EXECUTIVE SUMMARY

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Scaling up access to electricity and clean cooking, boosting the use of renewable energy and infrastructure development, improving energy efficiency and ensuring adequate finance—all are key pillars for the achievement of Sustainable Development Goal 7 (SDG 7) of the UN 2030 Agenda for Sustainable Development. Meeting the environmental and socioeconomic goals of the wider SDG agenda depends closely on SDG 7 and calls for a fundamental shift in energy production, distribution, and consumption, supported by enhanced ambition, long-term planning, greater investment, enabling policies, continued innovation and strong international cooperation. Over the past ten years, the world has made tremendous progress on SDG 7, but action must be accelerated to achieve our common goals. This is especially important in view of global crises that have the potential of slowing or reversing gains made in recent years.

Since its first edition in 2018, Tracking SDG 7: The Energy Progress Report has become the global reference for information on progress toward SDG 7, the aim of which is to "ensure access to affordable, reliable, sustainable, and modern energy for all." This report therefore summarizes global progress on electricity access, clean cooking, renewable energy, energy efficiency, and international financial flows in support of clean energy. It presents updated statistics for each of the indicators and provides policy insights on priority areas and actions needed to spur further progress on SDG 7.

The report is produced annually by the International Energy Agency (IEA), the International Renewable Energy Agency (IRENA), the United Nations Statistics Division (UNSD), the World Bank, and the World Health Organization (WHO)—the five custodian agencies responsible for tracking progress toward SDG 7. Figure ES.1 offers a snapshot of the primary indicators.

Despite substantial progress since 2015—including significant increases in the share of renewable energy in the global energy mix and improvements in the global rate of energy efficiency—the achievement of the 2030 target of universal access to affordable, reliable, and modern energy services remains off track and uneven, particularly with respect to the huge remaining energy access gap in Sub-Saharan Africa.

However, much headway can still be made on the road to SDG 7. Technologies are available, the costs of renewables and batteries have fallen dramatically, the policy architecture is expanding, and investment resources are available to be tapped. Accelerating progress will depend on closer collaboration among governments, the private sector, international organizations, and civil society. What is required now is urgency, coordination, and the political will to match commitments with resources, thus ensuring that the benefits of the energy transition reach every person, in every region, including the most vulnerable communities that the current trajectory risks leaving behind.

The global energy transition is unfolding against a backdrop of compounding crises that have repeatedly disrupted progress and whose full implications remain uncertain at the time of this publication. Successive shocks have underscored the fact that progress toward SDG 7 depends not only on ambitious policy, but also on geopolitical stability and the resilience of international cooperation. In this context, accelerating renewable energy deployment and improving energy efficiency in line with SDG 7 provide a critical opportunity for strengthening energy security by diversifying energy sources, reducing dependence on fossil fuel imports, and bolstering macroeconomic resilience. This approach gains importance and urgency as the economic consequences of high energy prices are depleting already constrained fiscal reserves in many countries, leaving developing economies, in particular, vulnerable to subsequent financial shocks.

Summaries of the status of progress toward each of the SDG 7 indicators, namely, (i) access to electricity; (ii) access to clean fuels and technologies for cooking; (iii) renewable energy as a share of energy consumption; (iv) energy efficiency; and (v) international financial flows in support of clean and renewable energy, are provided below.

