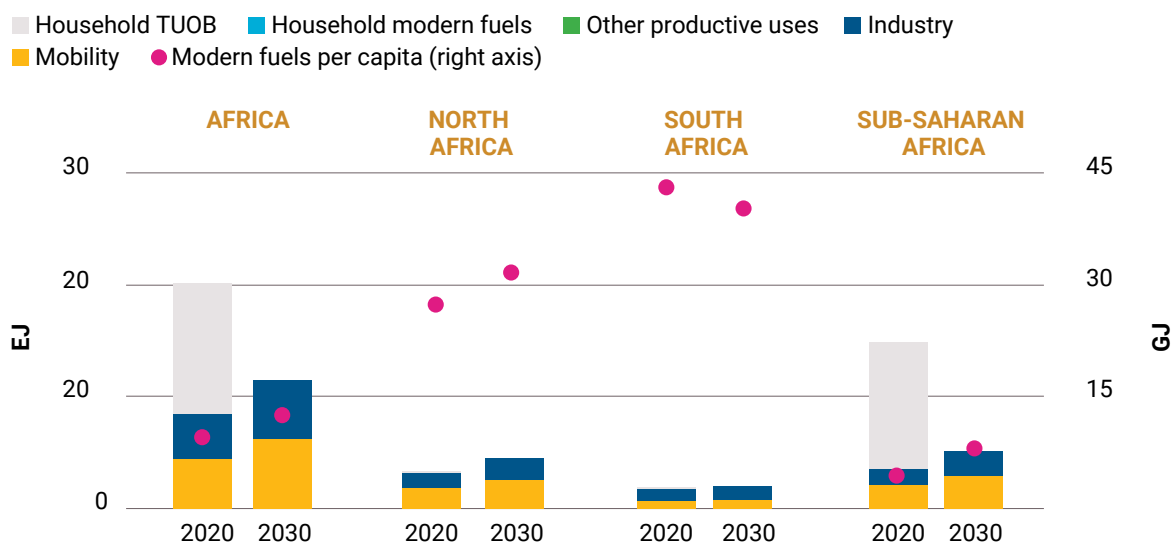
proportion rose from 16.2 per cent to 21.2 per cent over the same period. Compared to other regions, however, these shares remain relatively small.

**SDG7.3: Energy efficiency improvement**

Africa is the least energy-efficient in the world, followed by Asia. Between 2010 and 2019, Africa’s energy intensity decreased slightly, from an average of 5.95 megajoules (MJ) per constant US dollar (US\$) of GDP to 5.52 MJ/US\$ of GDP – a change of only 0.83 per cent.

Africa’s over-reliance on biomass for household use contributed to the continent’s high energy intensity. This usage consumes most of the continent’s primary energy supply after manufacturing and transportation.

**FIGURE 5. Primary energy consumption in Africa by sector, fuel type and change in TFEC by fuel and sector in 2020 and 2030**



Source: IEA Africa Energy Outlook 2022.

### 7.A.1 International public financial flows to developing countries in support of renewable energy

Public international financial flows to Africa totalled US\$ 4.1 billion in 2021. This was up 22 per cent in 2020, when these flows had declined to their lowest levels since 2012 (Figure 6). This decline was partly due to the COVID-19 pandemic and partly a continuation of a declining trend that began after the 2017 peak of US\$ 10.2 billion.

The increase in 2021 suggests that donors are stepping up their commitments after adjusting to the initial shocks from the pandemic and other geopolitical events. Yet, commitments in 2021 are still below the pre-pandemic average of US\$ 5.2 billion per year between 2010 and 2019. Moreover, the increase in 2021 is mainly concentrated in East Africa, while other regions continued to decline in flows. Indeed, in East Africa, solar commitments rose almost five-fold between 2020 and 2021.<sup>7</sup>

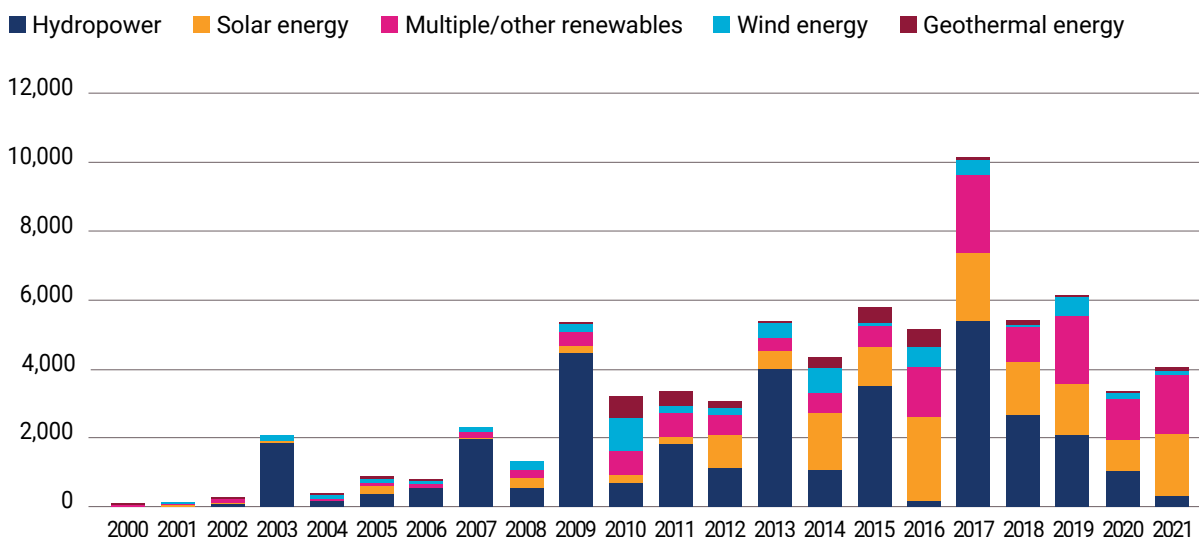
## PROGRESS AND PROSPECTS WITH SDG7 INDICATORS

Since the start of SDG tracking in 2015, it has been clear that meeting the SDG goals would necessitate massive efforts by African governments, development partners and other stakeholders. While some milestones have been achieved, the gap in renewable energy investments between Africa and other parts of the world is increasing.

Given the current political climate, over 670 million people worldwide will continue to lack access to electricity, with 600 million residing in Africa. Low access rates pertain in the Democratic Republic of the Congo, Nigeria, Uganda, and Sudan. Similarly, by 2030, about 1 billion of the 2.1 billion people without access to clean cooking options worldwide are expected to reside in Africa.

More positively, substantial progress has been made in proactive policy development, energy infrastructure resource mobilisation and enhanced independent power production. Renewable energy investments are beginning to bear fruit in several countries.

**FIGURE 6. Annual international public financial commitments to renewable energy in Africa, by technology, 2000–2021**



Source: IRENA and OECD 2023.

However, the continent is not on track to meet all its SDG7 targets. Africa must look beyond 2030 as a goal while using 2030 to accelerate planned initiatives.

## KEY CHALLENGES

- **Insufficient action from local and foreign governments and a lack of international collaboration.** These remain significant barriers to sustainable energy and cooking solutions in Africa. In addition, an over-reliance on private actors who perceive investments as high risk – and therefore come at high cost – means that the poorest people often pay the most for basic energy. Therefore, more public policies and funds are needed for energy access, reliability and affordability.
- **New economic, social, and political challenges have been negatively impacted.** These challenges include the COVID-19 pandemic, Russia’s invasion of Ukraine and growing debt burdens.
- **Higher prices for oil and oil products further restrict the fiscal space available in energy net-importing countries.** With this space already severely circumscribed, these higher prices result in a balance of payment issues for most African nations that rely heavily on imported refined petroleum products.
- **Balance of payments problems further reduce the availability of already-scarce public resources.** These resources are also required to mobilise the enormous sums necessary to bridge development gaps in energy and other sectors and promote economic growth while mitigating climate change. In contrast, Africa’s oil-exporting countries have benefited from higher oil prices. To some extent, they have also benefitted from renewed interest from Europe in natural gas and hydrogen from Africa to compensate for supply cuts in Russian gas. This has also given rise to increased debate within African countries over their right to develop their fossil fuels in the face of expected demand from Europe, in contradiction to parallel calls to curb investment in new fossil fuel production.<sup>8</sup>
- **High cost of capital and lack of affordability among users, weak grids, and limited baseloads remain major hindrances to access.** The ramping up of renewables from a wealth of solar and wind power resources is severely hampered by persistent underinvestment in Africa’s energy systems, including renewable-based power generation, power grids, interconnections, and electricity generation capacity. These have high transmission and distribution losses due to the technical state of many African power grids, which sometimes also suffer from design flaws and a lack of preventive maintenance, further harming supply security. Sub-Saharan Africa, for example, received less than 1.5 per cent of the amount invested in renewable energy globally between 2000 and 2020.<sup>9</sup>
- **A low level of investment in mini-grids and individual home systems.** These technologies are increasingly viewed as practical solutions to the problems associated with rural electrification. Yet, in 2021, investments in off-grid companies and projects across Africa were just US\$ 558 million, a figure far short of that necessary to achieve universal access to energy.<sup>10</sup> While the bankability of these projects and companies has significantly improved in the last decade, sufficient policy support must exist to support projects that are not bankable but are essential for development if investments are to reach the necessary scale and scope to meet the SDG7 targets.<sup>11</sup>

- **Policy and regulatory barriers make investment unattractive to the private sector.** Reducing Africa’s energy deficit requires increased funding from the private sector, which in turn requires a higher flow of public investment, domestic and international, as well as a favourable business climate and increased investor confidence. To make this possible, nations should dedicate more public funds to reducing the energy deficit. They should also increase their efforts to eliminate legislative and administrative obstacles to investment by ensuring the electricity market is open, attractive and prepared for private-sector investment.
- **Inadequate public intervention to ensure the electricity sold is affordable to end users.** This covers policy support for investments in clean cooking fuels, technology, transmission, distribution and on- and off-grid power systems. Innovative finance tools, contemporary procurement procedures – such as feed-in tariffs and auctions – financial guarantee programmes, and financially stable power producers and system operators are all essential to an enabling environment, whenever applicable. In Africa, these measures are either largely absent or need to be stronger. In some cases, such devices might not be an option, creating a need to look beyond the existing pool of solutions.
- **A lack of cost-reflective tariffs in most African countries.** Energy tariffs are sometimes below cost-reflective levels or below the electricity costs to produce, transport and distribute to customers. Service providers are rarely fully compensated for this revenue shortfall, which has several adverse effects. These include a lack of incentive and financing to connecting new consumers; a high off-taker risk for private electricity generators; and, consequently, underinvestment in the generation and grid. In cases where cost-reflective tariffs are not affordable to users, public funds can be mobilised to support a system of subsidies, for example.
- **Geopolitical challenges in balancing access, development and the transition.** As the momentum towards net-zero greenhouse gas (GHG) emissions has grown, calls to rapidly phase out fossil fuel investment have also increased. As a result, short-term investments in energy access in Africa will likely become even scarcer. As outlined in the AU’s “Common Position on Energy Access and Just Energy Transition” and the “Kigali Communique on a Just and Equitable Energy Transition,”<sup>12</sup> “African nations have received growing calls for a practical strategy utilising all the continent’s energy resources. This is seen as the best way to swiftly close the long-standing energy access deficit and gaps in development while concurrently stepping up efforts toward a green energy future. In this context, the increased natural gas investment could provide flexibility for variable renewable energy alongside a wide range of other instruments, including demand side management, storage, interconnection and sector coupling. At the same time, the use of liquefied petroleum gas (LPG) as one of the cleaner energy sources to replace traditional biomass for cooking can also be promoted. Critically, this would avoid saddling African countries with stranded assets and uneconomic and expensive infrastructure.
- **Emerging human rights and land tenure issues.** Much of the land needed for further renewable energy deployment in Africa will not be built on empty land but on land inhabited by people, many of them nomads/pastoralists and other Indigenous groups. How this land is being claimed, leased and sold is often not very transparent and, more often than not, involves evicting people from their ancestral homes. Therefore, sustainable energy development in Africa must acknowledge these problems and find practical solutions and safeguards. The Lake Turkana Wind Farm in Kenya exemplifies the worst practice. This project was implemented under very disadvantageous contract terms for the East African nation, leading to the World Bank leaving the project and significant human rights violations.<sup>13</sup>

## CLOSING THE GAP TO ACHIEVE SDG7

### Focus on quick wins

Efforts to increase energy and power connectivity must be expedited. Such measures include the African Single Electricity Market (AfSEM) and the AfDB's High Five strategy. The Programme for Infrastructure Development in Africa (PIDA) has also launched a second priority action plan (PAP) for infrastructure development in Africa, known as PIDA-PAP II, for 2021–2030. Numerous ground-breaking initiatives accompany these efforts at the national and regional levels, such as the Continental Power System Master Plan and the Africa Working Group of the Green Grids Initiative.

African governments have realised the need to update their legislative and regulatory systems and have implemented initiatives and incentives to encourage investment in cutting-edge power sector projects.

Although projects by development finance institutions (DFIs) and multilateral programmes are crucial in bridging the energy gap, their implementation typically requires a lot of time and resources. This is because they depend on specific structures that are only possible with the help of these organisations. More locally driven sector growth is still required, supported by the right tools and resources. The good news is that independent power projects (IPPs) are Africa's fastest-growing energy sector structures. As private sector investors become comfortable with the continent's liberalising power markets, IPPs can attract more investments.

### Address and prioritise clean cooking

The SDG7 target of access to clean cooking fuels and technologies still needs to be addressed in many African countries, despite its importance to the livelihoods of most of the population.

While there was a slight improvement in clean cooking technologies across Africa after 2010, this has now regressed, owing mainly to indifference at the regional and national levels. Even where clean cooking strategies exist, implementation could be more robust and provided with more finance – without which, even modest gains are hard to obtain. Raising the priority, profile and ambition of clean cooking goals will help governments attract the development financing necessary to support this SDG7 target.

Policies and financing for clean cooking should therefore be integrated into poverty alleviation and health strategies at the national level. The gender element is also crucial, as engaging women in clean cooking businesses will boost results and make such endeavours more lasting. Addressing this should range from awareness-raising campaigns to directly engaging women as champions and entrepreneurs.<sup>14</sup>

### Increase national and regional private sector participation in the clean energy supply

Between 2000 and 2020, Africa attracted just 2 per cent of global renewable energy investment.<sup>15</sup> Moreover, between 2013 and 2020, about 56 per cent of the renewables investment in Africa came from private sources, compared to a global average of 75 per cent.<sup>16</sup> Africa's private sector and capital need to be mobilised to lead the clean energy transition on the continent, while at the same time, more public investment is also required. African governments must collaborate with the private sector and other stakeholders and utilise local and international resources to accelerate energy investments, particularly in clean cooking, where the most significant deficit exists.<sup>17</sup>



### Increase investment in renewable energy technologies

International public funding flows must go beyond the need to promote clean and renewable energy investment in developing nations, particularly given the declining trend in global public flows and limited private investment described above.

Multilateral development banks (MDBs) must prioritise boosting financial flows to Africa and transforming lending. They must facilitate concessional financing to Africa and strategically employ it to leverage private capital better to mobilise the envisioned investment. In this regard, development partners must strengthen and scale up existing funds and facilities with a track record of delivery, such as the Sustainable Energy Fund for Africa (SEFA). This fund includes the requirement for the size of domestic financial markets to double.

Emerging sources of capital, such as climate finance, institutional investment and carbon credits, can bring more significant international financial flows to bear. Cross-cutting investment hazards, including high debt levels, continue to be complicating factors.<sup>18</sup>

### Accelerate African energy interconnection

Despite possessing abundant clean energy and rich mineral resources, power shortages mean many African countries can only engage in primary mining of those minerals, not their deep smelting and processing.

Meanwhile, a lack of technology and capital hinders the development of major clean energy projects, further constraining Africa's power supply.

Therefore, accelerating African energy interconnection is a fundamental solution to Africa's energy dilemma. Developing large hydropower bases in the Congo River basin and significant wind and solar power bases in northern and southern Africa requires strengthening domestic power grids and support for cross-border power interconnection. This would create an Africa-wide 'power highway' and ensure a clean and sustainable power supply across the continent.

Based on African energy interconnection, the co-development model of electricity, mining, metallurgy, manufacturing, and trade will leverage the advantages of clean energy and mineral resources. Under this model, renewable energy will support mining, metallurgy processing and various industries. In this way, it will support trade transformation from exports of primary products to higher value-added products. An integrated electricity-mining-metallurgy-manufacturing-trade industrial chain will be created, advancing Africa's industrialisation, electrification and low-carbon, sustainable development. In this model, power producers, transmitters and consumers jointly invest in clean power generation and transmission along with mineral and industrial projects to share benefits and risks. With a good return on project investment, market-oriented financing can follow, guaranteeing project implementation and boosting economic prosperity and sustainable development.

## PRIORITY ACTIONS TO ACCELERATE SDG7 IMPLEMENTATION

**Step up action to support energy access and clean cooking solutions for all.** Due to a significant energy access gap, there will be a growing need for clean, affordable energy in African nations in the coming decades. Africa has a unique opportunity to transform these challenges into unprecedented development opportunities, placing the continent at the centre of the global energy transition.

**Accelerate power sector reforms.** Efforts should also focus on advancing power sector reform, including supporting cost-reflective tariffs. Sector reforms should aim to accelerate moves by African power utilities towards creditworthiness, thus ensuring the sustainability and financial viability of the sector. This will increase the utility-based provision and attract private sector participation in energy infrastructure. Power sector reforms – such as better regulation, incentives, market development and business support – are also needed to realise Africa’s vast potential for off-grid or decentralised renewable energy technologies.

**Enhance the linkages between energy and agri-food systems.** Investing in renewable energy solutions and adopting new, holistic approaches can directly advance energy and food security. These holistic approaches include integrated food-energy systems and the water-energy-food-land nexus. These minimise competition and leverage synergies in water and land use while also contributing to job creation, gender equality and climate resilience and adaptation.

**Use Africa’s vast mineral resources to anchor the energy transition.** The push for net zero and the global energy transition allow Africa to be at the forefront of the electric future. Several countries on the continent each possess critical minerals required for the transition. For instance, the Democratic Republic of the Congo supplies more than 70 per cent of the world’s cobalt but accrues only 3 per cent of its value.

In the longer term, by employing the continent’s plentiful renewable energy resources, nations like the DRC, Zambia, South Africa, Morocco, Madagascar and Zimbabwe could develop production facilities to transform essential minerals into battery precursors by leveraging the Africa Continental Free Trade Area. They could move away from merely providing raw materials to supplying and exporting higher-value products. According to a multi-partner-backed study in 2021 by Bloomberg New Energy Finance (BNEF), battery precursors could be manufactured in the DRC three times cheaper than in the United States and with 30 per cent fewer emissions than in current supply chains based in China.<sup>19</sup>

**Strengthen safeguards for human rights and the environment.** As the continent develops those mineral resources during the energy transition and deploys utility-scale renewable energy, increasing safeguards for human rights and the environment is also crucial.<sup>20</sup> This includes a reform of land tenure rights, recognition of the rights of indigenous peoples and local communities over traditionally held land, meaningful consultation processes and the application of free, prior and informed consent (FPIC). It also includes stricter standards for social and environmental impact assessments and the protection of environmental defenders. Only if the energy transition protects these rights and avoids, many of the past pitfalls of the fossil fuel and other extractive industries can such activities promote a just transition.

**Take the opportunity to invest in pursuing stronger regional power transmission interconnectors, power pools, and trading.** Many African countries are working to improve their power infrastructure and grid connectivity via regional initiatives that aim to increase the cross-border electricity trade. The equalising of resource access and providing affordable and dependable electricity for the industry can benefit significantly from a linked African power system.

Increasing off-grid and micro-grid renewable energy solutions to meet household electricity demand could free up traditional grid energy at the pool level for industrial uses. Interconnecting the continent’s power supply through these power pools can efficiently integrate green energy into the continent’s overall energy consumption. Countries must still build, rehabilitate and strengthen national grids for regional integration and renewable energy absorption.

**Benefit from green jobs.** By preserving or regenerating ecosystems and biodiversity, lowering resource consumption and inefficiency, decarbonising the economy and minimising or eliminating all forms of waste and pollution, green jobs contribute to a sustainable environment.

Green jobs produce or support people's well-being while generating or providing goods or services that benefit the environment, such as green buildings or clean transportation. They could also be jobs that contribute to more environmentally friendly processes, like lowering water consumption or enhancing recycling systems.<sup>21</sup>

Africa, however, only accounts for 3 per cent of all the renewable energy jobs worldwide.<sup>22</sup> Far-sighted industrial policies will therefore be necessary to help the continent overcome historically ingrained structural dependencies, create local and regional value, and move supply chains towards more significant value-added. The labour market, skills and education policies will also be crucial. This includes technical and vocational education and training, public-private partnerships for skills delivery, national skills standards and diversity and inclusion measures that can ensure opportunities for all.

**Increase funding and finance.** Africa, home to many of the world's poorest countries, needs funds, not only finance in the form of loans. The continent also needs government structures enabling domestic businesses to access finance, such as the Green Climate Fund and the Loss and Damage facility. Other measures could include increasing the international community's role in facilitating domestic banking products and providing debt relief to over-indebted countries.

**Enhance climate action through SDG7.** Two African countries still need to ratify the Paris Agreement, while 47 have already submitted updated NDCs. These national goals include clean energy initiatives regarding end uses and technology selection. Countries can improve the number of bankable clean energy initiatives in their NDCs with international help, improving sustainable energy access. Indeed, increased access to finance is a precondition for enhancing sustainable energy uptake at the required pace.

## ENDNOTES

- <sup>1</sup> In the multi-tier framework (MTF) concept, electricity access refers to sufficient electricity for all required power demands across households and community institutions. This supply must be reliable, of good quality, inexpensive, legal, convenient, healthy and safe.
- <sup>2</sup> See: [www.worldbank.org/en/news/press-release/2023/02/26/solar-mini-grids-could-sustainably-power-380-million-people-in-af-frica-by-2030-if-action-is-taken-now](http://www.worldbank.org/en/news/press-release/2023/02/26/solar-mini-grids-could-sustainably-power-380-million-people-in-af-frica-by-2030-if-action-is-taken-now), accessed on 13 May 2023.
- <sup>3</sup> The WHO defines clean cooking fuels and technologies at the point of use as solar, electric, biogas, natural gas, liquefied petroleum gas (LPG) and alcohol fuels, including ethanol.
- <sup>4</sup> See: [www.iea.org/reports/africa-energy-outlook-2022](http://www.iea.org/reports/africa-energy-outlook-2022), accessed on 13 May 2023.
- <sup>5</sup> [www.seforall.org/clean-cooking](http://www.seforall.org/clean-cooking) accessed on 14 June 2023.
- <sup>6</sup> Energy intensity is a measure of the energy inefficiency of an economy. It is calculated as units of energy per unit of GDP. High energy intensities indicate a high price or cost of converting energy into GDP. Low energy intensity indicates a lower price or cost of converting energy into GDP.
- <sup>7</sup> This is according to data supplied to UNECA by IRENA and the OECD, 2023.
- <sup>8</sup> See, for example, [www.theguardian.com/world/2022/aug/01/african-nations-set-to-make-the-case-for-big-rise-in-fossil-fuel-output](http://www.theguardian.com/world/2022/aug/01/african-nations-set-to-make-the-case-for-big-rise-in-fossil-fuel-output) accessed on 19 May 2023
- <sup>9</sup> See IRENA/CPI 2023, "Global landscape of renewable energy finance 2023", IRENA/Climate Policy Initiative, Abu Dhabi, [www.irena.org/Publications/2023/Feb/Global-landscape-of-renewable-energy-finance-2023](http://www.irena.org/Publications/2023/Feb/Global-landscape-of-renewable-energy-finance-2023), accessed 9 June 2023.
- <sup>10</sup> See footnote nine above.
- <sup>11</sup> [www.irena.org/Publications/2023/Feb/Global-landscape-of-renewable-energy-finance-2023](http://www.irena.org/Publications/2023/Feb/Global-landscape-of-renewable-energy-finance-2023).
- <sup>12</sup> See <https://au.int/en/pressreleases/20220722/africa-speaks-unified-voice-au-executive-council-adopts-african-common>, accessed 9 June 2023.
- <sup>13</sup> See Anne Waters-Bayer and Hussein Tadicha Wario (2022), "Pastoralism and large-scale Renewable energy and green hydrogen projects: Potential and threats," Heinrich Böll Stiftung/Brot für die Welt, [www.boell.de/en/2022/05/18/pastoralism-and-large-scale-renewable-energy-and-green-hydrogen-projects](http://www.boell.de/en/2022/05/18/pastoralism-and-large-scale-renewable-energy-and-green-hydrogen-projects), accessed 9 June 2023, and Right Energy Partnership (2021), <https://rightenergypartnership.org/the-impact-of-the-lake-turkana-wind-power-project-on-kenyas-indigenous-peoples/>, accessed 9 June 2023.
- <sup>14</sup> See Jan Corfee-Morlot and others (2019), "Achieving Clean Energy Access in Sub-Saharan Africa", OECD/ENEP/World Bank, [www.oecd.org/environment/cc/climate-futures/case-study-achieving-clean-energy-access-in-sub-saharan-africa.pdf](http://www.oecd.org/environment/cc/climate-futures/case-study-achieving-clean-energy-access-in-sub-saharan-africa.pdf) accessed 9 June 2023.
- <sup>15</sup> See IRENA (2022), "Renewable energy market analysis: Africa and its regions", IRENA, Abu Dhabi, [www.irena.org/-/media/Files/IRENA/Agency/Publication/2022/Jan/IRENA\\_Market\\_Africa\\_2022.pdf?rev=bb73e285a0974bc996a1f942635ca556](http://www.irena.org/-/media/Files/IRENA/Agency/Publication/2022/Jan/IRENA_Market_Africa_2022.pdf?rev=bb73e285a0974bc996a1f942635ca556), accessed 9 June 2023.
- <sup>16</sup> See IRENA/CPI 2023, "Global landscape of renewable energy finance 2023", IRENA/Climate Policy Initiative, Abu Dhabi, [www.irena.org/Publications/2023/Feb/Global-landscape-of-renewable-energy-finance-2023](http://www.irena.org/Publications/2023/Feb/Global-landscape-of-renewable-energy-finance-2023), accessed 9 June 2023.
- <sup>17</sup> One example of private sector funding for clean cooking is the Spark+ Africa Fund. It is a US\$ 70 million impact investment fund that offers next-generation, distributed cooking energy solutions to the mass market in sub-Saharan Africa. Spark+ is the first fund of Luxembourg-based Spark+ General Partner Sàrl, a joint venture between the fund's exclusive advisor, Swiss impact investment advisory firm Enabling Capital (EQ) and Netherlands-based foundation Stichting Modern Cooking (SMC). The fund invests debt and mezzanine capital in leading companies throughout the value chains of various cooking fuels, including LPG, biofuels such as ethanol and pellets, electric appliances and efficient biomass stoves (see [www.sparkafricafund.com](http://www.sparkafricafund.com), accessed 9 June 2023).
- <sup>18</sup> See IEA (2022), "Africa Energy Outlook 2022", IEA, Paris, <https://iea.blob.core.windows.net/assets/6fa5a6c0-ca73-4a7f-a243-fb5e83ecfb94/AfricaEnergyOutlook2022.pdf>, accessed 9 June 2023.
- <sup>19</sup> See [www.uneca.org/stories/producing-battery-materials-in-the-drc-could-lower-supply-chain-emissions-and-add-value-to](http://www.uneca.org/stories/producing-battery-materials-in-the-drc-could-lower-supply-chain-emissions-and-add-value-to), accessed 9 June 2023.
- <sup>20</sup> See Colombia Center on Sustainable Investment (2023), "Enabling a just transition: Protecting human rights in renewable energy projects," CCSI, New York, [https://ccsi.columbia.edu/sites/default/files/content/docs/publications/final\\_RenewablesAndHumanRights%20\(Brief\).pdf](https://ccsi.columbia.edu/sites/default/files/content/docs/publications/final_RenewablesAndHumanRights%20(Brief).pdf), accessed 9 June 2023.
- <sup>21</sup> <https://fundforyouthemployment.nl/wp-content/uploads/2022/10/Green-Jobs-For-Youth-in-Africa.pdf>
- <sup>22</sup> See IRENA (2022), "Renewable energy market analysis: Africa and its regions", IRENA, Abu Dhabi, [www.irena.org/-/media/Files/IRENA/Agency/Publication/2022/Jan/IRENA\\_Market\\_Africa\\_2022.pdf?rev=bb73e285a0974bc996a1f942635ca556](http://www.irena.org/-/media/Files/IRENA/Agency/Publication/2022/Jan/IRENA_Market_Africa_2022.pdf?rev=bb73e285a0974bc996a1f942635ca556), accessed 9 June 2023.



# 5 Advancing SDG7 in Asia and the Pacific

### **Contributing organizations:**

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

International Energy Agency (IEA)

International Renewable Energy Agency (IRENA)

## **KEY MESSAGES**

The Asia-Pacific region is a key player in global energy consumption and a major source of greenhouse gas (GHG) emissions, accounting for over half of both, worldwide. As around three-quarters of those GHG emissions come from energy, achieving Sustainable Development Goal 7 (SDG7) is vital in addressing the climate change crisis.

Energy is also intertwined with many other SDGs, including poverty reduction, food security, health, education, gender equality and water access. Indeed, energy is linked to two-thirds of the 169 SDG targets, underlining the crucial role it plays in sustainable development. Expanding access to clean energy in line with SDG7, for example, can deliver improved health outcomes, create jobs and reduce poverty and inequality.

The latest data shows, however, that despite significant progress, the pace of transition to clean energy is uneven and incremental across the Asia and the Pacific region, highlighting the need for scaled-up technical and financial support.

A just energy transition is also critical, with disadvantaged economies requiring particular focus to ensure all nations benefit from clean and sustainable energy. This is especially important as some countries lack the necessary policies, capacities or financing mechanisms to support accelerated progress. This may leave vulnerable economies behind in the energy transition process.

A just transition is also critical in ensuring that all individuals in the communities of a nation have an equal opportunity to access the energy services and technologies that they require to meet their needs. To this end, regional cooperation can play a crucial role in facilitating commitments and efforts to advance SDG7 in the region. This is particularly so, given current geopolitical shifts and the energy market turmoil of 2022 and 2023. With recent setbacks challenging many economies, increased and targeted support is needed to ensure a sustainable energy future for all.

The following priority actions are therefore recommended for the Asia and the Pacific region over the next three years:

- Increase access to electricity in underserved areas by investing in off-grid and mini-grid solutions that utilize renewable energy sources to reach the last mile.
- Implement policies and regulations that support the deployment of clean cooking technologies, such as electric cookstoves, liquefied petroleum gas (LPG) and sustainable bioenergy, reducing reliance on traditional biomass fuels.
- Encourage the adoption of energy-efficient appliances and lighting systems through consumer education campaigns and financial incentives.
- Promote the development of local renewable energy markets by providing policy and regulatory support and improving access to financing, with a focus on the heat and transport sector.

- Strengthen regional cooperation and knowledge-sharing to enhance energy security and increase the use of renewable energy sources.
- Strengthen national and regional grid infrastructure to improve the reliability of modern energy services and accommodate larger shares of variable renewable energy.
- Enhance the availability and quality of energy data and information to support evidence-based decision-making and monitoring of progress towards SDG7.

In addition, the following priority actions should be taken towards 2030:

- Achieve universal access to affordable, reliable, and modern energy services, with a focus on electrification and clean cooking.
- Increase the share of renewable energy in the energy mix, aiming for at least 50 per cent by 2030. This should be done through the deployment of large-scale renewable energy projects and the integration of distributed renewable energy sources into the grid.
- Implement energy efficiency measures in all sectors, with a particular focus on industry, building, transportation and agriculture.
- Phase out unabated coal power and inefficient subsidies for fossil fuels. Redirect those resources towards investments in renewable energy and energy efficiency.
- Develop innovative financing mechanisms, such as green bonds, to support the scaling up of renewable energy and energy efficiency, as well as the phasing out of coal projects.

## PROGRESS TOWARDS ACHIEVING SDG7

### SDG7.1: Ensure universal access to electricity and clean cooking solutions

#### Recent progress

##### Access to electricity

Between 2016 and 2021, almost 380 million people gained access to electricity in the Asia and the Pacific region. Over this period, the region's population increased by 180 million, leading to a rise in the rate of electrification from 94.0 per cent to 98.6 per cent.

There is a small disparity between electricity access rates in urban and rural areas, but the gap is closing and universal access seems to be within reach. In 2021, urban access rates reached 99.8 per cent, while rates in rural areas reached 97.7 per cent.

However, there are a number of challenges with tracking electrification progress, particularly given limitations in household survey data coverage. The binary view of electricity access adopted by SDG7 can obscure important considerations such as affordability, quality, reliability and ultimately, the sustainability of electricity supply.



At the subregional level, access rates continued to trend upward, though the rate for the Pacific remained relatively flat. Nationally, progress was varied, with the greatest average annual growth rates for the period recorded in Afghanistan, Bhutan, Cambodia and Nepal, each with between 4.3 per cent and 10.2 per cent annual gains.

Growing electrification rates can be attributed to significant government efforts to expand and upgrade national power grids while reaching decentralized households and community systems in hard-to-reach areas. This was often done with the help of the private sector.

Yet, although significant progress has been made in electrification, approximately 67 million people remain without access to electricity, across the region. The problem is especially acute in low- and lower-middle-income countries and many rural areas. In addition, last-mile electrification remains a challenge, as does the quality and reliability of the existing electricity supply needed to support productive and sustainable livelihoods.

### **Priority targets**

Reaching end-of the-line and off-grid households with affordable, adequate and reliable electricity remains the greatest challenge to the achievement of universal access across the region.

Both the long-term sustainable operation of rural decentralized systems and the provision of energy access to more than the lowest-tier households have proved difficult in some contexts.

Although public, private and international actors have introduced numerous business models and technical approaches, regular maintenance activities are more challenging. Moreover, the bundling of system operations across regions is financially inefficient because of the absence of service and equipment standards. Without ongoing financial support, some off-grid communities will remain vulnerable to the activities of small operators and suppliers.

### **Clean cooking**

Between 2010 and 2021, the regional rate of access to clean cooking rose from 51.1 per cent to 73.9 per cent.

That meant that in 2021, almost 1.2 billion people – nearly one quarter of the population of the Asia and the Pacific region – were without access to clean cooking.

Therefore, as of that year, the region was not on track to meet this SDG7 target of universal access to clean cooking by 2030. This was especially the case in rural areas, where the access rate was 57 per cent.

This is despite the fact that progress in expanding access to clean cooking has been quite significant over the last decade. The annual rate of increase in access between 2010 and 2021 was 120 million people – a figure three times the size of population growth, which was 41 million.

Yet, the average annual increase in access was only 1 per cent over the decade in question.

With significant growth in population expected in the immediate term, by 2030, hundreds of millions of people will still be reliant on polluting and unhealthy cooking fuels and technologies.

A number of factors lie behind slow progress with the transition to clean cooking. There is a significant obstacle in affordability, with the COVID-19 pandemic also impacting communities across the region, shifting hundreds of thousands back to harmful cooking practices as a result of the economic difficulties it caused.

Some promising and innovative approaches have been slowly emerging, however, as possible solutions. In India, for example, ambitious, subsidized LPG cooking schemes have been introduced. Meanwhile, other countries, such as Bhutan and Indonesia, are embracing the shift from gas to electric cooking, which is becoming a more viable option. This shift is being supported by electricity subsidies and the provision of free electric induction stoves, encouraging households to switch away from kerosene.

### **Priority targets**

To bridge the gap and achieve the SDG7 target, radically increased investment in the promotion and adoption of clean cooking solutions is required.

Such investments may take various forms, including government subsidies and financial incentives that make clean cooking solutions more affordable and accessible to low-income households. Other initiatives could include public-private partnerships (PPPs) to leverage private sector expertise and finance clean cooking solutions. In addition, investments in the research and development of new technologies and fuels that are affordable, scalable, and environmentally sustainable, should be a focus for investment, as should

## **BOX 1. The gender impacts of SDG7**

The ongoing transformation of the energy sector also has implications for global efforts to address gender inequalities, with gender and energy intersecting in two main ways.

First, energy access, or the lack of access, can further widen gender inequalities. This is most visible in the Asia and the Pacific region in lack of access to clean cooking. Some 1.2 billion people, or about 20 per cent of the region's population, remained without access to clean cooking fuels and technologies in 2021. While lack of access to electricity has gender impacts, particularly by depriving women of economic opportunities, clean cooking stands out by virtue of its impact on both health and gender.

As cooking has a gendered dimension in the region, lack of access to clean fuels for cooking has a greater impact on women than men, as it is women who suffer greater exposure to pollution while preparing meals.

Second, gender disparities can be reinforced through employment in the energy sector, where gender gaps are pronounced. Indeed, not only are fewer women employed in the energy sector than men, but they are also paid less.

According to the IEA, in 2018 women made up just 16 per cent of the traditional energy sector workforce, worldwide, despite comprising 39 per cent of the global workforce, overall. Salaries in the energy sector were also reported to be 16 per cent lower for women than for men.

These figures reflect the dominance of the incumbent fossil fuel sector, which has traditionally been less gender diverse. As countries transition to new energy paradigms dominated by clean energy, how they create greater opportunities for women to participate in these industries will be key to addressing this challenge. While this is important for operational level roles, it is even more important for management and decision-making roles. The benefits from this approach stem not only from the possibility it creates for tapping into innovative and diverse thinking, but also from the promotion of better social engagement in public debates over the energy transition.

The investment and policy attention devoted to clean cooking lags significantly behind the necessary level, while at the current rate of improvement, the target of universal access by 2030 will not be reached. Clean cooking should therefore attract a higher level of policy commitment – and when gender impacts are factored in, the urgency for this becomes even greater. New technologies, such as electric cooking, along with schemes to attract innovative climate finance into the sector are some of the ways in which progress can be made. In order to achieve a successful energy transition driven by human-centred innovation, incorporating a gender strategy into national energy transition plans and greater women's participation in the energy workforce is essential.

increased international development assistance and donor funding to support clean cooking initiatives in developing countries.

## **SDG7.2 Substantially increasing the share of renewable energy in the global energy mix**

### **Recent progress**

Climate change and the growing affordability of renewables are driving many countries to focus their national energy development plans on renewable energy.

Yet, although renewable energy installations are increasing in number, they still constitute a relatively small share of total energy consumption in many countries, due to the overall growth in energy demand. In 2020, modern renewable energy accounted for 12.5 per cent of total final energy consumption (TFEC) in the region. This pushed the overall share of renewables – including both modern and traditional forms – to its highest level so far, at 19.1 per cent.

The region is also undergoing a shift towards a more diverse mix of modern renewable energy sources. Since 2020, the combined installed capacity of wind and solar has surpassed that of hydropower, with solar energy in particular experiencing rapid growth. In 2021, the Asia and the Pacific region's solar installed capacity reached 485 gigawatts (GW), representing a significant increase – approximately 19 per cent – on the previous year.

Renewable energy auctions have been instrumental in driving the adoption of wind and solar power, leading to increased investment and reduced costs in the region, which has become a global leader in this field.

A significant gap remains, however, between the progress made by the region's wealthier nations and its developing countries, despite an impressive six-fold growth in renewable generating capacity since 2010. Those countries with a high income or upper-middle income have witnessed a remarkable three-fold surge in renewable energy installations, while those with a low income or lower-middle income have made only minimal progress, on a per capita basis.

Furthermore, the slowest increase observed continues to be in the heat and transport sectors.

### **Priority targets**

Despite some progress towards cleaner energy systems, there is therefore still a long way to go. The current rate of progress is not enough to meet the growing demand for renewable energy. Though modern renewables have become a cost effective option on a global basis, the lack of relevant policies to support their rollout as well as the lack of technical and financial capacity, are significant barriers for many countries to achieve the necessary level of renewable energy deployment.

To overcome these challenges, there needs to be increased technical and financial support on a larger scale. Additionally, it is crucial to prioritize the needs of developing economies in the transition to cleaner and sustainable energy. This is essential to ensure that all nations can enjoy the benefits of clean energy and that the transition is fair and equitable.

## **BOX 2. Relevant financing mechanisms for energy transition**

Major financing deals, such as Just Energy Transition Partnerships (JETPs), have the potential to significantly increase renewable energy deployment and energy efficiency, while also helping phase out coal powered plants. Similarly, the Association of Southeast Asian Nations (ASEAN) Catalytic Green Finance Facility can provide crucial support to de-risk green projects and mobilize public and private financing.

Other promising developments include the Energy Transition Mechanism and Climate Investment Funds, backed by the Asian Development Bank. These aim to incentivize the private sector to support early phase-out of coal power plants in India, Indonesia, and the Philippines, with potential expansion to other countries in the region. Furthermore, the Regional Comprehensive Economic Partnership, a free trade agreement between 10 southeast Asian economies and Australia, China, Japan, New Zealand and the Republic of Korea, which came into effect in 2022

## **SDG7.3: Doubling the global rate of improvement in energy efficiency**

### **Recent progress**

The annual improvement rate of primary energy intensity in Asia Pacific slowed to 1.3 per cent between 2015 and 2020, compared to the 2.8 per cent level seen during the 2010–2015 period.

Unfortunately, at these levels, the pace of improvement in energy intensity in the region is not keeping up with the 2010–2030 global target rate of 2.6 per cent. In fact, from 2020 to 2030, the region now needs to accelerate its annual energy intensity improvement rate to 3.2 per cent if it is to meet the SDG7.3 target.

Indeed, energy intensity in the region's emerging economies continues to be relatively high compared to its developed countries. Many smaller countries are not achieving sufficient improvement, and this means that further policy attention in this area is required.

### **Priority targets**

Achieving the global SDG7.3 target will require significant scaling up of energy efficiency policies and investments. There are several challenges to achieving this, however. These include low prioritization, limited identification of opportunities, insufficient policy and regulatory support, financing hurdles and inadequate awareness of the benefits of energy efficiency.

It is crucial to integrate energy efficiency into national and regional development planning to ensure proper consideration and allocation of resources. China serves as a prime regional example of how setting ambitious energy performance requirements for large-scale industrial facilities can aid in meeting efficiency targets. Through its 2021–2025 Five-Year Development Plan, China aims to reduce energy consumption per unit of gross domestic product (GDP) by 13.5 per cent, compared to the 2020 level.