Figure ES.1 • Primary indicators of global progress toward the SDG 7 targets

INDICATOR		2015	2024
7.1.1 Proportion of population with **access to electricity**		**958 million** people without access to electricity	**655 million** people without access to electricity (2024)
7.1.2 Proportion of population with primary reliance on **clean fuels and technology for cooking**		**2.7 billion** people without access to clean cooking	**2.0 billion** people without access to clean cooking (2024)
7.2.1 **Renewable energy** share in total final energy consumption		**15.6%** share of total final energy consumption from renewables	**18.0%** share of total final energy consumption from renewables (2023)
7.3.1 **Energy intensity** measured as a ratio of primary energy and GDP		**4.22 MJ/USD** primary energy intensity	**3.76 MJ/USD** primary energy intensity (2023)
7.a.1 **International financial flows** to developing countries in support of clean energy research and development and renewable energy production, including in hybrid systems		**14.3 USD billion** international financial flows to developing countries in support of clean energy	**24.6 USD billion** international financial flows to developing countries in support of clean energy (2024)
7.b.1 Installed **renewable energy-generating** capacity in developing and developed countries		**248 watts per capita** installed renewables capacity	**544 watts per capita** installed renewables capacity (2024)

SDG 7.1.1 • Access to electricity

Global trend. The global rate of access to electricity has stalled at 92 percent. In 2024, 655 million people were still without electricity. Investment in electricity access remains far below what is needed to achieve universal access by 2030. Achieving the 2030 target will require the pace of progress to more than triple to 1.35 percent per year.

Top 20 access-deficit countries. In 2024, the 20 countries with the largest electricity access deficits accounted for more than three-quarters of people lacking access, even more than in 2022. Eighteen of these countries are in Sub-Saharan Africa, and just three—Nigeria (87 million), the Democratic Republic of Congo (85 million), and Ethiopia (57 million)—account for about one-third of the global deficit. South Sudan (5 percent access), Chad (13 percent), and Malawi (16 percent) show the lowest national electrification rates.

Regional highlights. Central and Southern Asia's share of the global access deficit fell from 36 percent in 2010 to just 3 percent in 2024, reflecting rapid grid expansion, regional power market integration, and rising incomes. Other regions also showed steady improvement, except for Sub-Saharan Africa, which in 2024 was home to 563 million of the 655 million people without electricity.

Differences between urban and rural areas. Urban access rates rose globally from 96 to 98 percent between 2010 and 2024, while rural coverage climbed from 73 to 85 percent. Many of those connected in urban and rural areas alike still face poor-quality, unreliable, or unaffordable service. It is noteworthy that Sub-Saharan Africa stands out as the only region where the rural access deficit widened over the same period, increasing from 376 million to 447 million people.

Determinants of access in countries making good progress from a low baseline. Several factors characterize countries that are successfully addressing the electricity access challenge. Chief among those factors are least-cost electrification planning to alleviate supply-side problems (high costs, weak utilities, scarce finance), dedicated electrification funds, blended finance, and targeted subsidies. Strong geospatial planning, clear institutional mandates, and capable regulators improve efficiency and inclusion. Effective responses to demand-side problems include connection subsidies, pay-as-you-go financing, lifeline tariffs, and awareness campaigns.

Affordability as a binding constraint. The correlation between household income and electricity access is strong. Affordability is the primary barrier. Globally, only 22 percent of households without access earn enough to meet the monthly payment required for basic services. Constraints persist even where least-cost electrification approaches are applied. To succeed, least-cost planning must be complemented by explicit affordability measures, such as lifeline tariffs, cross-subsidies, and targeted social protection supported by regular affordability audits. Affordable electricity is the *sine qua non* of the productive uses of electricity discussed below.

Exploiting distributed renewable energy to boost access and productive uses of electricity. Distributed renewable energy allows governments to meet demand faster and at lower cost, thereby supporting human capital development through the electrification of health facilities, schools, and community infrastructure. It can be used simultaneously to accelerate economic growth by boosting productive uses of electricity. Stimulating productive uses is widely regarded as critical to enhancing the economic and fiscal effect of access initiatives but has yet to be tested at a sufficient scale. Women, in particular, have untapped potential, not only as consumers, but also as entrepreneurs. When coupled with financial incentives, technical assistance, and capacity building, companies can access more woman-headed households and businesses, widening women's participation in the workforce.