To promote energy efficiency and reduce energy demand, there is also a need to raise awareness of the benefits of high-efficiency choices. This can be done in various ways, such as adequate labelling, consumer awareness campaigns and incentives. In order to accomplish this, governments must obtain better data across the range of end-uses to increase minimum energy performance standards (MEPS) on products. Indeed, it is essential to introduce, tighten and enforce national MEPS for appliances, as this prevents the dumping of inefficient technologies on less-developed energy efficiency markets. Harmonizing regional MEPS and standardizing labelling, as is being done in the ASEAN subregion, can offer benefits throughout the supply chain. It can lower manufacturing costs, simplify compliance for officials and open up cross-border markets that can take advantage of economies of scale, contributing to affordability.

In the building sector, the introduction of energy efficiency building codes is vital in ensuring good building energy performance and supporting the affordability of energy services through reduced energy demand. Passive design strategies for buildings and urban areas are an emerging focus area within building regulations and urban planning. Such strategies also support the reduction of the building sector's energy consumption and GHG emissions.

## POLICY IMPLICATIONS AND RECOMMENDATIONS

The Asia-Pacific region continues to make notable efforts towards achieving the SDG7 targets, particularly in terms of increasing access to electricity.

Yet, the countries of the region are still falling short on achieving many other aspects of this SDG. Greater momentum is required to close the gap in universal access to electricity and to promote clean cooking fuels and technologies. It is also required to accelerate the deployment of renewable energy and to increase its share in the national energy mix. Furthermore, greater momentum is also needed in scaling up energy efficiency and electrification in end uses.

### BOX 3. Development of the SDG7 road map in Asia and the Pacific

In 2018, the UNESCAP publication “Energy Transition Pathways for the 2030 Agenda in Asia and the Pacific” highlighted that under the policy settings in place at the time, the region would not achieve all the SDG7 targets by 2030.

UNESCAP has been using an integrated energy planning approach in its support for regional countries as they work toward the ambitious SDG7 targets. This is because the achievement of those goals requires consideration of the synergies between the constituent elements of the SDG. Those elements are: increasing access to modern energy services, improving energy efficiency, reducing emissions from the energy sector and increasing the share of renewable energy. Constraints, such as resource availability and emissions reduction targets under the Nationally Determined Contributions (NDCs), need to be considered.

In this regard, the 2018 UNESCAP report mentioned above suggested that national SDG7 implementation road maps could play a transformational role in the region. They would do this by providing guidance to policymakers on the policy and technology options available that would help them achieve the SDG7 and NDC targets.

With the agreement and support of its member states, UNESCAP then developed a framework, called the National Expert SDG Tool for Energy Planning (NEXSTEP), to support the development of national SDG7 road maps. This framework enables policymakers to make informed decisions that support the achievement of the SDG7 and emissions reduction targets.

UNESCAP has now partnered with 16 countries in the region to produce national SDG7 road maps. The NEXSTEP work has also been expanded to the subnational level to create sustainable energy transition plans through partnerships with six cities and three provinces. These plans articulate energy strategies for these cities and provinces that enable them to leverage their fiscal and policy influence in order to contribute to the SDG7 targets at their national level.

Some common findings have emerged across the different analyses, even though the countries that have developed SDG7 road maps are quite diverse. These include the discovery that clean cooking solutions using electric cooking are an increasingly viable option. In addition, refocusing efforts on energy efficiency through measures such as minimum performance standards for appliances, were also found essential to put energy efficiency gains back on track. In the power sector, phasing down the use of coal in favour of renewables and energy efficiency both emerged as common recommendations for countries which have significant levels of coal fired power generation in their energy mix.

More information, including completed road map reports at the national and subnational levels, is available at [www.unescap.org/projects/nexstep](http://www.unescap.org/projects/nexstep).

It is therefore recommended that the following actions be given priority:

### **Improve enabling environments for clean energy development**

Accelerated clean energy development hinges on the capacity of governments to signal their long-term commitment to transformation through ambitious energy goals and targets. With regard to NDCs from the region, renewable energy generation is the most frequently mentioned energy-related climate mitigation measure, followed by multisectoral energy efficiency. Then follow efficiency in transport and of buildings, the electrification of transport and the shift to low- or zero-carbon fuels.

Governments must ensure policy coherence and predictability in order to attract investment. Good governance, especially with regard to political stability, rule of law and the effectiveness of governing bodies, has a substantial impact on risk perceptions and investment protection. Engagement within regional and international bodies is essential to enhancing knowledge and domestic capacity for policymaking.

Comprehensive national planning that includes the power sector, the electrification of end uses, alternative fuels and demand-side measures is needed. Integrating higher shares of renewables requires larger, more responsive and flexible grid systems. Government support is needed to establish robust supply chains for clean cooking fuels and technologies. It is also needed to encourage PPPs to ensure that clean cooking energy and technologies are accessible in a reliable, affordable and convenient manner.

### **Mobilize investment and finance**

In meeting the SDG7 targets, the private sector is likely to play a major role in project development and provide the majority of investments. Governments should reform market structures and ownership rules in a way that enhances private participation and increases competition. Private participation can be greatly enhanced through the design of effective regulatory frameworks to support PPPs in infrastructure development. Governments also need to consider enabling private investment to play a role in sectors that are traditionally dominated by public spending. Significant investments are needed in the modernization and expansion of national power grids, as well as in complementary technologies such as smart grids and storage systems.

International capital markets represent potentially large pools of low cost capital for clean energy projects. Sustainable funding instruments are attracting a great deal of attention from investors looking to green their portfolios, with sustainable debt issuance now valued at well over US\$ 1 trillion globally. The ability of many developing Asia and the Pacific region economies to tap into these sources remains limited, however. Improved domestic capacity and more robust and better harmonized frameworks for sustainable finance are required. These should include standards with regard to instruments and taxonomies to help guide capital allocation.

### **Use connectivity as a tool for supporting the energy transition**

Energy connectivity is a key tool for enabling the secure, affordable and sustainable development of power systems. Connectivity supports the integration of a variety of renewable energy resources and enables access to a more diverse and less costly set of resources. This strategy is widely recognized, including by the Member States of UNESCAP, which in 2021 endorsed the Regional Road Map on Power System Connectivity: Promoting Cross-border Electricity Connectivity for Sustainable Development.

Governments should take steps to increase initiatives supporting regional cooperation on connectivity. This should be done by creating harmonized regulations and operational policies that allow for the integration of power systems. To that end, governments should ensure that there are appropriate subregional and regional institutions to support the development and harmonization of regulatory frameworks. They should also ensure that regulators have mandates to participate in regional initiatives.

### **Ensure a just energy transition**

Clean energy transitions are marked by structural changes in which jobs in legacy industries are replaced by those in new sectors. In several countries in the Asia and the Pacific region, industries related to fossil fuels have emerged as major sources of employment. Some communities have developed exclusively around these industries, such as coal mining. In moving away from fossil fuels, efforts are required to ensure transitions are just and people-centred, with coordinated, long-term engagement for affected workers and communities, both within and across countries and regions.

Expanding jobs along the value chain of clean energy – from technology manufacturing to project development – requires a comprehensive approach to the deployment and integration of clean energy technologies, industrial policies, education, and skills training. It also requires community and regional economic development measures. It is key to adopt new holistic approaches such as the water-energy-food-land nexus to advance energy and food security, while also contributing to job creation, gender equality, and climate resilience and adaptation throughout just energy transition.

# 6 Advancing SDG7 in the Arab Region



### Contributing organizations:

United Nations Economic and Social Commission for Western Asia (United Nations ESCWA)

European Union (EU)

Food and Agriculture Organization (FAO)

International Renewable Energy Agency (IRENA)

Global Energy Interconnection Development and Cooperation Organization (GEIDCO)

## KEY MESSAGES

- While the Arab region<sup>1</sup> has made progress recently towards achieving the Sustainable Development Goal 7 (SDG7) targets, urgent efforts are still vital if these goals are to be achieved by 2030.
- The region retains an overwhelming reliance on fossil fuels, even though some Arab countries have made substantial progress on utility-scale renewable generation. Many of these world-leading projects are set to come online in 2023, too, while five Arab countries have also pledged to achieve economy-wide net-zero emissions by 2050 or 2060.<sup>2</sup>
- Yet, continued supply chain disruption, economic downturns, conflict and instability in several regional countries have continued to slow overall progress with SDG7.
- This policy brief therefore recommends the following priority actions over the next three years:
- Accelerate policy action on energy access, renewables and efficiency by setting ambitious targets with wider socioeconomic objectives to enable just, inclusive, and sustainable energy transitions.
- Improve communication and awareness so that stakeholders can better understand policy choices and changing regulations, enabling them to plan accordingly.
- Increase public investment in emerging technologies in the energy sector and promote policies which encourage private sector participation by de-risking investments.
- Boost electrification across sectors – including industry, building and transport – to improve energy intensity and accelerate the uptake of renewable energy.
- Enhance linkages between energy and agrifood systems and adopt new holistic approaches, such as integrated food-energy systems and the water-energy-food-land nexus.
- Synergize interlinkages between SDG 7 and other SDGs, particularly SDG 1 on zero hunger, SDG 6 on clean water and sanitation, SDG 9 on industry, innovation, and infrastructure, SDG 11 on sustainable cities and communities, and SDG 17 on partnerships.

Furthermore, in the lead up to 2030 the following actions should also be prioritised:

- Implement and enhance national, regional and international multi-stakeholder partnerships for energy, leveraging technical assistance and expert advice to build capacity based on the lessons learned from successful global programmes.
- Enhance coordination at the national and regional level to strengthen energy governance and institutions, develop technological capacity and increase the pace of implementation of SDG7, in order to attract additional climate financing.
- Enhance Nationally Determined Contributions (NDCs) to better align with the Paris Agreement goals and establish or enhance net-zero emissions targets to de-carbonize economies by mid-century.

## SUMMARY OF PROGRESS WITH SDG7

### SDG7.1: Ensure universal access to electricity and clean cooking solutions

Access to electricity in the Arab region was almost 91 per cent in 2021, with many countries having reached 100 per cent.

Nevertheless, conflict, political instability and utility sector mismanagement left nearly 42 million people without electricity access that year, across the region.

Rural areas suffered the largest deficits. In these, only 83 per cent of the population had access to electricity, compared to 98 per cent in urban areas. The rural-urban divide was most prominent in the less developed countries (LDCs) of the region. In these, urban electricity access averaged 84.5 per cent, while in rural areas, it averaged only 52 per cent.

In addition, around 52 million people in Arab countries did not have access to clean cooking, with large subregional disparities.

### SDG7.2: Substantially increase the share of renewable energy in the global energy mix

In the Arab region, renewable energy deployment rates continued to lag behind other regions, accounting for only 5.1 per cent of total final energy consumption in 2020.

Most renewable energy comes from traditional biomass. Electricity generation from modern renewables, however, continues to accelerate. Utility-scale solar PV projects have been especially prominent, with some of the largest projects in the world present in the region. Some of these – particularly in the Gulf Cooperation Council (GCC) countries – boast record low power prices, worldwide.

### SDG7.3: Double the global rate of improvement in energy efficiency

In the Arab region, primary energy intensity is higher than the global average and is now increasing year by year, after a decade of remaining relatively flat.

Using the 2017 purchasing power parity (PPP) level of gross domestic product (GDP) as a baseline, in 2010, primary energy intensity was 5.2 megajoules (MJ) per US dollar (US\$). By 2019, this level had fallen to 5.11 MJ/US\$, but in 2020, this figure was 5.17 MJ/US\$. Therefore, despite earlier successes, the pace of improvement has slowed and lags behind the SDG7.3 target of improving energy intensity by 2.6 per cent per year, up to 2030.

## PROGRESS TOWARDS ACHIEVING SDG7

### SDG7.1: Access to electricity and clean cooking solutions

#### Recent progress

#### Access to electricity

Electricity access rates in the Arab region crossed the 90 per cent mark for the first time in 2017 and continued to increase, reaching 90.8 per cent in 2021. In that year, the total number of people without access to electricity in the region stood at almost 42 million, with 89 per cent of them residing in the Arab LDCs.

Indeed, although there has been a considerable improvement in electricity access in the Arab LDCs since 2011 – access in those countries also improved by 2 per cent annually from 2019 – access in the Arab LDCs still remains the lowest among the Arab subregions, at 63.5 per cent in 2021.

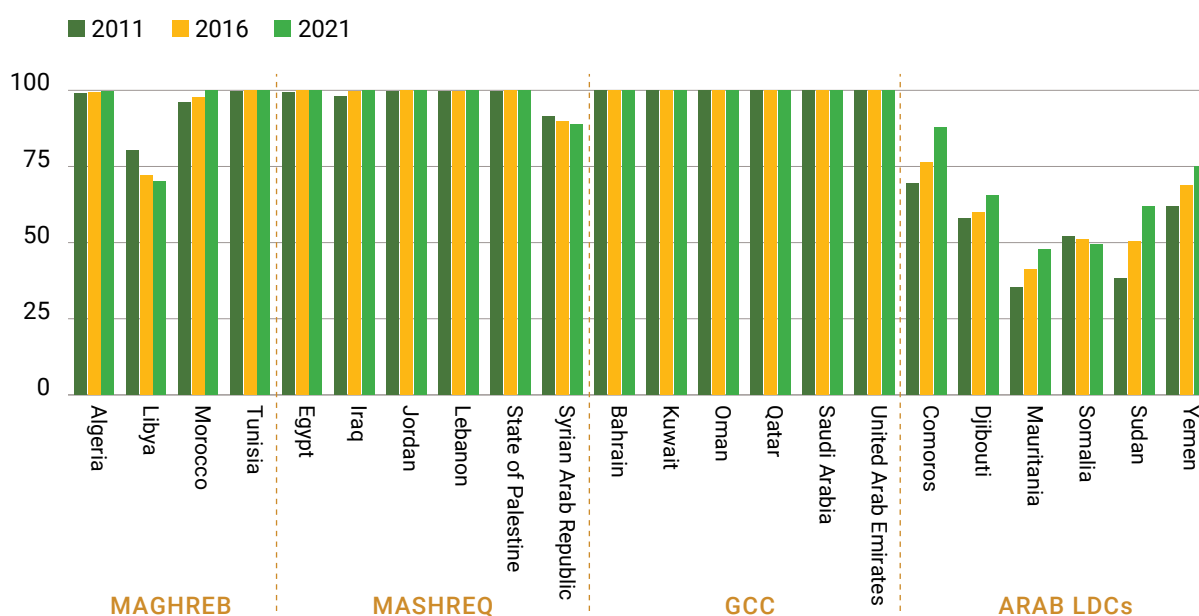
Uneven development within the region thus remains, with approximately 52 per cent, 51 per cent and 38 per cent of the populations of Mauritania, Somalia, and the Sudan still without access to electricity in 2021.<sup>3</sup>

Indeed, in Sudan around 17.5 million people are without access to electricity, while 8.6 million are without access in Somalia. With the addition of some 8.3 million without access in Yemen, this totals over 34 million people without access to electricity in these three countries alone. Rapid improvement is required, if these countries are to see access for all.

At the same time, all the GCC countries and most of the countries in the Mashreq region boast universal access to electricity. There has also been a slight improvement in access rates in countries in conflict, with the share of people with electricity access increasing from an average of 70.4 per cent in 2011 to 76.8 per cent in 2020 and 77.5 per cent in 2021.<sup>4</sup>

In 2021, almost 98 per cent of the population in urban areas in the Arab region had access to electricity, while only 83 per cent of those living in rural areas did. The rural-urban divide was most prominent in the Arab LDCs. There, urban electricity access was 84.5 per cent, while in rural areas, access was only 52 per cent.<sup>5</sup>

**FIGURE 1. Share of population with electricity access in the Arab region, 2011, 2016 and 2021 (per cent)**



Source: Data provided to UN ESCWA by the World Bank, 2023.

### **Priority targets**

Targeted subsidies based on household income are a viable pathway to providing energy-poor households with affordable electricity. In most cases, this will also require institutional reform and capacity building in order to help build up effective and transparent social safety systems, especially in the Arab LDCs.

Decentralized renewable energy solutions are also emerging as a cost-effective alternative to electricity from the grid. New business models to provide on-demand energy access should be implemented, especially in remote areas without grid connectivity.

The Arab region also holds great potential for electrified transport, both in the public transport segment and for private vehicles, once policy incentives and infrastructure development support this development.

### **Clean cooking**

While 88 per cent of the population have access to clean fuels and technology for cooking in the Arab region, there are large subregional disparities. In 2021, 52 million people in the Arab region did not have access to clean cooking, a slight increase from 2019. Around 88 per cent of these people lived in Somalia, the Sudan and Yemen. Djibouti and Somalia were the countries with the highest share of their populations lacking access to clean fuels, at more than 90 per cent.<sup>6</sup>

The urban-rural divide is also evident for clean cooking. In the Arab region, an average 5.5 per cent of the urban population did not have access to clean cooking in 2021, while 21 per cent of rural populations suffered from a clean cooking deficit. The urban-rural divide was most evident in Mauritania, Yemen, the Sudan, and Comoros.

### **Priority targets**

Clean cooking needs to be prioritized for implementation on the ground in countries with significant deficits in national policy. Multilateral lending agencies should partner with national governments to provide low-cost capital along with technical assistance and capacity-building based on successful global projects, as well as success stories from within the region.

## **SDG7.2: Increased share of renewable energy in the global energy mix**

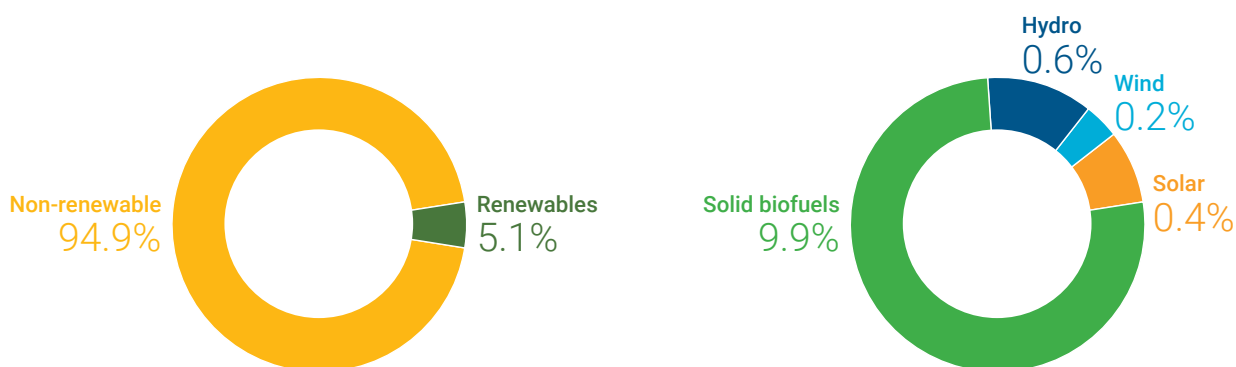
### **Recent progress**

In the Arab region, renewable energy penetration rates continued to lag behind other geographies. Only 5.1 per cent of the region's total final energy consumption (TFEC) was generated by renewables in 2020, with this mainly accounted for by solid biofuels. Most of these biofuels are traditional and are mainly used for cooking, heating and even lighting. They have low efficiency levels and adverse effects on health, due to indoor and other air pollution.

Three countries (the Sudan, Egypt and Somalia) accounted for 72 per cent of the region's renewable energy consumption in 2020. This came mainly from those traditional solid biofuels, which accounted for 78% of renewable energy in the region overall.

Arab LDCs continued to be the largest consumer of biofuels, which accounted for nearly 53% of TFEC in the Arab LDCs in 2020.

**FIGURE 2. TREC breakdown by source in the Arab region, 2020 (per cent)**



Source: Data provided to UN ESCWA by the IEA, 2023.

In the coming decades, the share taken by biofuels is likely to fall, however, as those Arab LDCs see more modern sources of energy become increasingly accessible. The future mix in those countries will most likely be based on a combination of fossil fuels and modern renewable energy.

Total installed renewable electricity capacity in the Arab region has roughly doubled over the past decade, reaching a little over 22 gigawatts (GW) in 2021.<sup>7</sup> In 2020, solar and wind energy accounted for nearly 12 per cent of the region's renewable energy consumption, up from 11 per cent in 2019, with solar being the fastest growing renewable source for power generation.

Jordan, Lebanon, the State of Palestine and Yemen exhibited the highest shares of solar in their energy mix, partly driven by decentralised solutions – contrary to the regional trend. These solutions have been adopted owing to a lack of capacity in grid-based electricity. Morocco, meanwhile, has been leading the way in wind energy, with 46 per cent of the region's total wind energy consumption.

### **BOX 1. Promoting small-scale renewable energy technologies and applications in rural areas of the Arab region**

Initiatives such as the Regional Initiative to Promote Small-Scale Renewable Energy Applications in Rural Areas of the Arab Region (REGEND) from United Nations ESCWA aim to improve the livelihood, economic benefits, social inclusion and gender equality of Arab rural communities. Such initiatives focus on particularly marginalized groups and address energy poverty, water scarcity, vulnerability to climate change and other natural resources challenges. They use appropriate small-scale renewable energy technologies to conduct productive activities. These include water pumping, food manufacturing and agricultural practices, amongst others, while supporting entrepreneurial development and ensuring women's empowerment. Their emphasis is on creating jobs and developing robust value chains.

The rise in renewable energy investments in the region could see capacity increase by 33 GW between 2022 and 2026, with around 26 GW as utility-scale and distributed solar.<sup>8</sup>

Several large utility-scale renewable energy projects are set to come online in the coming years. These include the 2.06 GW Al Shuaibah solar photovoltaic (PV) plant and the 1.5 GW Sudair solar PV plant in Saudi Arabia, as well as the 2.0 GW Al Dhafra solar PV plant in the United Arab Emirates. These are some of the largest such facilities, globally. Recently completed megaprojects include the 580 MW Ouarzazate concentrated solar power (CSP) farm in Morocco and the 200 MW Baynouna solar PV project in Jordan.

### **Priority targets**

Modern renewable energy solutions are required to close the gap in renewable energy penetration rates between the Arab region and elsewhere. These solutions include sustainably-sourced modern biofuels, which could help the transition from traditional biomass towards other modern renewable energy solutions, or be used in hybrid systems.

Diversifying the energy mix is a key aspect of the energy transition in the Arab region. Beyond accelerating the uptake of renewables and electrifying relevant sectors, alternative energy carriers including hydrogen and hydrogen derivatives are being explored as a way to leverage the region's renewable resource potential.

Low-carbon hydrogen development could diversify Arab export revenues and reduce energy-related emissions. Such a development could also play an important role as part of a toolbox of clean energy solutions addressing the environmental and economic vulnerability to which the region is exposed. Low-carbon hydrogen development could leverage the region's natural gas resources, paired with carbon capture use and storage, while also leveraging its extensive renewable energy potential for green hydrogen.

## **SDG7.3: Energy efficiency improvement**

### **Recent progress**

With GDP calculated according to a 2017 PPP baseline, energy intensity in the Arab region increased from 5.11 MJ/US\$ in 2019 to 5.17 MJ/US\$ in 2020. Over the past decade, however, energy intensity has decreased, having stood at 5.2 MJ/US\$ in 2010.

This trend was not uniform, however, as while the GCC and Mashreq sub-regions saw this decline in energy intensity, the Maghreb and Arab LDC sub-regions saw intensity increase over the same period. In the Maghreb region, energy intensity grew from 4.07 MJ/US\$ in 2010 to 4.67 MJ/US\$ in 2020, while the Arab LDCs witnessed an even bigger increase, from 3.27 MJ/US\$ in 2010 to 4.16 MJ/US\$ in 2020. Growth in energy supply was the highest in those countries in the region experiencing conflict in the 2019–2020 period, despite those countries suffering a GDP contraction.

### **Priority targets**

With improvements in energy efficiency continually below the rate that would enable the region to meet the targets of SDG7.3, the implication is that energy efficiency (EE) policies are not yielding the desired results. This includes the performance of countries with high or upper-middle incomes – meaning that more effort is required across the region. The annual rate of improvement in EE would now need to be 3.2 per cent through 2030 to make up for slow progress in previous years.<sup>14</sup>

## BOX 2. Sustainable hydrogen

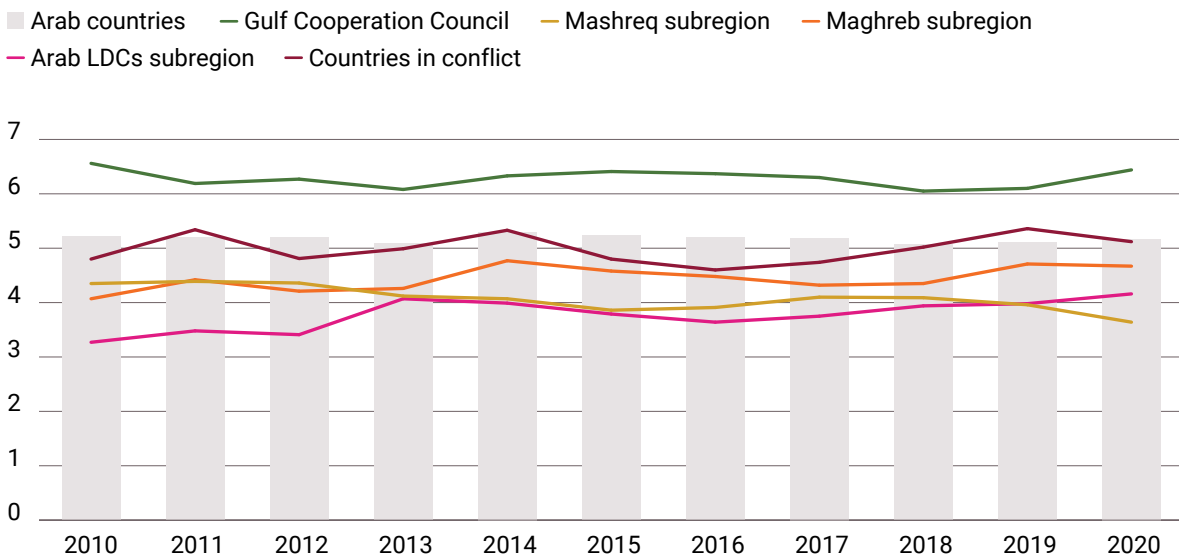
The Arab region is well placed to dominate the global export trade in sustainable hydrogen – both green and blue. By 2050, it could supply up to 20 per cent of global market demand<sup>9</sup> due to the low cost of renewable energy in the Arab region, experience with oil and gas exports and the region’s proximity to Europe and Asia as export markets.<sup>10</sup>

The most appropriate near-term applications in the region are the petrochemicals and refining industries, which currently depend on grey hydrogen, steel and aluminium smelters, ammonia and methanol. In the medium to long term, large-scale seasonal energy storage, long-haul transportation and maritime shipping are prospective applications.<sup>11</sup>

When it comes to hydrogen use in industry, the Arab region currently dominates direct reduced iron (DRI) production using hydrogen, with 40 per cent of global production. The Al Reyadah carbon capture project in the United Arab Emirates, a DRI project with carbon capture use and storage (CCUS) launched in 2016, produces an estimated 70 kilotons (kt) annually of low-emission hydrogen. This is the only project of its type in operation today, however. No similar projects of this scale are under development.

Egypt, Mauritania, Morocco, Oman, Saudi Arabia and the United Arab Emirates all have green hydrogen projects under development. Saudi Arabia is developing an US\$8.5 billion 3.5 GW green hydrogen plant at Neom which aims to produce 219 kt of hydrogen and 1200 kt of ammonia annually.<sup>12</sup> Mauritania recently signed a memorandum of understanding with partners in Germany, Egypt and the United Arab Emirates to develop a 10 GW green hydrogen project with an annual capacity of up to 8 million tonnes of green hydrogen and derivatives, with phase one to be completed by 2028.<sup>13</sup>

**FIGURE 3. Arab subregion energy intensity trends, 2010–2020 (MJ/US\$ at 2017 PPP GDP)**



Source: Data provided by IEA.

Early action on EE through well-designed and implemented EE policies can deliver multiple benefits in addition to lifetime savings of energy and greenhouse gas (GHG) emissions. Price signals also play a vital role in attracting private investments. Therefore, Arab countries need to progress with a gradual rationalization of energy subsidies. Proactive policies and regulatory incentives need to separately address energy efficiency in industry, transport and the building sector.

As part of the Saudi & Middle East Green Initiatives, the Regional Investment Fund for Circular Carbon Economy (CCE) technology is being established to advance EE innovation throughout the region. This initiative aims to reduce emissions from hydrocarbon production in the region by more than 60 per cent. Within this framework, the first phase of the region's largest CCUS hub was launched in February 2023 in Jubail, Saudi Arabia, with a capacity of 9 million tons per year of CO<sub>2</sub> storage capacity. The plant will scale up to a maximum capacity of 44 million tons annually by 2035.

## POLICY IMPLICATIONS AND RECOMMENDATIONS

### **Increase public investment in energy access, renewable energy and energy efficiency**

Detailed implementation plans for both on-grid and off-grid renewable access should be backed by public investments. They should also be supported by the technical and financial resources of the international community in order to achieve progress on ground. Private sector involvement will enable the scaling up of renewable energy pilot programmes and can catalyse investment in energy efficiency to provide savings across the economy.

### **Accelerate policy action**

Governments should make energy access (including availability and affordability), renewables, and efficiency top political priorities by setting ambitious targets, plans and policies while implementing specific projects. This includes regulation to drastically improve standards of technology, fuel efficiency and economy while promoting cost-effective solutions, such as decentralised/rooftop generation.

Public communication, information and transparency must be improved so that consumers, businesses and industries understand policy choices and changing regulations and can plan accordingly. Regional cooperation over minimum standards for new technology equipment, components and vehicle standards could significantly reduce the cost to companies of improving the performance standards of their products. Region-wide, consumer information and transparency are vital in influencing demand and patterns of consumption.

### **Boost energy electrification**

Renewable resources should be leveraged to enhance energy efficiency and promote sustainable development. By increasing electrification in sectors such as oil and gas exploration, desalination, manufacturing, transportation and residential life, energy intensity can be reduced. Governments should create mid-term and long-term plans, set clear goals for electrification and strengthen research and development. Supportive policies, including financial subsidies and tax breaks, can encourage the growth of industries such as electric vehicles, port shore power and electric hydrogen production.

### **Synergize interlinkages with other SDGs**

There are strong interlinkages between SDG7 and other SDGs, such as SDG1 on zero hunger, SDG6 on clean water and sanitation and SDG9 on industry, innovation and infrastructure. There are also strong links between SDG7 and SDG 11 on sustainable cities and communities and SDG 17 on partnerships.



These interlinkages must be clearly identified at the regional and national levels, risks of trade-offs must be managed, impacts on gender equality must be considered and synergies between the SDGs must be harnessed to achieve multiple benefits.

### **Enhance the linkages between energy and agrifood systems**

Investment in renewable energy solutions should be promoted, along with the adoption of new, holistic approaches. The latter include integrated food-energy systems and the water-energy-food-land nexus. These approaches can address trade-offs and leverage synergies in water and land use, while directly advancing energy and food security. They can also contribute to job creation, gender equality and building resilience to climate change.

### **Strengthen multi-stakeholder partnerships**

Multi-stakeholder partnerships with international agencies can be leveraged to provide technical assistance and expert advice. They can also help build capacity based on lessons learned from successful global programmes. Collaborative decision-making processes and programmes involving local actors such as non-governmental organizations (NGOs), civil society and entrepreneurs can accelerate clean energy projects. The involvement of private companies and new business models will complement international and national efforts. Regional grid interconnection should be strengthened.

### **Reinforce coordinated action from governments**

High-level policies, enhanced coordination between ministries and clear allocation of responsibilities among implementing agencies are all essential to increase the pace of implementation of SDG7, while also attracting additional climate financing.

Attention should be paid to strengthening energy governance, building strong institutions, developing technological capacity – including technology and knowledge transfer – and reskilling human resources. Current NDCs should be enhanced to better align with the goals of the Paris Agreement. Net-zero emissions targets should be expanded beyond the current five Arab countries that have pledged to achieve economy-wide net-zero emissions by 2050 or 2060. Capacity building should be strengthened for relevant ministries, agencies and local governments, including training staff in climate finance-related matters.

## ENDNOTES

- <sup>1</sup> The Arab region here includes: the Maghreb (Algeria, Libya, Morocco, and Tunisia), the Mashreq (Egypt, Iraq, Jordan, Lebanon, the State of Palestine and the Syrian Arab Republic), the Gulf Cooperation Council countries (Bahrain, Kuwait, Oman, Qatar, the Kingdom of Saudi Arabia and the United Arab Emirates), and the least developed countries (LDCs) of Comoros, Djibouti, Mauritania, Somalia, the Sudan and Yemen.
- <sup>2</sup> Five Arab countries have pledged to achieve economy-wide net-zero emissions: Oman and the United Arab Emirates are aiming to achieve this target by 2050 and Bahrain, Kuwait, and Saudi Arabia by 2060.
- <sup>3</sup> Data provided to UN ESCWA by the World Bank, 2023.
- <sup>4</sup> Data provided to UN ESCWA by the World Bank.
- <sup>5</sup> Data provided to UN ESCWA by the World Bank.
- <sup>6</sup> Data provided to UN ESCWA by the WHO, 2023.
- <sup>7</sup> IRENA (2022), "Renewable Energy Statistics 2022", The International Renewable Energy Agency, Abu Dhabi, [www.irena.org/publications/2022/Apr/Renewable-Capacity-Statistics-2022](http://www.irena.org/publications/2022/Apr/Renewable-Capacity-Statistics-2022), accessed April 2023.
- <sup>8</sup> APICORP (2022), "MENAs Sustainability Journey in Light of COP27", Arab Petroleum Investments Corporation, Dammam, [www.apicorp.org/publication/menas-sustainability-journey-in-light-of-cop27/#](http://www.apicorp.org/publication/menas-sustainability-journey-in-light-of-cop27/#), accessed April 2023.
- <sup>9</sup> ESCWA (2022), "Potential blue and green hydrogen developments in the Arab region", United Nations Economic and Social Commission for Western Asia, Beirut, <https://www.unescwa.org/sites/default/files/pubs/pdf/potential-blue-green-hydrogen-developments-arab-region-english.pdf>, accessed April 2023.
- <sup>10</sup> ECFR (2023), "Sunny side up: Maximising the European Green Deal's potential for North Africa and Europe", European Council on Foreign Relations, Berlin, <https://ecfr.eu/publication/sunny-side-up-maximising-the-european-green-deals-potential-for-north-africa-and-europe/>, accessed April 2023.
- <sup>11</sup> IEA (2022), "Global Hydrogen Review 2022", International Energy Agency, Paris, <https://iea.blob.core.windows.net/assets/c5bc75b1-9e4d-460d-9056-6e8e626a11c4/GlobalHydrogenReview2022.pdf>, accessed April 2023.
- <sup>12</sup> ACWA Power (2023), "NEOM Green Hydrogen Project", ACWA Power, Riyadh, <https://acwapower.com/en/projects/neom-green-hydrogen-project/>, accessed April 2023.
- <sup>13</sup> Alkesh Sharma, "Infinity Power and Conjuncta to develop green hydrogen project in Mauritania," The National (9 March 2023), Abu Dhabi, [www.thenationalnews.com/business/2023/03/09/infinity-power-and-conjuncta-to-develop-green-hydrogen-project-in-mauritania/](http://www.thenationalnews.com/business/2023/03/09/infinity-power-and-conjuncta-to-develop-green-hydrogen-project-in-mauritania/), accessed April 2023.
- <sup>14</sup> IEA, IRENA, UNSD, World Bank, WHO (2022), "Tracking SDG 7: The Energy Progress Report", World Bank, Washington DC, [www.worldbank.org/en/topic/energy/publication/tracking-sdg-7-the-energy-progress-report-2022](http://www.worldbank.org/en/topic/energy/publication/tracking-sdg-7-the-energy-progress-report-2022), accessed April 2023.



# 7 Advancing SDG7 in the United Nations Economic Commission for Europe Region

## Contributing organizations:

United Nations Economic Commission for Europe (UNECE)

## KEY MESSAGES

Even before the crises and challenges of recent years, progress in the UNECE region towards achieving the Sustainable Development Goal 7 (SDG) was already too slow to meet the 2030 target. Amid overall positive SDG7 implementation trend, this report confirms the gap between the actual progress and that for that required for the achievement of the set SDG7 targets.

Although access to electricity and the use of clean fuels for cooking, heating and lighting is widespread in the UNECE region – and deployment of renewable energy had been increasing and energy efficiency had also been improving – the rate of progress has not been high enough to make the energy targets of SDG7 achievable.

An acceleration of effort is therefore critical to ensure access to affordable, reliable, sustainable and modern energy for all.<sup>1</sup>

Particular challenges include:

- **The affordability of clean fuels and technologies.** This is particularly acute for low-income households, but is a growing problem across the region.
- **A shortage of skills and qualifications.** This can be seen particularly in the deployment and maintenance of clean energy technologies.
- **Persistent behavioural barriers.** These often act as an obstacle to the effective harnessing of optimal organizational potential, which would help achieve more resilient energy systems. This is a widespread factor even when technologies and capabilities are in place.

Public and private investment in renewable energy across many UNECE countries remains modest compared to global growth trends. For instance, investments in 17 countries of South-Eastern and Eastern Europe, the Caucasus and Central Asia are particularly insufficient. In US dollars (US\$), the year 2020 saw US\$ 7.2 billion invested, a sum equivalent to 2.2 per cent of the global total and much the same as the amount invested 10 years ago.

On the positive side, a total of 44 UNECE member States increased the share of renewable energy in their energy mix to above 10 per cent in 2020. This was compared to 26 countries in the year 2000 and 40 countries in 2015. These data show a clearly positive trend, although this may have slowed in the last year due to the impact of the recent energy crisis.

Meanwhile, between the years 2000 and 2019, the average energy intensity of the UNECE region fell 58 per cent to 4.18 MJ/US\$ (megajoules (MJ) per unit of gross domestic product (GDP) in constant 2017 US dollars (US\$) at purchasing power parity (PPP)). This was 0.54 MJ/US\$ lower than the global average.

System-wide inefficiencies, however, resulted in noticeable losses throughout the region's energy value chains over the period studied. Energy efficiency solutions should therefore be deployed as a priority across both the supply and demand sides. This requires integrated thinking by energy system actors, coupled with enabling policy frameworks and good governance. It therefore also requires increased cooperation and financing.

## PROGRESS TOWARDS ACHIEVING SDG7

### SDG7.1: Ensure universal access to electricity and clean cooking solutions

While both urban and rural populations in the UNECE region enjoy universal access to electricity, in several countries access to clean fuels and technology remains a challenge. This becomes even more complex in times of crisis, with the COVID-19 pandemic, ongoing geopolitical crises, supply chain disruptions and the impact of climate change all having an impact.

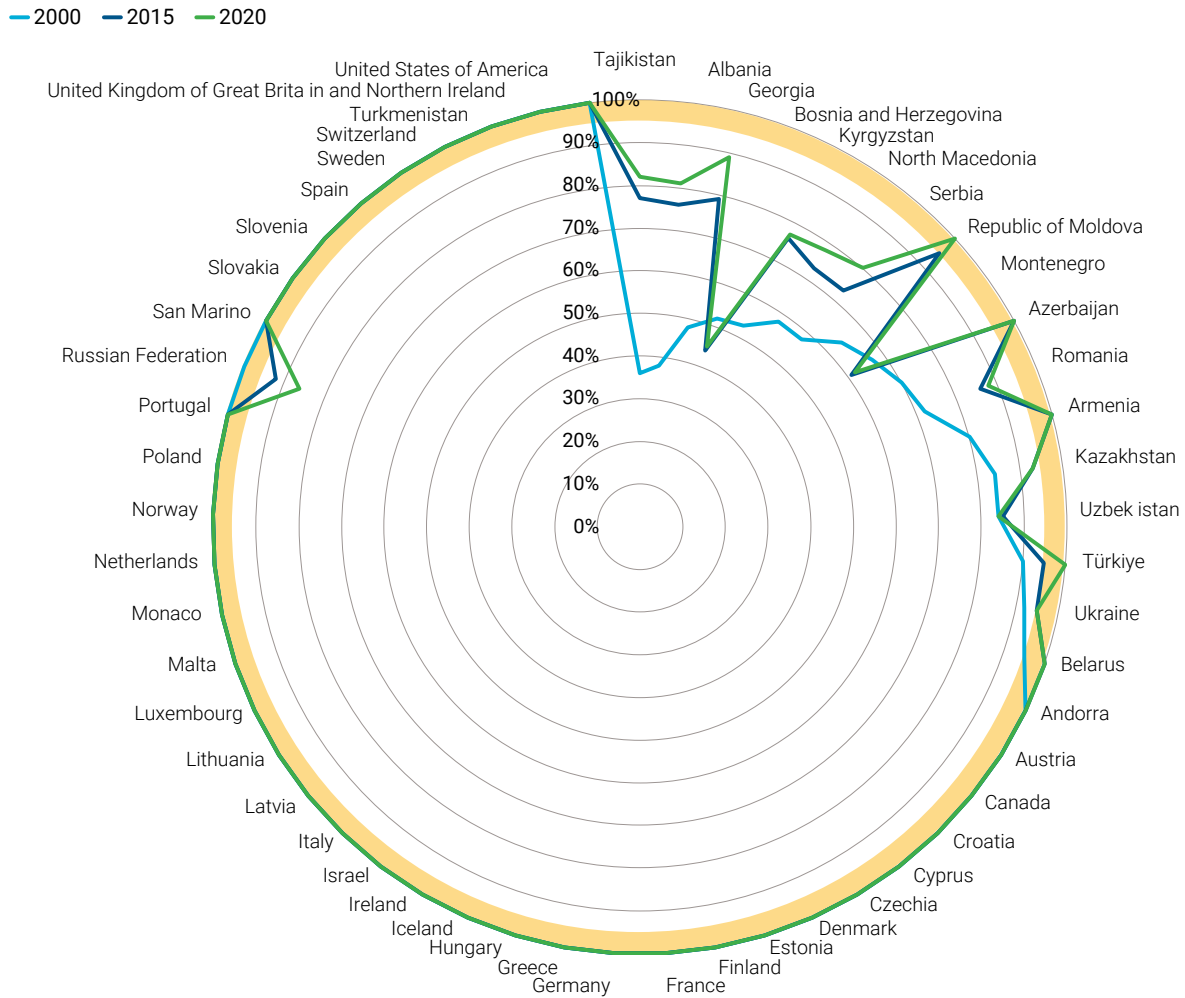
Clean fuels and technologies are often more expensive than traditional fuels and technologies, making them unaffordable for lower-income households. This affordability challenge is particularly acute for those living in rural areas and informal settlements, where incomes tend to be lower and access to financial resources more limited. The affordability aspect of access to clean fuels and technologies could therefore become a significant barrier for certain energy users, going forward.