SDG 7.1.2 • Access to clean fuels and technologies for cooking and lighting

Global trend. In 2024, an estimated 75 percent of the global population relied primarily on clean cooking fuels and technologies. Although this figure represents notable progress since 2010, roughly a quarter of the world's population—around 2.0 billion people—remains dependent on polluting fuels and technologies. Projections of current trends suggest that 79 percent of the global population will have access by 2030, leaving 1.8 billion people mainly reliant on polluting forms of cooking. Slow progress in some parts of the world, combined with population growth, suggests that the campaign to narrow the global access deficit is slowing and may well falter in the long-term, in the absence of a course correction.

Regional highlights. The percentage of the population with access to clean cooking has almost doubled in most of Asia since 2010. However, the total population without access is growing in Oceania (excluding Australia and New Zealand), in Sub-Saharan Africa, and in Western Asia and Northern Africa. Some 970 million people lack access in Sub-Saharan Africa alone, and that figure may reach 1 billion by 2027. A few large countries account for the most marked decreases in the access deficit since 2010. India alone accounts for about 40 percent of the overall decrease; China for a further 30 percent; and Indonesia for about 10 percent.

Urban-rural divide. Access to clean cooking in rural areas—where an estimated 56 percent of the people covered by this report lived in 2024—lags well behind urban areas, where the access rate is 89 percent. Of the 2.0 billion people without access in 2024, 1.5 billion lived in rural areas. Yet the urban-rural divide is narrowing as rural access rises.

Use of electricity for cooking. Electricity remains a small part of the clean cooking energy mix. It is reported as the primary source of cooking energy primarily in urban areas and in the low- and middle-income countries of Northern America and Europe.

Clean cooking in public institutions. Schools, clinics, hospitals, prisons, and other public institutions still rely on polluting fuels. Yet, the problem suggests an opportunity moving to electricity, biogas, or LPG in such institutions is highly scalable because of the predictability of their energy needs. Electric cooking in schools can cut costs, reduce smoke exposure, and improve efficiency.

Clean cooking and displaced populations. According to the Global Platform for Action, almost 50 million forcibly displaced people may lack access to clean cooking. Yet they remain largely absent from national data gathering and planning. Closing this gap is essential to achieving universal access and ensuring that no one is left behind.

Policy insights. Accelerating access to clean fuels and technologies for cooking demands high-level political leadership paired with cross-ministerial coordination to align policies on energy, health, development, climate, agriculture, and food security. But broad success in ensuring access to clean cooking for those most in need will ultimately hinge on localized solutions—for example, those tailored to rural areas, public institutions, or to the countries with the highest deficits.

Lighting the way to household energy transitions. Progress in household lighting demonstrates what targeted action can achieve: the global population relying on kerosene, oil, gasoline, paraffin or diesel lamps, or solid fuel for lighting dropped from an estimated 1.2 billion people in 2000 to about 200 million in 2024. In other words, a billion fewer people are no longer exposed to the most polluting and hazardous lighting options.

SDG 7.2 • Renewables

Global trend. In 2023, renewables represented 18.0 percent of the world's total final energy consumption (TFEC). Over the past decade, renewables' share of TFEC has increased gradually, while the share of modern renewables grew more strongly, reflecting sustained deployment momentum. The power sector remains the main driver of renewables' use, while heat and transport are emerging as key areas for further acceleration.

Target for 2030. SDG Target 7.2 calls for a substantial increase in the share of renewable energy in the global energy mix by 2030. Strong and accelerating progress, particularly in renewable electricity, has put renewables on a robust upward trajectory. Building on this momentum will be critical, as current trends remain below what is needed to fully align with SDG 7 and international climate and development objectives, including the pledge to triple global renewable energy capacity. Faster uptake of renewables, especially in heat and transport, can significantly narrow this gap.

Electricity. Renewables-based electricity consumption grew almost 5 percent in 2023—and by nearly 79 percent from 2013. As of 2023, more than 30 percent of all electricity consumption was covered by renewable sources, the largest share among all end uses of renewables. Renewables-based electricity, in turn, accounted for more than 38 percent of global renewable energy consumption and more than half of modern uses of renewable energy. Sustained capacity additions—mainly in solar photovoltaics (PV) and wind, for which the combined consumption increased fivefold between 2013 to 2023—are rapidly increasing renewables' share. However, hydropower remains the world's predominant source of renewables-based electricity, meeting almost 15 percent of global electricity demand.

Heat. In 2023, renewable sources accounted for more than 21 percent of the world's use of energy for heat. However, nearly half of renewables-based heat still comes from the traditional use of biomass (18 exajoules [EJ]), reflecting ongoing challenges in access to clean cooking. In particular, more than 90 percent of this use was concentrated in Sub-Saharan Africa and Asia. The share of modern renewable energy use in global heat consumption continued to increase, although gradually, reflecting the simultaneous increase in global demand for heat.

Transport. The share of renewable energy in transport TFEC rose to 4.3 percent in 2023, up from 2.9 percent in 2013. Biofuels, mainly crop-based ethanol and biodiesel, continued to dominate renewable energy use in transport, growing 11 percent year-on-year in 2023. At the same time, renewables-based electricity use in transport more than doubled from 2013, driven by strong growth in electric vehicle sales and a rising share of renewables in electricity supply for road and rail transport.

Top 20 energy-consuming countries. The share of renewable energy in TFEC varies widely across countries. Among the top 20 energy-consuming countries, China accounted for more than a fifth of global modern uses of renewable energy. In terms of shares of modern renewables in the energy mix, Brazil and Canada continued to top the list in 2023 (47 percent and 24 percent, respectively). These shares are underpinned by their considerable use of hydropower for electricity, biomass for extracting heat (particularly in industry), and, in Brazil's case, biofuels for transport. In the decade ending in 2023, the United Kingdom, Germany, and Brazil achieved the strongest gains in the share of modern renewables.

Installed renewable energy generating capacity in developing and developed countries. Installed renewable energy–generating capacity per capita has continued to grow, reaching a global record of 544 watts per person in 2024. Substantial disparities persist across income groups. High-income and upper-middle-income countries recorded 1,224 watts and 808 watts per person, respectively, whereas lower-middle-income countries averaged 117.4 watts and low-income countries only 33.6 watts per person. Solar and wind energy remain the primary drivers of overall expansion.

SDG 7.3 • Energy efficiency

Global trend. Primary energy intensity, defined as the ratio of total energy supply to gross domestic product (GDP), is the main global indicator for energy efficiency. Global energy intensity was 3.76 megajoules per US dollar (MJ/USD) in 2023 (based on 2021 purchasing power parity, PPP, rates). The 2023 rate of progress in energy intensity fell to 1.5 percent from 2.4 percent in 2022. This slower progress in global energy intensity masks strong gains in some countries and regions—for example, the European Union, the United States, the Republic of Korea, Türkiye, and the United Kingdom—where strong policy action, increased investment, and changes in consumer behavior led to improvements well above the global average rate.

2030 target. Despite significant global policy activity, improvements in energy intensity continue to fall short of the SDGs, which aim to double the global rate of improvement in energy efficiency between 2010 and 2030 compared with the 1990–2010 baseline. Given that the targeted energy intensity improvement was not achieved in 2023, the required average annual improvement rate for 2024–2030 remains at approximately 4.2 percent per year to reach the SDG 7.3 target.

Regional highlights. In 2023, notable variations were observed in the energy intensity of major economies and may be attributed to differences in economic structure, efficiency levels, and climate. However, no major region achieved the 2.6 percent improvement rate set by SDG Target 7.3 between 2010 and 2023. Northern America and Europe came closest, at 2.3 percent, and Oceania followed at 2.2 percent. Eastern Asia and South-Eastern Asia remained at around 2 percent.

Trends in the 20 countries with the largest total energy supply. From 2010 to 2023, energy intensity dropped notably (relative to 1990–2010) in 15 of the 20 countries with the largest total energy supply. Despite this progress, only six countries succeeded in meeting the 2.6 percent annual reduction required to meet SDG Target 7.3. The United Kingdom recorded the best average annual improvement, with a reduction of 4 percent in energy intensity.