### SDG7.2: Substantially increase the share of renewable energy in the global energy mix

A broader deployment of renewable energy technologies in the region took place during the monitoring period. In 2020, 44 UNECE member States had a share of renewable energy in their energy mix above 10 per cent, as compared to 26 countries in 2000 and 40 countries in 2015. Importantly, the number of countries where the share of renewable energy was below 1 per cent decreased from 4 countries to just 1 country over the 2010–2020 period. Similar dynamics were observed in the group of countries with renewable energy shares of between 1–10 per cent. Within the latter group, most of the countries have continuously increased their shares of renewables to above 10 per cent.

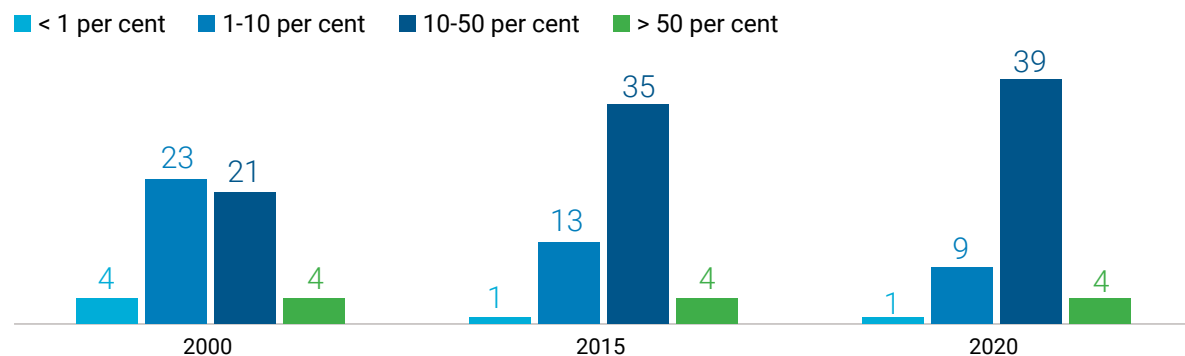
The 2022 UNECE Renewable Energy Status Report shows that in 17 UNECE focus countries significant progress in renewable energy has been achieved in recent years, although the full potential remains largely untapped.<sup>2</sup> The region has seen an unprecedented growth in renewable electricity, but that is not the case in transport sector or space heating and cooling.

**FIGURE 1. Proportion of population with primary reliance on clean fuels and technology, 2000, 2015, and 2020 (per cent)**



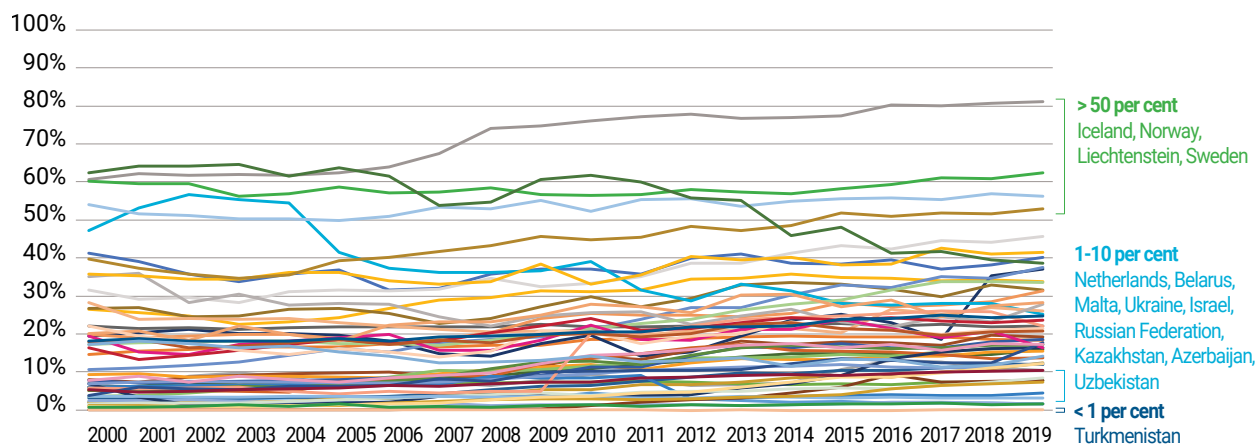
Note: The blue circle visualizes the level above 95 per cent. Source: Figure based on the SDG Indicators Database, <https://unstats.un.org/sdgs/dataportal/database>

**FIGURE 2. Number of UNECE member states grouped by share of renewable energy in their energy mix, 2000, 2015, and 2020 (per cent)**



Source: Figure based on the SDG Indicators Database, <https://unstats.un.org/sdgs/dataportal/database>

**FIGURE 3. Share of renewable energy in total final energy consumption, 2000–2019 (per cent)**



Source: Figure based on the SDG Indicators Database, <https://unstats.un.org/sdgs/dataportal/database>

Public and private investment in renewables across the focus countries remained modest compared to global growth trends. This highlights the need for a significant effort to deploy financial resources in renewables, along with the development of policy options to facilitate renewable energy uptake.

In 2018, renewable energy investments in the region totalled US\$ 7.2 billion. This was a similar amount to that achieved almost ten years before. This figure also represented only some 2.2 per cent of the global total and approximately 13 per cent of the US\$ 55 billion invested in renewable energy in the European Union as a whole that year.

To achieve a higher share of renewable energy in their energy mixes, UNECE member States should focus on strengthening the policy, institutional, normative and regulatory frameworks that enable and facilitate the uptake of renewable energy, as well as on improving understanding of renewable energy resource characteristics and availability. This should include application of the United Nations Framework Classification for Resources (UNFC) to renewable energy resources and projects. In addition, investing in renewable energy deployment should remain in focus.

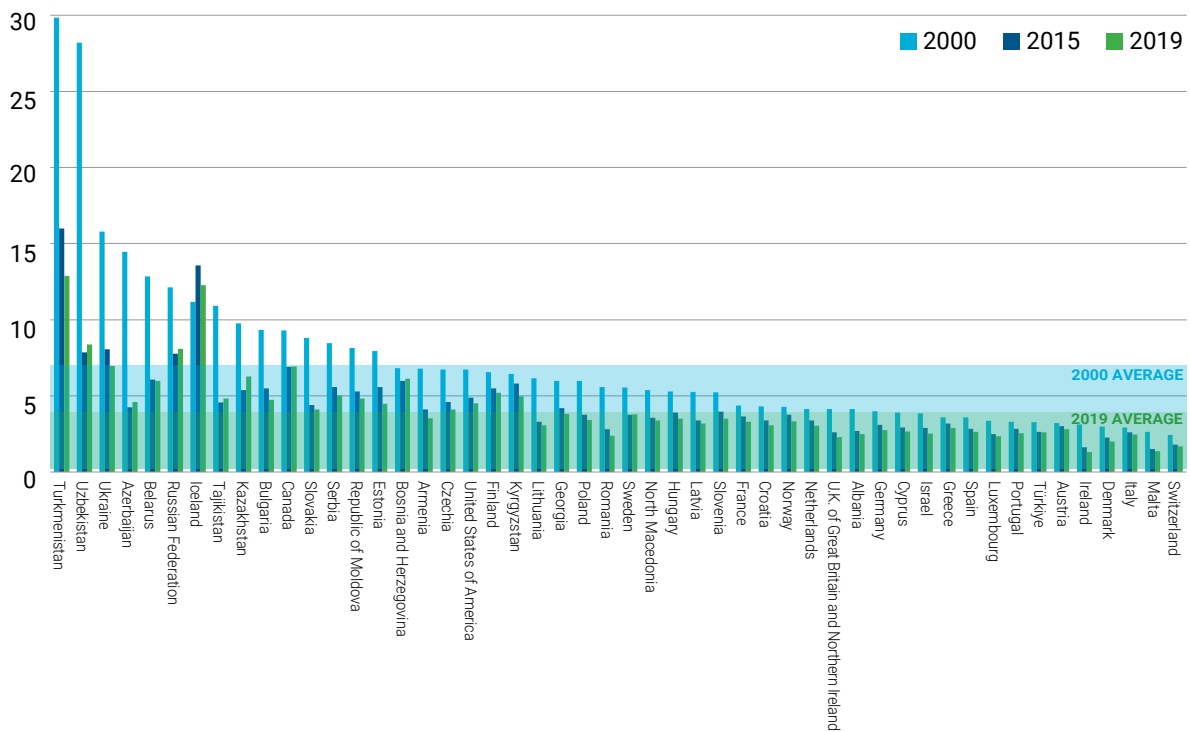
It is also important not to underestimate the importance of the availability of historical data, notably for identifying trends and formulating evidence-based development pathways for sound decision-making and sector development.

### **SDG7.3: Double the global rate of improvement in energy efficiency**

As shown in Figure 4, energy intensity in the UNECE member States generally decreased over the monitoring period. Expressed in MJ/US\$ (megajoules (MJ) per unit of gross domestic product (GDP) in constant 2017 US dollars (US\$) at purchasing power parity (PPP)), the regional average fell from 7.19 MJ/US\$ in 2000, to 4.18 MJ/US\$ in 2019. However, inconsistencies in the rate of improvement can be observed between countries and globally (Figure 5).

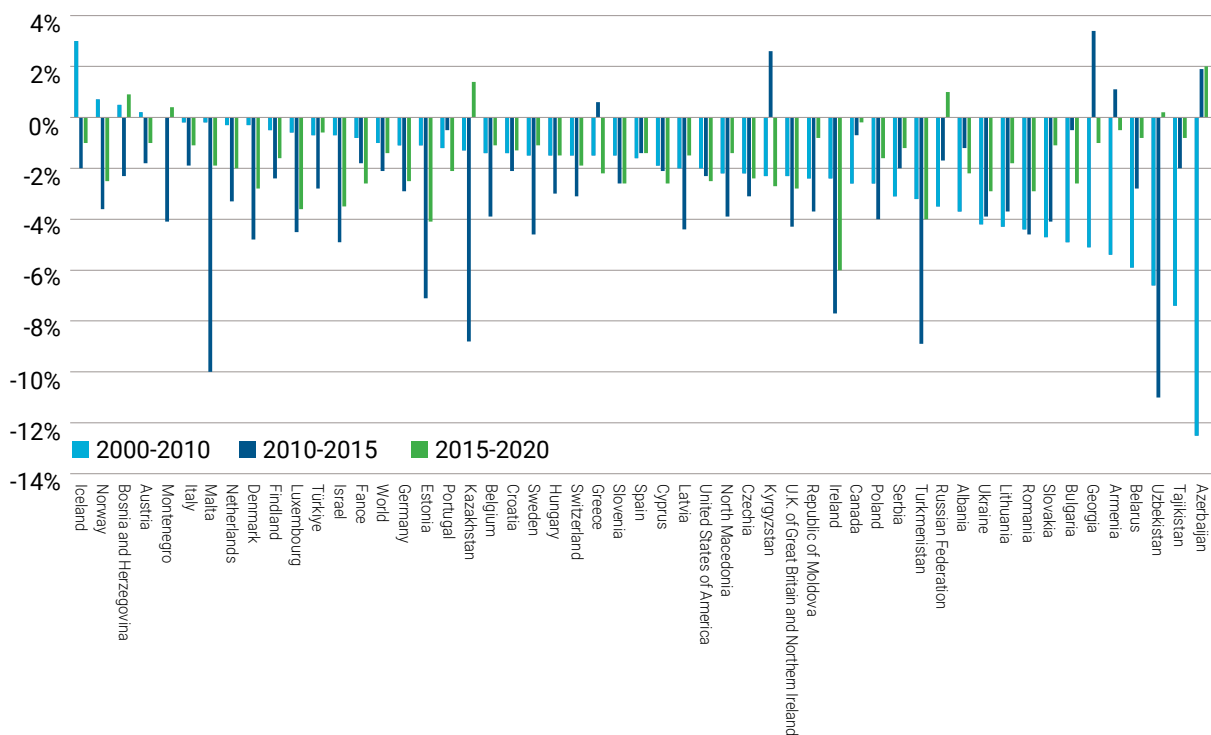


**FIGURE 4. Energy intensity measured in terms of primary energy and GDP, 2000–2019**



Source: Figure based on the SDG Indicators Database, <https://unstats.un.org/sdgs/dataportal/database>

**FIGURE 5. Rate of improvement in energy efficiency in UNECE member States and globally, 2000–2010, 2010–2015, and 2015–2020**



Source: Figure based on the SDG Indicators Database, <https://unstats.un.org/sdgs/dataportal/database>

A significant amount of energy can sometimes be wasted due to inefficiencies across the energy system. A focus shift from technology to integrated thinking, policymaking, and governance is needed to help enable larger-scale implementation of existing solutions by energy system actors. This is because the related challenges are often more of an adoptive nature.

As an example, tangible action on buildings is often hampered by the absence of such integrated thinking, policymaking and governance. This can be seen in the lack of harmonization of building codes with high-performance building targets and their subsequent application in construction and renovation. It can also be seen in the challenge of improving the efficiency of supply chains in the construction business, including in the recovery of materials. A further absence of such integrated thinking, policymaking and governance can sometimes be discerned in the absence of financial mechanisms offering incentives for building and renovation that are in line with the best available technologies and practices.

The development of pathways for the balanced integration of electric mobility by coupling charging infrastructure with urban transport requires a new level of coordination across historically siloed stakeholders. At the same time, turning electric mobility into a grid asset may help, maintaining electricity system resilience and taking advantage of distributed energy resources operated with the support of digital solutions.

Indeed, digitalization may act as a balancing force between energy security, ensuring affordable, reliable, sustainable and modern energy services and the environmental sustainability of energy use. It can also take a key role in ensuring the reliability of the transmission grid and the energy system in general. Yet, digitalization in energy can be complex, potentially impacting economies and societies and implying disruptive changes.

Among many energy actors, a relatively low awareness of the potential of energy efficiency as an energy resource in its own right – and of the resource-use optimization that energy efficiency offers – is the result of the lack of the necessary skill set to implement such existing energy efficiency solutions.

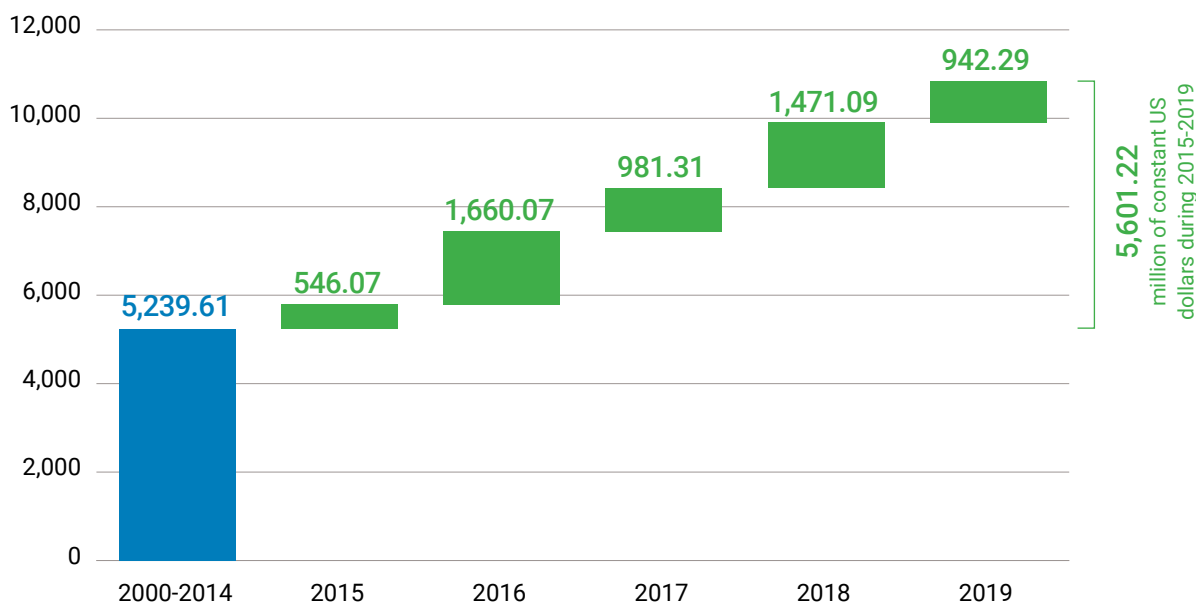
### **SDG7.A: Enhance international cooperation to facilitate access to clean energy research and technology**

Investment in clean energy research and technology in the developing countries of the UNECE region<sup>3</sup> has grown significantly since the adoption of the 2030 Agenda.

Over the 15 years of the 2000–2014 period, cumulative investments in the sector in these countries totalled US\$ 5.2 billion, in constant dollars. In the following five years alone, this figure reached US\$ 5.6 billion (Figure 6).

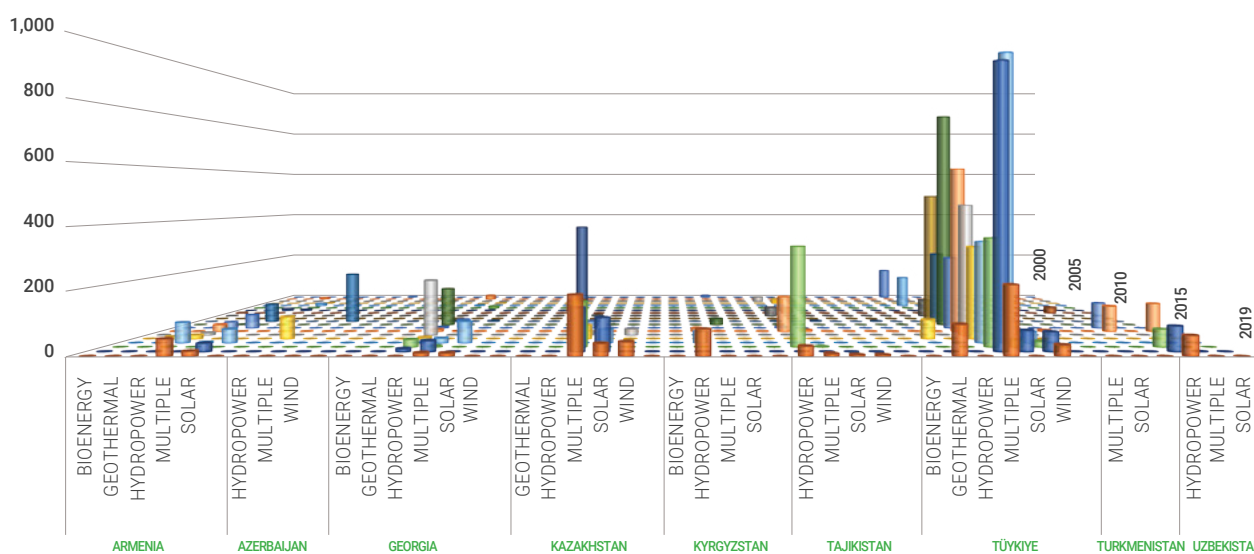
Figure 7 shows the volume of international financial flows in support of clean energy research and development and renewable energy production that went to developing countries in the UNECE region over the 2000–2019 period.

**FIGURE 6. Cumulative investments in clean energy research and technology in developing countries of the UNECE region in the period of 2000–2014 and in 2015–2019**



Source: Figure based on the SDG Indicators Database, <https://unstats.un.org/sdgs/dataportal/database>

**FIGURE 7. International financial flows to developing countries in the UNECE region in support of clean energy research and development and renewable energy production, including in hybrid systems, 2000–2019**



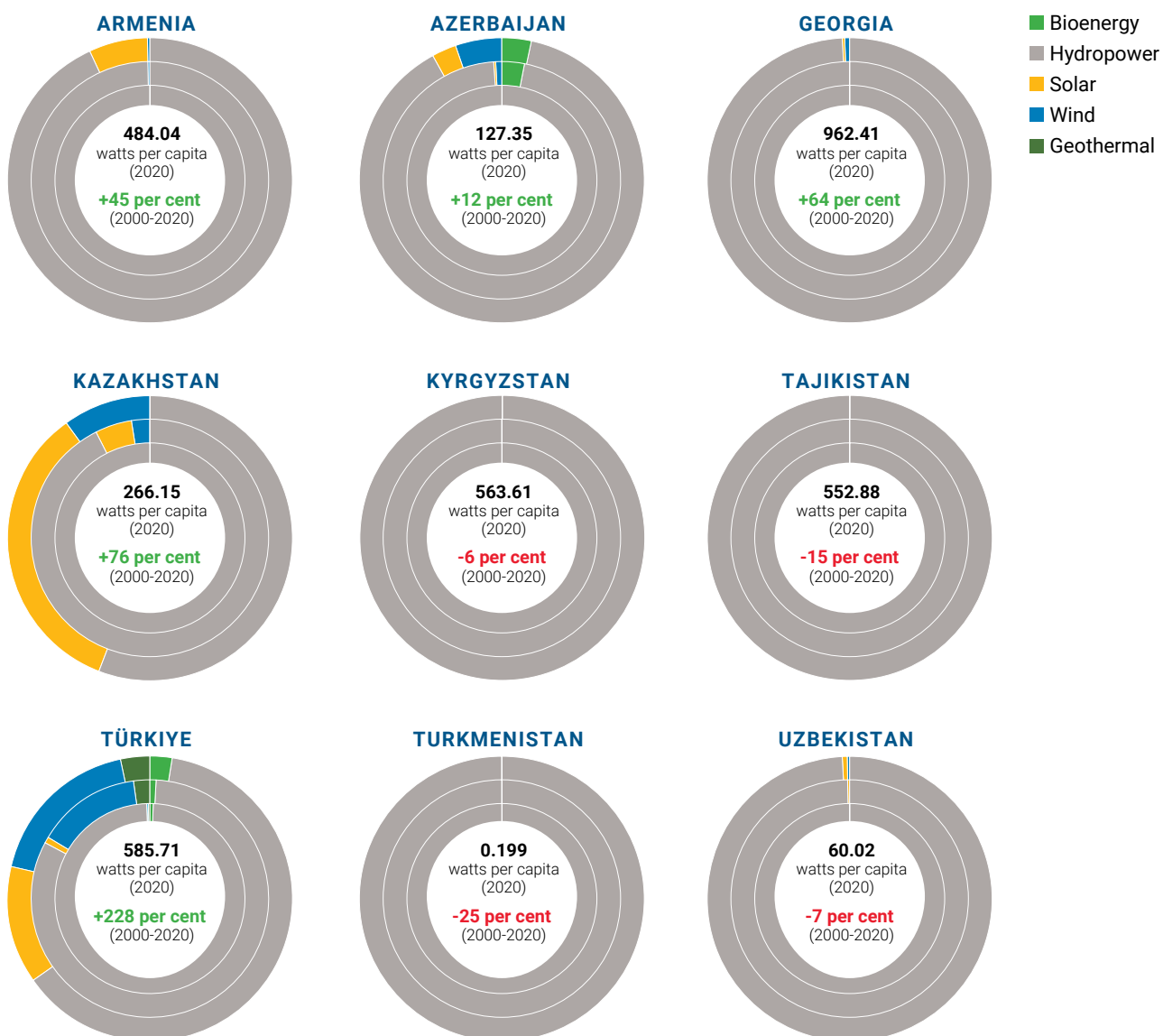
Source: Figure based on the SDG Indicators Database, <https://unstats.un.org/sdgs/dataportal/database>

## SDG7.B: Expand infrastructure and upgrade technology for supplying modern and sustainable energy services for all in developing countries

As shown in Figures 2 and 3, the UNECE region saw an increase in renewable energy deployment in the 2000–2015 period, though the dynamics were uneven across member States.

In all cases, however, in 2020 the renewable energy mix per capita was dominated by hydropower, which accounted for 89 per cent of total installed renewable energy-generating capacity per capita in the region’s developing countries. This was followed by the substantially smaller share taken by solar power, at 5.7 per cent, of which almost half of the capacity was located in Kazakhstan. Wind followed with 4.0 per cent, while bioenergy accounted for 0.6 per cent and geothermal 0.5 per cent. Three-quarters of capacity in both wind and bioenergy were installed in Türkiye, a country which also accounted for most of the installed geothermal capacity (Figure 8).

**FIGURE 8. Installed renewable energy-generating capacity in developing countries of the UNECE region (watts per capita)**



Source: Figure based on the SDG Indicators Database, <https://unstats.un.org/sdgs/dataportal/database>

## KEY INTERLINKAGES WITH OTHER SDGs IN THE REGION

UNECE is a forum where governments can cooperate and engage with all stakeholders on norms, standards and conventions. It therefore takes a multisectoral approach to tackling the interconnected challenges of sustainable development. UNECE approaches these challenges in an integrated manner and with a transboundary focus, thus helping devise solutions to shared concerns.

In accordance with SDG17, UNECE therefore supports and maintains partnerships between stakeholders. These include governments, international and regional organizations, businesses, academia, civil society, and other stakeholders active in related areas, all of which are driving forces for the work of UNECE.

This work covers three main strategic areas:

- Improving connectivity within the region, as targeted by SDGs 7, 8, 9, 11 and 13.
- Reducing environmental pressures and using resources more sustainably, as targeted by SDGs 3, 6, 7, 12, 13 and 15.
- Contributing to creating more dynamic and resilient economies, as targeted by SDGs 7, 8, 9, 11 and 13.

UNECE also promotes women's economic empowerment and the mainstreaming of gender equality in all its activities, in line with SDG5.

The key areas in which UNECE gives countries support towards achieving the SDGs are shown in Figure 9.

**FIGURE 9. UNECE and the SDGs**

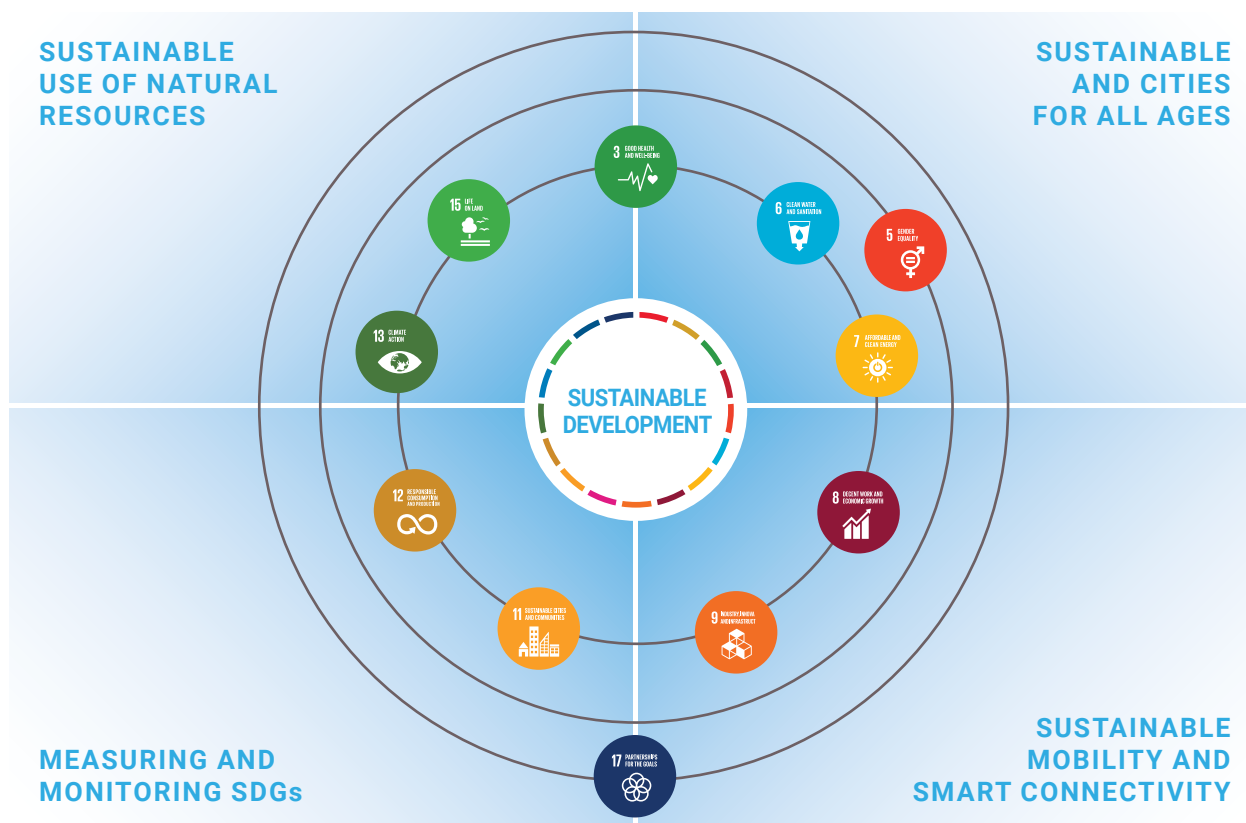


Figure adapted from UNECE website, <https://unece.org/unece-and-sdgs-4>

Clearly, energy is fundamental to achieving many of the goals of the 2030 Agenda. Arguably, however, energy could have a negative impact on progress with some of those targets. This is especially the case if the complexity of certain interactions and interlinkages, such as the food-energy-water nexus, is not given due account.

## POLICY IMPLICATIONS/RECOMMENDATIONS

UNECE acknowledges that the achievement of SDG7 is fundamental to the implementation of all other SDGs.

To build energy systems that are more secure, affordable and environmentally sustainable, the following high-level policy recommendations are proposed:

- Implement energy efficiency solutions immediately and to the greatest possible extent across both the supply and demand sides. Solutions that will enhance energy efficiencies across the industrial, building and transport sectors, as well as in energy generation and transmission and agrifood systems should be scaled and deployed widely.
- Digitalize energy systems and capitalize on the opportunities arising from improved digital literacy and the deployment of digital solutions. These opportunities will arise throughout the transition process and across all layers and stakeholders in the energy system. Digitalization has the potential to make energy systems more efficient, more resilient and more capable of meeting the trajectory needed to limit global warming.
- Diversify the energy supply of both the UNECE region and the individual member states to enhance energy security and avert future supply and price shocks. Countries should promote investment in strengthening the power grid, both to bring greater efficiency and to enable increased penetration of variable renewable energy, as well as to enable further cross-border interconnections.
- Build a workforce to deliver on energy transition by addressing the skills and labour shortage. This will create the next generation of qualified experts who can deploy and maintain clean energy technologies.
- Implement an integrated, sustainable resource management framework based on shared principles. Tools such as the United Nations Framework Classification for Resources (UNFC) and the United Nations Resource Management System (UNRMS) should be applied to minerals and energy sources. They should also be applied to injection projects, including carbon and hydrogen storage, groundwater and anthropogenic resources – such as residues and wastes, including those from agriculture and agrifood systems.
- Integrate circular economy considerations into decision-making. The transition towards a greener energy system must encourage increased circularity of materials and resources and reparability of goods. In that context, the production and use of fossil fuels that are impossible to replace in the short- or medium-term must take place efficiently and with the application of technologies that reduce their carbon footprint.
- Adopt the principles of a transition that is just and inclusive. This transition must aim to find the right balance between member states' on the goals and targets of the 2030 Agenda for Sustainable Development and on national energy security concerns. It must also find the right balance between quality of life and other social ambitions and be a rights-based approach that protects minorities, indigenous peoples and local communities from rights violations due to industrial activities that are part of the energy transition. The transition should also find a just and inclusive balance in its environmental, social and economic objectives.

- Recognize that there is no 'one size fits all' approach. The transition should be aligned with the capabilities and needs of individual member states. This should take into account their endowment of natural resources, technological and industrial base, aspirational socio-economic model, cultural heritage and legal and regulatory structures.
- Enhance linkages between the energy and agrifood systems, promoting investment in renewable energy solutions and adopting new holistic approaches. These include integrated food-energy systems and the water-energy-food-land nexus. Such solutions minimize competition and leverage synergies in water and land use, directly advancing energy and food security. They also contribute to job creation, gender equality and climate resilience and adaptation.
- Acknowledge that all technologies play a role in progress with the transition across the ECE region. This should be done while simultaneously recognizing that each member state chooses its own technological pathway. UNECE countries need to cooperate and develop technically non-discriminatory regulatory frameworks and financing mechanisms. These should provide resources for the necessary investments across the region.
- Address behavioural barriers, as although the technologies and capabilities are in place to achieve more resilient energy systems, the move towards them is not happening fast enough. One of the crucial factors – and the missing link – is human psychology. To apply skills and use the full potential of technology, psychological aspects need to be taken into account. Individual roadblocks that hinder successful implementation should be recognized and overcome while also harnessing the potential for organizational and behavioural optimization.

## ENDNOTES

<sup>1</sup> UNECE (2023), "Growing Challenges for Sustainable Development: Can the UNECE Region Turn the Tide in 2023?", UNECE, Geneva, [https://unece.org/sites/default/files/2023-03/ECE-CES-STAT\\_SDG-Report\\_2023.pdf](https://unece.org/sites/default/files/2023-03/ECE-CES-STAT_SDG-Report_2023.pdf)

<sup>2</sup> See: <https://unece.org/sustainable-energy/publications/unece-renewable-energy-status-report-2022>

<sup>3</sup> These countries are: Armenia, Azerbaijan, Georgia, Kazakhstan, Kyrgyzstan, Tajikistan, Türkiye, Turkmenistan and Uzbekistan.





# 8 Advancing SDG7 in Latin America and the Caribbean

## Contributing organizations:

United Nations Economic Commission for Latin America and the Caribbean (UNECLAC)

## KEY MESSAGES

The Latin America and the Caribbean region has made significant progress in terms of access to electricity in recent years, reaching a 96.5 per cent access rate in 2021.

There are, however, still strong inequalities accentuating energy poverty. The most vulnerable fifth of the population has around nine times less access to electricity than the richest.

At the same time, fossil fuels still dominate. In 2021, these constituting 66.8 per cent of the energy mix.

In recent years, energy efficiency has not been increasing, either, except for a slight improvement in the transportation sector, which consumes the largest proportion of fossil fuel energy.

UNECLAC has calculated that an annual investment equal to 1.3 per cent of regional gross domestic product (GDP) over a decade would be necessary to increase regional electrical integration based on a high share of renewable generation (80%), in order to advance towards SDG 7 targets (7.1 and 7.2). This investment would also lead to a 31.5 per cent reduction in carbon dioxide (CO<sub>2</sub>) emissions and create 7 million new green jobs, with a corresponding increase in wages and incomes.

The following priority actions therefore need to be taken:

- The promotion of investments that move forward universal access to electricity based on renewables, create jobs, reduce emissions and end energy poverty.
- The development of renewable energy value chains with wide potential in the region, such as solar, wind, hydrogen vehicle (H2V) and battery storage to increase the mix of renewable energy in the mix, as well as to promote the economic recovery of the region.
- An increase in energy efficiency in all sectors of economic activity, including households and buildings, through regulations, financing and technology.

Energy in the UNECLAC region constitutes a development driver based on innovation, efficiency and renewability. It contributes to the economic recovery of the region through the development of value chains, the generation of quality jobs and the reduction of greenhouse gas (GHG) emissions.

Recent external shocks have highlighted the fragility of energy production, particularly in countries that are net importers of fossil fuels and in those with low diversification in their renewable energy matrix. In this context, the UNECLAC region needs to accelerate the transition towards renewable and clean energy sources and further electrify the energy mix. It also needs to enhance potential energy efficiencies and universalize coverage, giving a quality and uninterrupted service to increase resilience and boost energy security.

## SUMMARY OF PROGRESS WITH SDG7

### SDG7.1: Ensure universal access to electricity and clean cooking solutions

In recent decades the region has made significant progress in terms of access to electricity.

In 2021, 96.5 per cent of the population in both urban and rural areas had access, while the proportion of the population with primary reliance on clean fuels and technology was 62 per cent.<sup>1</sup>

However, the COVID-19 pandemic and the war in Ukraine have caused an increase in vulnerability around the region, amplifying inflation through increased costs of energy and transportation for all goods and services. This has affected the most vulnerable quintiles of the population in particular, therefore intensifying energy poverty.<sup>2</sup>

Vulnerable households are those with the greatest lack of access to quality energy services, due to insufficient accessibility and/or affordability. Most of the 16.1 million people who are not connected to electricity in the UNECLAC region<sup>3</sup> live in rural and remote areas where the costs of extending networks and infrastructure are high. In addition, the most vulnerable quintile of the region has nine times less access to electricity than the quintile with the highest income. On average, this gap then triples in the rural population.

As an example, during 2022 the Instituto Clima e Sociedade of Brazil (Institute of Climate and Society [ICS]) and Intelligence in Research and Consulting (IPEC) estimated through a survey that 40 per cent of Brazilians had delayed paying their energy bills. The same study showed that the cost of cooking gas and electricity accounted for more than half of family income for around 46 per cent of Brazilian families in 2022. The same survey revealed that 22 per cent of Brazilians were changing their decision-making when buying some basic foods in order to pay their energy bills.

Indicators prior to the COVID-19 pandemic already showed that households across the region were allocating a high proportion of their spending on fuel. Indeed, this could reach up to 10 per cent of their total expenditure. Electricity can account for up to 5 per cent of household spending, while in most countries the percentage can be up to four times higher for the most vulnerable quintiles. The indigenous and Afro-descendant populations of the region are among the most vulnerable.

At the same time, 78 million people do not have access to clean cooking fuels and technologies.<sup>4</sup> There are also gender inequalities that are reflected in the impossibility of accessing clean energy sources for cooking and in the acquisition and administration of energy resources such as firewood and biomass for households.

To overcome energy poverty, it is important to improve not only the quality of access, but also to ensure reliability in sustainable sources for the most disadvantaged and remote sectors.

### SDG7.2: Increased share of renewable energy in the global energy mix

In 2021, the UNECLAC region's primary energy supply relied predominantly in fossil fuels,<sup>5</sup> with these constituting 66.8% of the energy mix.<sup>6</sup> At the same time, previous years showed a stable, constant increase in the supply of renewable sources (Figure 1).

The transport sector is the region’s main final consumer, with a 36 per cent share of total final energy consumption (TFEC) in 2021. This was almost completely based on fossil fuels. The second largest share of TFEC was the industrial sector, with 29 per cent, followed by the residential sector, with 18 per cent. In 2020, the share of renewable energy in the TFEC was 34.2 per cent.<sup>7</sup>

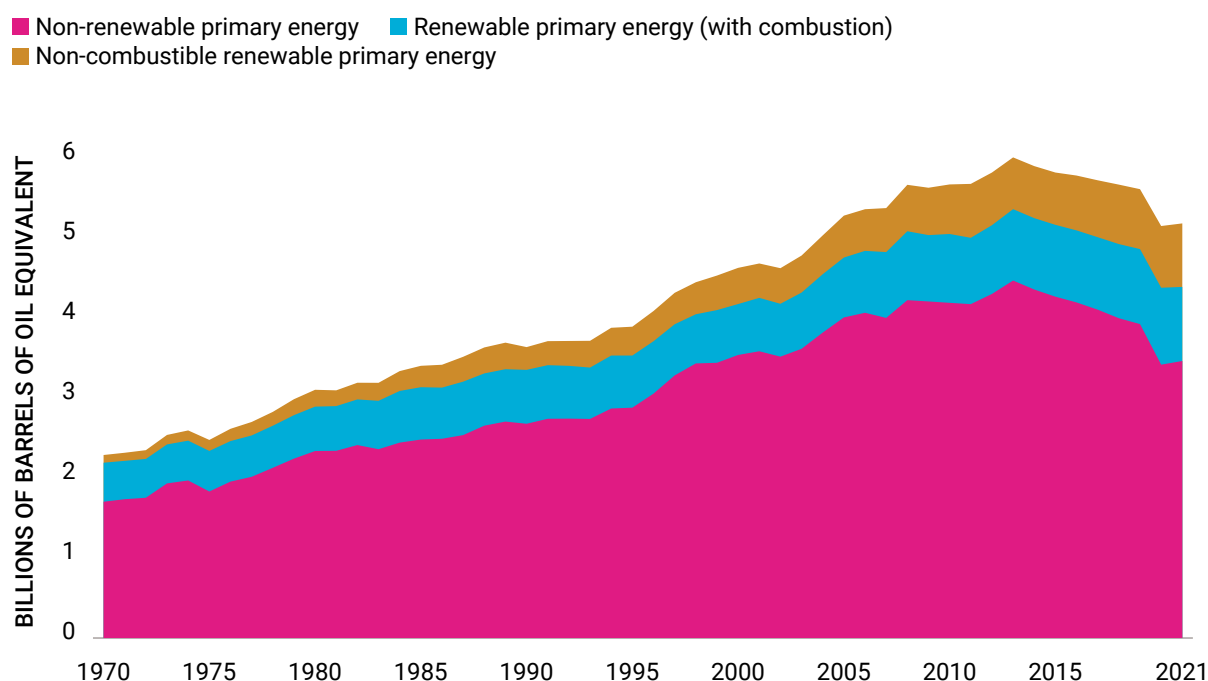
Between 1970 and 2021, the primary supply of energy in Latin America and the Caribbean grew 2.3 times.<sup>8</sup> This accompanied the expansion of the region’s economy and the needs of its households. Over the same period, the energy intensity of the entire region slowly decreased.

Over the same five decades, the share of renewable energy sources in total primary energy supply grew faster, from 25 per cent in 1970 to 33.2 per cent in 2021. A distinction must be made between types of renewable energy sources, however. Those that require combustion and generate significant emissions – for example, firewood and bagasse – represented 54 per cent of total renewables in 2021. Within clean renewables, hydroelectricity had the greatest weight in the region, with a 26 per cent share, followed by solar, wind, biomass and geothermal, which together represented around 20 per cent.

Regarding the region’s electricity subsector, although there are many differences between countries, both the supply and the demand for electricity are expected to grow strongly in the years ahead.

In 2021, the level of renewable electricity generation within the energy mix increased to an average of 59 per cent. This growing proportion therefore shows the great potential in the region for a decarbonization of the energy mix.<sup>9</sup>

**FIGURE 1. Renewable and non-renewable primary energy supply, Latin America and the Caribbean, 1970–2021**



Source: OLADE, 2023; SIELAC online database.

In particular, during 2021, wind and solar continued to expand. A total of 23.5 gigawatts (GW) of new capacity in electricity generation was installed around the region that year. Of this total, non-renewable thermal power plants accounted for 4.5 GW, wind power plants 5.9 GW, solar photovoltaic (PV) power plants 9.8 GW, hydroelectric power plants 2.423 GW and the rest was composed of renewable, biogas and biomass thermal power plants.<sup>10</sup> This meant 81 per cent of the total was based on renewable energy.

### **SDG7.3: Energy efficiency improvement**

Regional energy intensity decreased by 17 per cent in the three decades to 2020.<sup>11</sup> That year, the energy intensity level of primary energy, using constant 2017 GDP at purchasing power parity (PPP), was 3.31 (MJ/US\$).<sup>12</sup>

Transport, which uses 36 per cent of the energy in the region, was the only productive sector that experienced a slight increase in efficiency over the above period. This was in response to the rising relative price of fossil fuels, as well as to technological improvements and stricter regulations.

On the other hand, the manufacturing industry, agriculture and commerce present a slight downward trend in their energy efficiency. This lag is partly explained by the impact of a series of structural barriers. These include insufficient information, inadequate frameworks for regulation and incentives, lack of access to specialized services and low access to financing. Most energy efficiency measures were implemented in UNECLAC countries after 2010, with around 40 per cent applied in the residential sector.

## **POLICY IMPLICATIONS AND RECOMMENDATIONS**

### **Renewable and clean electrification of transport**

In the UNECLAC region, transportation accounts for the highest share of energy consumption and is almost entirely based on fossil fuels. A high percentage of the region's total GHG emissions from energy therefore come from the transport sector.

Electromobility represents one opportunity to address this and reduce emissions in urban areas in particular. It is estimated that renewable-based electromobility in the UNECLAC region could cut CO<sub>2</sub> emissions by 1.341 billion tons by 2050.<sup>13</sup> The potential for reducing CO<sub>2</sub> emissions in just four major cities in the region (Bogotá, Buenos Aires, Sao Paulo and Mexico City) would be 80 million tons of CO<sub>2</sub> per year in passenger vehicles and 2.27 million tons in buses. This represents, on average, a reduction of almost 17 per cent of transport sector emissions in each nation.

In the region, 27 out of 33 countries have prioritized the transport sector as key to the achievement of the GHG emissions reduction goals in their Nationally Determined Contributions (NDCs). Most have legislation that encourages the entry and use of electric vehicles. Additionally, they have introduced electric mobility strategies or included mobility strategies in public policy and legislation on products and services related to electromobility – although still on an insufficient scale. Such electromobility strategies have also been introduced within other productive development strategies.

Since 2020, there has also been clear progress in the installation of electric vehicle charging points, both public and private, across the region. In addition, certain new companies are retrofitting buses and vehicles that have reached the end of their useful life, adapting electric motors and in some cases manufacturing them for new mobility solutions.

A complementary public policy to address the challenges of the transport sector should aim at prohibiting the import of used vehicles, which would help avoid the accelerated aging of the vehicle fleet and the maintenance of a high level of emissions. Incentives and economic instruments enabling the acquisition of authorized high efficiency and performance vehicles, including electric vehicles, should be promoted. Other benefits, such as exemptions from parking fees, circulation permits, reduced electricity consumption and other schemes should also be promoted.

The success of the transition to net-zero emissions will be contingent on systemic decarbonization through the electrification of different economic sectors. In parallel, investments in green hydrogen and other low-carbon alternative fuels, such as biofuels, will play a key role in decarbonizing those sectors where this task presents the greatest difficulty.<sup>14</sup>

### **Green hydrogen**

To dramatically increase the use of renewables in the UNECLAC region, the development of the new, green hydrogen industry needs strengthening.<sup>15</sup>

Green hydrogen is hydrogen produced using renewable energy, such as solar, wind and hydroelectric. These sources of renewable energy are all widely available in the region and often at very competitive prices. Hydrogen is a highly flexible energy source suitable for use in energy intensive sectors, such as heavy industry (cement and steel) and transport (urban cargo, shipping and aviation). Using hydrogen as storage for solar and wind renewables, or as energy in its own right, could therefore contribute to the decarbonization of the energy mix in transport and industry, in particular.

Nowadays, the new hydrogen industry is already developing fast in the region. In 2022, 12 hydrogen energy projects were in operation in Argentina, Brazil, Colombia, Costa Rica, Chile and Peru in sectors such as transportation (buses, trucks and shipping) and reinjection of electricity and mining (replacing diesel). Additionally, there were 71 projects in development in the same countries plus Bolivia, French Guyana, Mexico, Paraguay and Uruguay. Chile, which has the potential to produce 160 million tons of green hydrogen per year, is a leading developer, while many other regional countries have strategies or roadmaps for green hydrogen development, or are in the process of preparing them.

In some countries, however, the price of renewable electricity is not as conducive or viable for hydrogen production. Therefore, a temporary subsidy focusing on kick-starting hydrogen production should be debated.

### **Critical minerals to increase renewables**

To advance renewable energy, the development of infrastructure for production, storage, transmission and the electrification of transport is required. Most clean and renewable energy technologies are intensive in what are known as 'critical minerals',<sup>16</sup> both for the energy transition and for electro-mobility. The energy transition will therefore increase demand for these minerals, which are particularly abundant in the UNECLAC region.

Indeed, Latin America and the Caribbean are home to 51 per cent of the world's lithium reserves, 38 per cent of its copper, 22 per cent of its natural graphite, 39 per cent of its silver and 17 per cent of its nickel, zinc, and rare earths. The region is also responsible for 40.6 per cent of world copper production and 32.2 per cent of world lithium output.

Meeting the objectives of the Sustainable Development Scenario under the Paris Agreement would mean global demand for lithium increasing up to 42 times by the year 2040, taking 2020 as a base year. For graphite, that demand would jump 25 times, cobalt 21 times, nickel 19 times and copper 2.7 times.

According to UNECLAC estimates, the expansion of electrical capacity in Latin America alone, guided by renewable sources and in a scenario of regional integration, will require 47 GW and 75 GW of solar photovoltaic and wind generation, respectively, by 2032. To reach this capacity, the region's generation and transmission facilities would require 611,000 tons of copper, 53,300 tons of nickel, 2,500 tons of cobalt and 2,100 tons of lithium between them.

### **Cross-border power grid interconnection**

Between them, the countries of the UNECLAC region boast some of the richest hydro, wind and solar energy resources in the world – resources that are crucial to renewable energy development.

Countries like Brazil, Colombia, Peru and Bolivarian Republic of Venezuela have enormous potential for hydropower development. Argentina and the north-eastern part of Brazil have abundant wind energy resources. The Atacama Desert of Chile has the region's best solar resources.

To effectively tap into these large-scale renewable energy resources, power grid interconnection between the different countries of the region needs to be strengthened. For this, a regional platform for renewable power allocation and dispatching needs to be created. In this way, power generated from hydro, wind and solar energy reservoirs can be delivered to major cities and load centres. A better balance of power supply and demand can be achieved on a country-wide and region-wide basis, with the region also possessing excellent power complementarity among its various renewable energy sources, as well as among its different countries.

As an example, the Belo Monte Ultra-High Voltage (UHV) hydropower transmission project in Brazil has played a crucial role in the effective development and outbound transmission of clean hydropower from the Amazon River, with significant economic and social benefits.

This successful Brazilian case can be replicated and rolled out in other parts of Latin America, further energizing the development of large-scale renewable energy bases in other countries.

It is therefore recommended that a joint assessment of renewable energy resources in the region, such as wind and solar energy, be conducted. Furthermore, collaborative regional power interconnection planning for the medium and long term should be carried out, as well as the promotion of electricity trading, market coordination and integration among different countries. These measures would lay a solid foundation for regional power grid interconnection.



## CONCLUSIONS

The UNECLAC region has made substantial progress with SDG7. Access to energy services is relatively high and the proportion of renewable energy within the energy mix has been increasing – although it remains vulnerable to external shocks. On the other hand, multidimensional energy poverty persists and there have been no significant advances regarding energy efficiency. These regional challenges also constitute transformative opportunities, however, in which immediate action must be taken.

At the same time, reducing the costs of renewable and storage technologies is not enough on its own. Effective governance and long-term national energy planning is also required, if the quality of electricity services and energy security is to improve in the face of external shocks. A strengthened regulatory, investment and financing institutional ecosystem is needed to accelerate an inclusive, fair and sustainable energy transition for all.

UNECLAC encourages public policy to be deployed nationally. In this, an investment drive is essential, aimed at generating new green jobs and reducing GHG emissions by increasing renewables, improving infrastructure and establishing universal access to energy services. The latter requires the development of renewable energy value chains and the public and private sectors working and participating together. It also requires the deployment of mechanisms that strengthen regional institutions focused on achieving SDG 7.

## ENDNOTES

- <sup>1</sup> UN STATS (2023), <https://unstats.un.org/sdgs/dataportal> accessed May 2023
- <sup>2</sup> The concept of energy poverty refers to the insufficient satisfaction of energy needs. This encompasses standards of equitable access in both quantity and quality. Amongst other factors, this includes standards of lighting, air conditioning, the cooking and maintenance of food, information and communication technologies and affordability.
- <sup>3</sup> OLADE (2022), *"Panorama Energético de América Latina y el Caribe 2022"* ("Energy Panorama of Latin America and the Caribbean, 2022"), The Latin American Energy Organization, Quito, <https://sielac.olade.org/WebForms/Reportes/SistemaDocumental.aspx?ss=7>, accessed May 2023.
- <sup>4</sup> UN STATS (2023) and CEPALSTAT (2023), <https://statistics.cepal.org/portal/cepalstat/index.html?lang=es>, accessed May 2023.
- <sup>5</sup> OLADE (2023), *"SIEE-LAC Sistema de Información Energética de Latinoamérica y el Caribe"*, ("SIEE-LAC Energy Information System of Latin America and the Caribbean"), The Latin American Energy Organization, Quito, <https://sielac.olade.org/>, accessed May 2023.
- <sup>6</sup> Fossil fuel subsidies are still in place in the region. In 10 Latin American countries, hydrocarbons and minerals account for fiscal revenues above 2 per cent of GDP, while this figure is up to 10 per cent in countries such as Bolivia, Ecuador and Venezuela.
- <sup>7</sup> UN STATS (2023), accessed May 2023.
- <sup>8</sup> This was from 2.280 billion to 5.183 billion barrels of oil equivalent (boe), according to OLADE (2023).
- <sup>9</sup> The contribution of the UNCELAC region to global GHG emissions is limited, at around 5–8 per cent. Nevertheless, regional countries have committed to reductions through their Nationally Determined Contributions (NDCs). However, these are being implemented more slowly than the United Nations Environment Programme (UNEP) expected. In the case of the UNCELAC region, investment would have to be multiplied eight times to cover the mitigation needs committed to in the region's NDCs and thus to achieve the 1.5Co goal.
- <sup>10</sup> OLADE (2022), *"Panorama Energético de América Latina y el Caribe 2022"* ("Energy Panorama of Latin America and the Caribbean, 2022"), The Latin American Energy Organization, Quito, <https://sielac.olade.org/WebForms/Reportes/SistemaDocumental.aspx?ss=7>, accessed May 2023.
- <sup>11</sup> OLADE (2023), *"SIEE-LAC Sistema de Información Energética de Latinoamérica y el Caribe"*, ("SIEE-LAC Energy Information System of Latin America and the Caribbean"), The Latin American Energy Organization, Quito, <https://sielac.olade.org/>, accessed May 2023 and CEPALSTAT (2022), <https://statistics.cepal.org/portal/cepalstat/index.html?lang=es>, accessed May 2023.
- <sup>12</sup> UN STATS (2023), accessed May 2023.
- <sup>13</sup> Diego Messina, Rubén Contreras Lisperguer, René Salgado (2022), *"El rol de las energías renovables en la electrificación del transporte público y privado de las ciudades de América Latina y el Caribe: impactos, desafíos y oportunidades ambientales"* ("The role of renewable energy in the electrification of public and private transport in the cities of Latin America and the Caribbean: Environmental impacts, challenges and opportunities"), UNECLAC, Santiago, [www.cepal.org/es/publicaciones/48175-rol-energias-renovables-la-electrificacion-transporte-publico-privado-ciudades](http://www.cepal.org/es/publicaciones/48175-rol-energias-renovables-la-electrificacion-transporte-publico-privado-ciudades), accessed May 2023.
- <sup>14</sup> OECD and others (2022), *"Perspectivas económicas de América Latina 2022: Hacia una transición verde y justa"* ("Latin American Economic Outlook 2022: Towards a Green and Just Transition"), Organisation for Economic Co-operation and Development, Paris, <https://doi.org/10.1787/f2f0c189-es>, accessed May 2023.
- <sup>15</sup> In 2021, 95 per cent of the hydrogen supplied globally was produced from fossil fuels, however, and was therefore not 'green'. The UNECLAC region produces 5 per cent of the world's 'grey' hydrogen (made from natural gas reformed by steam). This is used as a raw material in refineries and in the production of ammonia, methanol and steel.



# 9 Advancing SDG7 in least developed countries, landlocked developing countries and small island developing states

### Contributing organizations:

United Nations Office of the High Representative for Least Developed Countries, Landlocked Developing Countries and Small Island Developing States (UN-OHRLLS)

## KEY MESSAGES

Urgent international attention is needed to address the inequalities in access to sustainable energy that are faced by the least developed countries (LDCs), landlocked developing countries (LLDCs) and small island developing states (SIDS). Unless efforts are scaled up significantly in these countries, the world will fall short of its target of universal access to affordable, reliable and modern energy services by 2030.

Supported by technological leapfrogging, faster deployment of renewables in the LDCs, LLDCs and the SIDS can help bridge the sustainable energy access gap, strengthen energy security and support climate goals. A major shift in strategy is required, however, to significantly increase these countries' access to accessible and appropriate financing and support clean or low-carbon energy initiatives. In this regard, public finance remains crucial to de-risking and crowding-in private sector investment, bringing new markets to maturity in the LDCs, LLDCs and SIDS.

Currently, international public finance in support of energy is still concentrated in a few countries and on larger projects. Therefore, a concerted effort is needed by developed countries, governments and international organizations to support local enterprises in the LDCs, LLDCs and SIDS, particularly small- and medium-sized enterprises, off-grid developers and organizations led by women. This can support the development of new products and technologies, address inequalities and narrow the gap in access to electricity and clean cooking between countries, as well as within them.

Accelerating access to reliable, affordable and modern energy services should be a key element in the new 10-year programmes of action for the SIDS and LLDCs to be adopted in 2024.

## SUMMARY OF PROGRESS WITH SDG7 INDICATORS

### SDG7.1.1 Access to electricity

In 2021, electrification rates in the LDCs and LLDCs continued to rise, but remained low, at 56 per cent and 60 per cent respectively. Access to electricity is higher in the SIDS, at 76 per cent. However, this rate has remained virtually unchanged since 2019.

The global population without access to electricity is increasingly concentrated in the LDCs, which accounted for 70 per cent of those without any power in 2021. The overall figures also hide urban/rural disparities, as well as the significant progress made in some countries. Indeed, in 2021, some achieved universal access for the first time.

### **SDG7.1.2 Access to clean cooking technologies**

In line with worldwide trends, in the LDCs, LLDCs and SIDS advances in access to clean cooking have been slower than in electrification over the past 10 years.

The proportion of the population with access to clean cooking solutions in the LDCs, LLDCs, and SIDS were 25 per cent, 28 per cent and 58 per cent, respectively, in 2021. In comparison, the worldwide average was 71 per cent.

A faster rate of adoption of clean cooking technologies requires committed and sustained policies to provide easy access to modern fuels and stoves at affordable prices. It also requires the dissemination of information and messaging that can help change behaviour.

### **SDG7.2 Substantially increasing the share of renewable energy**

Potentially, the LDCs, LLDCs and SIDS could make considerable strides toward achieving SDG7 by using their abundant natural energy resources. Yet, in comparison to other developing economies, the LDCs, LLDCs and SIDS are falling behind global trends in the adoption of cutting-edge renewable technologies.

The share of modern renewables in total final energy consumption (TFEC) is therefore progressing particularly slowly. In the LDCs, the average share was 12 per cent, in the LLDCs, 10 per cent and the SIDS, 8 per cent in 2021, with fossil fuels still meeting a substantial share of growth in TFEC.

### **SDG7.A.1 International public financial flows to developing countries in support of renewable energy**

In US dollar (US\$) terms, international financial flows in support of clean energy fell for a fourth year in a row in 2021, down to US\$ 10.8 billion after standing at US\$ 26 billion in 2017. The countries where support is needed the most received relatively little. The 92 countries in the LDC, LLDC, SIDS groups combined received less than a third of total global flows – the LDCs receiving US\$ 2 billion, the LLDCs US\$ 1.3 billion and the SIDS US\$ 198 million.

This overall decline in support of clean energy is of grave concern given the urgent need for universal access to energy, a critical factor in reducing poverty, as well as the need for structural transformation and clean energy systems that can align development with climate goals.

### **SDG7.B.1 Installed renewable electricity-generating capacity in developing countries**

Installed renewable power generation capacity is growing in the LDCs, LLDCs and SIDS, although more slowly than in other developing countries.

In 2021, the compounded annual growth rate of installed renewable capacity per capita was highest in the SIDS, at 8.5 per cent, followed by the LDCs, at 5.5 per cent and the LLDCs, at 3.9 per cent. This compared to a global average of 9.6 per cent in other developing countries over the period 2016 to 2021.

### **SDG7.3 Energy efficiency**

Using the most recent available data, for 2020, energy intensity improved in the SIDS and LLDCs while declining in LDCs. There was a huge drop in gross domestic product (GDP) and energy consumption in 2020, it difficult to identify any particular trend in energy intensity, as the indicator was affected by factors unrelated to energy efficiency during the period in question.

## PROGRESS AND PROSPECTS WITH SDG7 INDICATORS

### SDG7.1.1 Access to electricity

Regarding the target of universal access to affordable, reliable, sustainable and modern energy, the LDCs, LLDCs and SIDS have made considerable progress over the last decade.

Access rates in the LDCs improved from 55 per cent to 56 per cent between 2020 and 2021, despite the global pandemic.<sup>1</sup> Yet, this still meant 481 million people in the LDCs were without any connection to electricity in 2021. This figure was almost two-thirds of the total global population lacking access.

An estimated 32 million people a year in the LDCs were connected to electricity between 2019 and 2021.<sup>2</sup> Yet, this rate needs to more than double, to 63 million new connections per year, if the goal of universal access is to be achieved by 2030.<sup>3</sup>

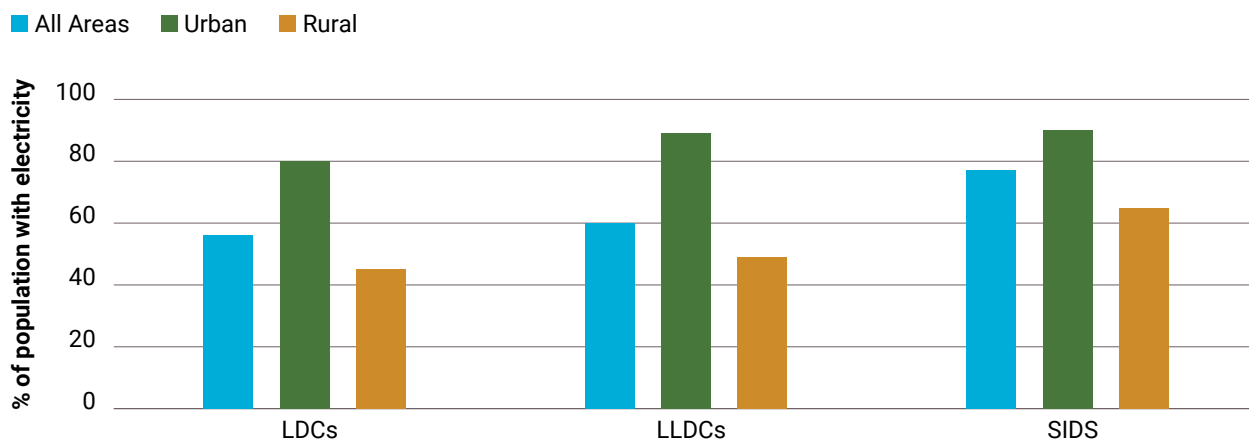
Meanwhile, up to 2021, only 3 LDCs have reached the goal of universal access (Bhutan in 2019, followed by Timor-Leste and the Lao People's Democratic Republic in 2021). Urgent actions are therefore needed to scale up support for LDCs, prioritizing the poorest and rural communities, if they are to reach universal access.

Regarding the LLDCs, on average, 60 per cent of the population in these countries had access to electricity in 2021.<sup>4</sup> By then, almost half of the 32 LLDCs had access rates of over 97 per cent of the population, with 10 reaching the universal access target. The low average for the LLDCs reflects the especially low access rates of those LLDCs which are also LDCs.

These figures, however, hide huge disparities within countries, as well as between urban and rural areas (Figure 1).

Regarding the 37 SIDS, on average, the proportion of the population with access to electricity was 76 per cent in 2021.<sup>5</sup> Country level data reveals that 25 SIDS had access rates above 95 per cent that year, with 17 SIDS having already achieved the goal of universal access by 2021. Among the 5 SIDS with the lowest access rates, 4 were also classified as LDCs. The exception was Papua New Guinea, which had an access rate of 21 per cent – the lowest rate among all SIDS.

**FIGURE 1.** Percentage of the population with access to electricity in all areas, urban areas and rural areas, in LDCs, LLDCs, and SIDS, 2021



Source: From data supplied to UN-OHRLLS by the World Bank, April 2023.

### **SDG7.1.2 Access to clean cooking solutions**

Unless clean cooking finds a lasting place on the global political agenda, by 2030, more than 2.1 billion people will continue to rely on fuels such as biomass, kerosene or coal for cooking.<sup>6</sup> Household air pollution, mostly smoke from cooking, disproportionately affects women and children and is linked to almost 2.5 million premature deaths a year.<sup>7</sup> Scaling up of clean cooking solutions can help reduce direct carbon emissions and conserve the environment. It is also considered a cost-effective way to incorporate nature-based climate solutions.

In 2021, almost 80 per cent of the population living in the LDCs – some 880 million people – lacked clean cooking facilities.<sup>8</sup> In 20 LDCs the problem was acute, with less than 5 per cent having access to clean fuels for cooking.

In the LLDCs, the proportion of the overall population with access to clean cooking increased by only 3 percentage points between 2010 and 2021, rising from 25 per cent to 28 per cent.<sup>9</sup> In the SIDS, access to clean cooking and technologies increased by around 1 percentage point annually from 2000, plateauing at 58 per cent in 2010.<sup>10</sup>

Several factors lie behind the slow rate of adoption of clean cooking technologies. These include infrastructure barriers, such as access to electricity for electric stoves, lack of income and affordability, as well as behavioural and cultural factors. Regarding the latter, traditional methods of food preparation using wood may take preference in a household's decision whether or not to switch to clean cooking.<sup>11</sup>

If universal access to clean cooking is not achieved, the cost of inaction – driven by negative externalities on health, gender, and climate – is estimated at US\$ 2.4 trillion a year.<sup>12</sup> Scaling up efforts to reach universal access requires committed and sustained policies to provide easy access to modern fuels and stoves at affordable prices. It also requires information distribution and messaging aimed at changing behaviour.<sup>13</sup> Greater involvement of organizations led by women and the empowerment of women are also critical to this target. Achieving this milestone would require strengthening policy support in all sectors and implementing effective tools to further mobilize private capital, especially in the LDCs, LLDCs and SIDS.

### **SDG7.2 Substantially increasing the share of renewable energy**

In the LDCs, LLDCs and SIDS the share of renewable energy sources in TFEC remains high. This is especially so in the LDCs, where the share was 71 per cent in 2021. This high figure, however, is because in the LDCs the majority of the population relies on traditional uses of biomass (wood fuel and crop and animal residues) for cooking and heating.<sup>14</sup>

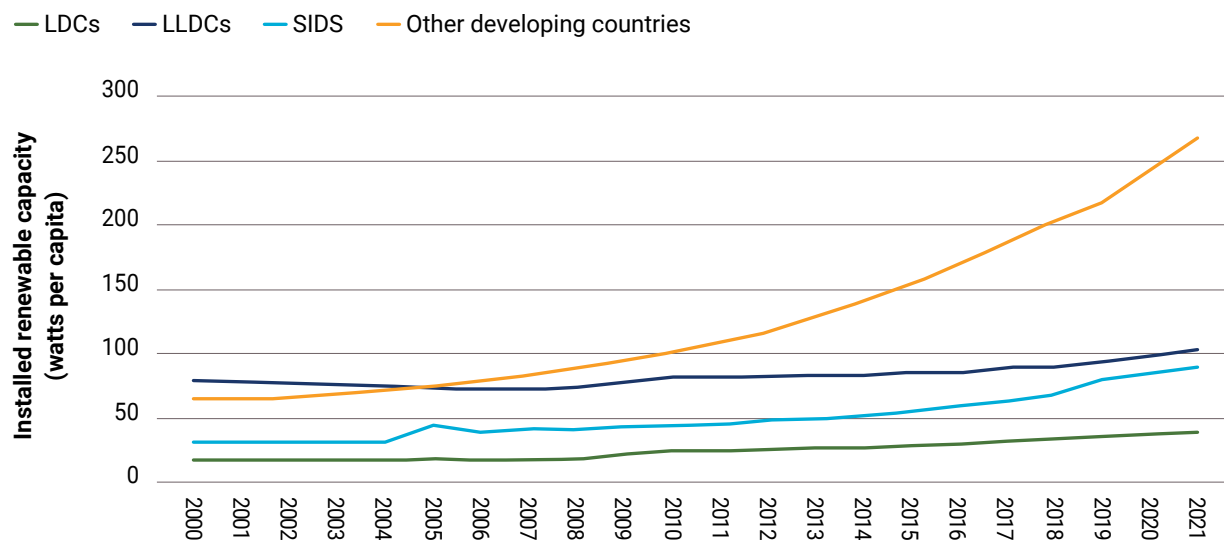
In the LLDCs, the share of renewable energy sources in TFEC in 2021 was 45 per cent and in the SIDS it was 20 per cent. When traditional use of biomass is excluded, the share of renewables in TFEC drops significantly – in the LDCs to 12 per cent, the LLDCs to 10 per cent and the SIDS to 8 per cent.<sup>15</sup>

During the COVID-19 pandemic, economic activity and global supply chains were continuously disrupted. Yet renewable energy consumption continued to grow globally, in contrast to the consumption of other energy sources.<sup>16</sup>

Nonetheless, the LDCs, LLDCs and SIDS fell behind this positive global trend (Figure 2), although there is huge potential for these countries to capitalize on their natural energy resources, particularly as renewable energy becomes increasingly competitive, worldwide. Scaling up decentralized energy systems, for example, can have a great impact in lifting millions out of energy poverty and maximizing the productive capacity of sectors such as agriculture – the backbone of many of these countries' economies. In many



**FIGURE 2.** Installed renewable electricity-generating capacity (watts per capita) in LDCs, LLDCs and SIDS compared with the other developing countries, 2000 to 2021



Source: IRENA, 2023.

developing countries, especially the LDCs, LLDCs and SIDS, the private sector finances most renewable energy investments, yet the public sector remains pivotal in financing projects directly, or in leveraging private capital.

Out of the three groups, the SIDS have made the most progress in adding renewable energy generating capacity to their energy mix. They achieved a compound annual growth rate (CAGR) for installed renewable electricity generating capacity (in watts per capita) of 8.5 per cent between 2016 and 2021.

Many SIDS do not have any indigenous fossil fuel supply and therefore import up to 100 per cent of their petroleum products. These, in turn, comprise most of their energy mix and their emissions. Shifting away from fuel imports can increase the energy independence of the SIDS, based on utilization of their abundant natural energy resources. It would also improve their balance of payments position and at the same time help meet their ambitious targets on climate action.

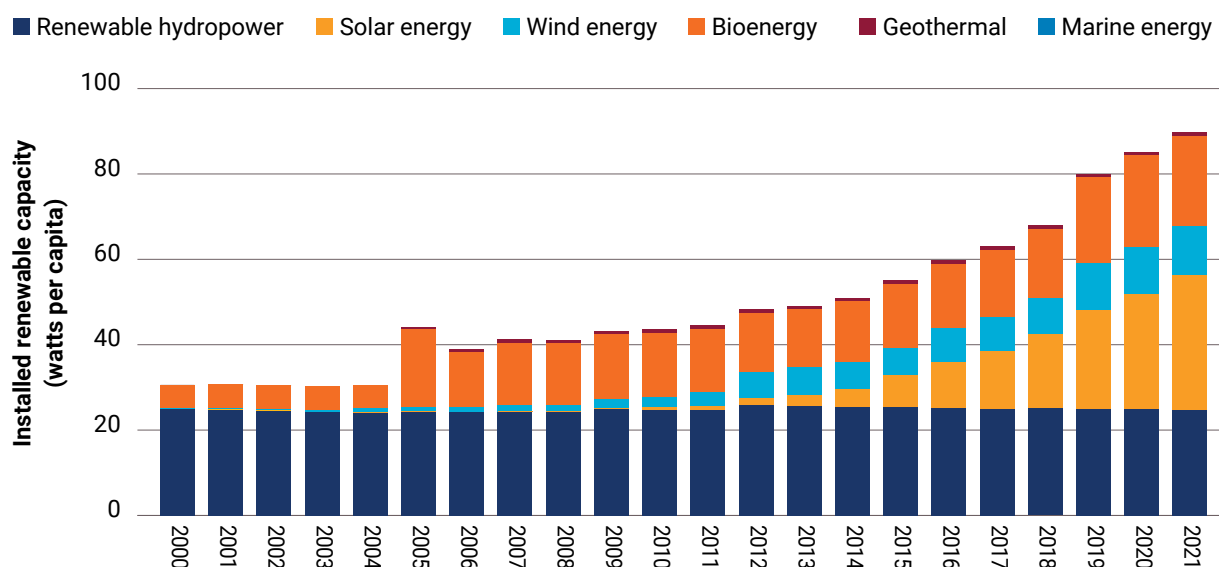
Most SIDS have already started this transition, with growth in solar supported by the competitiveness of photovoltaic (PV) systems, globally. On these island nations, the second largest capacity by technology is renewable hydropower, followed by bioenergy (Figure 3).

Between 2016 and 2021, installed renewable capacity grew the fastest in Antigua and Barbuda, Barbados, Maldives, Nauru and the Seychelles. In addition, Belize, the Dominican Republic, Fiji, Mauritius and Samoa all have long-standing records of high renewable generation capacity. Some of the SIDS, however, have seen their renewable energy capacity decline in recent years.

### 7.A.1 International financial flows to developing countries in support of renewable energy

Significant initial upfront investment costs are required to increase the share of renewables in the energy-mix. Other challenges, such as current dependence on fossil fuels, may also make the energy transition challenging for the LDCs, LLDCs and SIDS. Additionally, without development finance acting as

**FIGURE 3. Renewable installed generating capacity in SIDS, 2000 to 2021**



Source: IRENA, 2023.

a catalyst, the limited market size of these countries makes it difficult to overcome the perceived and real risks investors see in the LDCs, LLDCs and SIDS. Rising commodity prices have also increased the cost of producing solar modules, wind turbines and biofuels. This has reversed the previous, declining cost trend seen in renewable energy.<sup>17</sup>

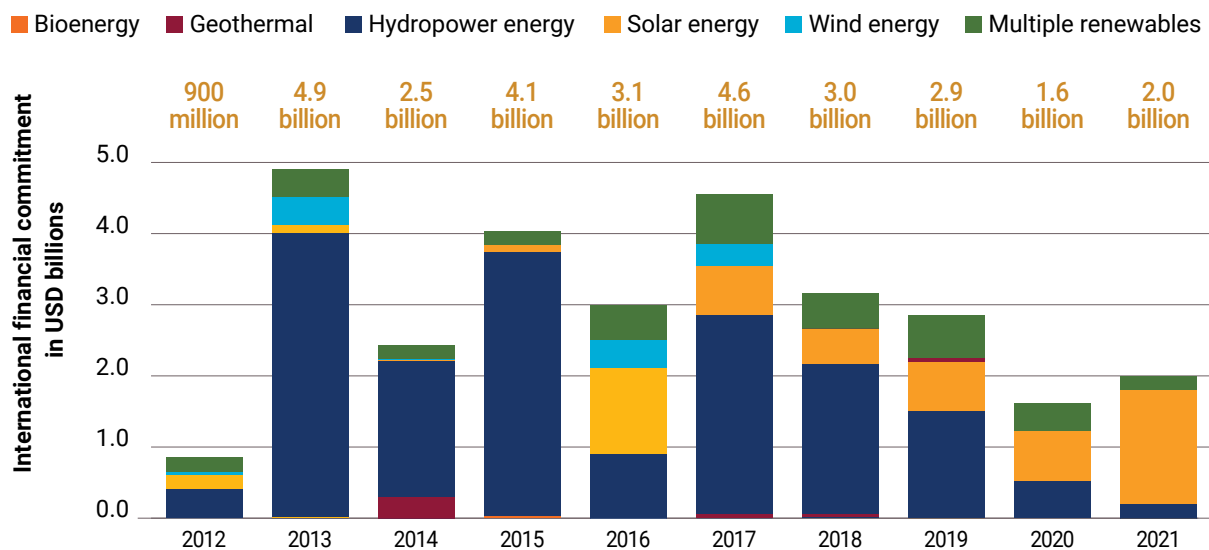
Globally, international financial flows to developing countries in support of renewable energy had started declining even before the onset of the COVID-19 pandemic. This decline continued through 2021, when these flows amounted to US\$ 10.8 billion. Of this, US\$ 2.0 billion went to the LDCs, US\$ 1.3 billion to the LLDCs and US\$ 198 million to the SIDS – an amount significantly smaller than that going to the other two groups.<sup>18</sup>

The current level of international public financial flows to the LDCs, LLDCs and SIDS for clean energy is therefore insufficient to spur larger volumes of investments from the private sector, a flow which is critical to expedite progress on SDG7.

A closer look at the international financial flows to LDCs by technology type also reveals wide variations between regions and countries, with large scale investments concentrated in a few places. In 2013, for example, a peak in financial flows to LDCs occurred. Yet, this flow was accounted for by just a handful of LDCs where major hydropower generation capacity was being developed. In 2017, too, the Lao People’s Democratic Republic received almost half of all flows to LDCs globally, yet this was for a single scheme, the Nam Theun 2 Hydropower Project.<sup>19</sup>

Solar energy projects are typically smaller in financial value, with funding for solar overtaking hydropower in recent years (Figure 4). More LDCs are receiving at least some funding for solar, although almost half of the flows in 2021 still went to just three countries – Ethiopia, Niger and Tanzania. Over the last decade, the countries receiving the largest flows have also achieved the fastest growth in electrification rates,

**FIGURE 4. International financial flows in support of clean energy by technology to LDCs, 2012-2021**



Source: IRENA, 2023.

underscoring the importance of these flows in unlocking investments in the LDCs.

Efforts in the LDCs, LLDCs and SIDS must also be scaled up to support local enterprises. This is especially the case for micro-, small- and medium-size enterprises (MSMEs) and off-grid developers, if new markets are to be brought to maturation.

Off-grid and decentralised energy systems provide a viable electrification solution that requires low initial investment, is rapidly deployable, environmentally sound, can be suited to match local needs and has the potential to empower rural communities. Such schemes can also have a focus on youth and women.<sup>20</sup> In particular, huge opportunities exist to scale up the application of renewables and energy efficient technologies in the agrifood sector in these most vulnerable nations. This sector is particularly at risk and faces an uncertain future due to climate change, water stress, pests and diseases, trade and macroeconomic policies and other, unexpected events.

## PRIORITY ACTIONS TO ACCELERATE SDG7 IMPLEMENTATION

To achieve the SDG7 targets, there is an urgent need to enhance global efforts to address the specific barriers that exist in the 46 LDCs, 32 LLDCs and 37 SIDS.

Along with electrification efforts to provide universal access, additional challenges must be tackled in order to provide a sustainable energy supply that is conducive to economic growth. This is also vital in facilitating progress toward the achievement of all the other SDGs.

Enacting enabling policy and regulatory frameworks to support the energy sector in the LDCs, LLDCs and SIDS must be a top priority in both national, regional, and international settings. Faster deployment of renewables, supported by technological leapfrogging, can help to bridge the sustainable energy access gap and at the same time support these countries' climate goals.

The following priority actions are therefore recommended:

- Seize every opportunity to rapidly accelerate efforts in the LDCs, LLDCs and SIDS in order to achieve universal access to energy by 2030. This will require stronger political support and long-term energy planning, identifying least-cost pathways and appropriate financing to ensure universal access to sustainable energy in the shortest time possible.
- Reaffirm the central role of public finance in sustainable financing of energy projects.
- Significantly scale up international public financial flows to the LDCs, LLDCs and SIDS in order to leverage private capital and bolster energy investments in quality climate-resilient energy infrastructure. This will enable both economic and environmental benefits.
- Ensure that clean energy transitions are cost-efficient, people-centred and inclusive. Governments have a key role in this. A comprehensive energy sector subsidy reform plan that phases out fossil fuel subsidies and redirects finances to better targeted social spending can help reduce inefficiencies in the allocation of resources.
- Energy transition also represents better opportunities for the LDCs, LLDCs and SIDS to attract investments from a wider pool of funding sources, including climate financing facilities. Capacity constraints facing LDCs and SIDS must be addressed in order to expand financial access and to navigate multiple financing facilities. This is also key to successful project preparation and bankability.
- Enhance the linkages between energy and agrifood systems. Promoting investment in renewable energy solutions and adopting new holistic approaches, such as integrated food-energy systems and the water-energy-food-land nexus, which minimise competition and leverage synergies in water and land use, can directly advance energy and food security. They can also contribute to job creation, gender equality and climate resilience and adaptation.
- Increase support for MSMEs, including support for decentralized renewables, which are often at the forefront of delivering energy services in poorer and rural communities. These and off-grid systems should be supported in order to bring new markets to maturity.

## ENDNOTES

- <sup>1</sup> From data on electricity access supplied to UN-OHRLLS by the World Bank, April 2023.
- <sup>2</sup> SDG7 Tracking Report, 2023. Tracking SDG7: The Energy Progress Report 2023 (who.int), [www.who.int/publications/m/item/tracking-sdg7--the-energy-progress-report-2023](http://www.who.int/publications/m/item/tracking-sdg7--the-energy-progress-report-2023)
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- <sup>4</sup> From data on electricity access supplied to UN-OHRLLS by the World Bank, April 2023.
- <sup>5</sup> Ibid.
- <sup>6</sup> See International Energy Authority (IEA) (2022), "SDG7: Data and Projections", IEA, Paris, <https://www.iea.org/reports/sdg7-data-and-projections/access-to-clean-cooking>, accessed 10 June 2023.
- <sup>7</sup> Ibid.
- <sup>8</sup> Global Health Observatory (GHO), World Health Organisation (WHO) (2023), "Proportion of population with primary reliance on clean fuels and technology", GHO/WHO, [www.who.int/data/gho/data/indicators/indicator-details/GHO/gho-phe-primary-reliance-on-clean-fuels-and-technologies-proportion](http://www.who.int/data/gho/data/indicators/indicator-details/GHO/gho-phe-primary-reliance-on-clean-fuels-and-technologies-proportion), accessed 11 June 2023.
- <sup>9</sup> Ibid.
- <sup>10</sup> Ibid.
- <sup>11</sup> Govinda R. Timilsina and Sunil Malla (2021), "Clean cooking: Why is adoption slow despite large health and environmental benefits?", *Economics of Energy & Environmental Policy*, Volume 10, Number 1, International Association for Energy Economics, Cleveland, <https://econpapers.repec.org/article/aeneepjl/eeep10-1-timilsina.htm> accessed 10 June 2023.
- <sup>12</sup> ESMAP (2020), "The State of Access to Modern Energy Cooking Services", Energy Sector Management Assistance Programme, World Bank, Washington, D.C., <https://documents1.worldbank.org/curated/en/937141600195758792/pdf/The-State-of-Access-to-Modern-Energy-Cooking-Services.pdf>, accessed 10 June 2023.
- <sup>13</sup> Shonali Pachauri and others (2021), "Access to clean cooking services in energy and emission scenarios after COVID-19", *Nature Energy* 6, <https://doi.org/10.1038/s41560-021-00911-9>, accessed 10 June 2023.
- <sup>14</sup> See IRENA (2023), "Renewable capacity statistics 2023", IRENA, Abu Dhabi, [https://mc-cd8320d4-36a1-40ac-83cc-3389-cdn-endpoint.azureedge.net/-/media/Files/IRENA/Agency/Publication/2023/Mar/IRENA\\_RE\\_Capacity\\_Statistics\\_2023.pdf?rev=d2949151ee6a4625b65c-82881403c2a7](https://mc-cd8320d4-36a1-40ac-83cc-3389-cdn-endpoint.azureedge.net/-/media/Files/IRENA/Agency/Publication/2023/Mar/IRENA_RE_Capacity_Statistics_2023.pdf?rev=d2949151ee6a4625b65c-82881403c2a7), accessed 10 June 2023.
- <sup>15</sup> IEA (2023) Raw data shared with OHRLLS by IAE
- <sup>16</sup> See IEA (2022), "SDG7: Data and Projections", IEA, Paris, [www.iea.org/reports/sdg7-data-and-projections/access-to-clean-cooking](http://www.iea.org/reports/sdg7-data-and-projections/access-to-clean-cooking) accessed 10 June 2023.
- <sup>17</sup> IEA (2021), "Renewables 2021", IEA, Paris, [www.iea.org/reports/renewables-2021](http://www.iea.org/reports/renewables-2021), accessed 11 June 2023.
- <sup>18</sup> IRENA (2023), Figures given are commitments by recipient country, in million US dollars at 2019 prices and exchange rates and using donor country deflators.
- <sup>19</sup> World Bank (2020), "Lao People's Democratic Republic: Nam Theun 2 Hydroelectric and Social and Environment Projects", World Bank Group, Washington D.C., <https://documents1.worldbank.org/curated/en/813141611764408784/pdf/Lao-Peoples-Democratic-Republic-Nam-Theun-2-Hydroelectric-and-Social-and-Environment-Project.pdf>, accessed 11 June 2023.
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