End-use trends. Although reductions in energy intensity across all end-use sectors accelerated in 2010–2023 compared with 2000–2010, the rate of progress fell in the industrial sector in 2023. Between 2010 and 2023, the energy intensity of the building sector steadily improved at an average annual rate of 1.4 percent. The average annual improvement rate for passenger vehicles rose from 0.7 to 1.6 percent, and for heavy-duty trucks from 0.4 to 0.5 percent.

Electricity generation trends. Between 2010 and 2023, the efficiency of fossil-fuel-based generation increased by around 4 percent. Over the same period, the overall efficiency of power generation rose by 11 percent, largely because of the growing share of renewable energy in the electricity mix. Over 2010–2023, average electricity generation efficiency increased to around 47 percent, compared with a more limited improvement from 40 to 42 percent in 1990–2010. Improvements in generation efficiency were linked to lower losses in the transmission and distribution of electricity.

SDG 7.a.1 • International public financial flows to developing countries in support of clean energy

Global trend. International public financial flows in support of clean energy in developing countries increased only slightly in 2024, reaching at least USD 24.6 billion, up from USD 24.4 billion in 2023. Of particular concern are the reduced flows to least developed countries (LDCs), which stood at USD 3.7 billion in 2024, an 11 percent decrease from 2023 levels. The modest overall growth in 2024 must be understood within a challenging broader financing environment, as total official development assistance (ODA) from members of the OECD's Development Assistance Committee fell by 6 percent in 2024, the first decline in five years. Development assistance is expected to continue to tighten in the coming years. Against the backdrop of the unfolding 2026 energy and economic crisis, international public finance for clean energy, particularly in the form of impact-based concessional loans and grants, will play a vital role in upholding the commitment to support energy development in developing countries and ensure they are able to benefit equitably from the global energy transition.

Technology highlights. Among renewable energy technologies, projects attributed solely to solar energy continue to attract the largest share of investment. However, their share has moderated from 43 percent in 2023 to about 30 percent in 2024, broadly in line with its average share over the past five years, representing commitments of roughly USD 7.4 billion.[1] Hydropower's share increased from about 13 percent to 17 percent over the same period, with flows rising to roughly USD 4.1 billion. Wind energy, by contrast, declined from around 13 percent of total commitments in 2023 to about 5 percent in 2024, equivalent to around USD 1.3 billion. Projects involving multiple renewables accounted for most of the growth in 2024, rising 50 percent compared with 2023 to reach USD 11.1 billion and accounting for 45 percent of total flows.

Concentration of commitments. International public financial flows are still primarily concentrated in a few countries, with India, Türkiye, and Argentina at the top. In 2024, 80 percent of commitments were distributed across 32 countries. Flows to LDCs decreased by 11 percent from the 2023 level to USD 3.7 billion, representing only about 15 percent of total flows in 2024. Landlocked developing countries (LLDCs) attracted more financing than LDCs in 2024, reaching USD 4.6 billion, a 16 percent rise from 2023. Meanwhile, flows to small island developing states (SIDS) fell by 5 percent to USD 585 million in 2024. Collectively, these three country groups received less than 30 percent of total public clean energy flows to developing countries in 2024, despite accounting for roughly two-thirds of the global population without electricity access. This fundamental misalignment between where energy poverty is concentrated and where financial flows are directed makes bridging the financing gap for LDCs, LLDCs, and SIDS essential to ensuring that the energy transition is equitable. Sub-Saharan Africa remained a key recipient of funds. However, commitments declined from about USD 7.2 billion in 2023 to around USD 5 billion in 2024, marking a decrease after three years of growth.

Financing instruments. Debt-based instruments accounted for about 80 percent of total flows in both 2023 and 2024. Standard loans were the largest instrument in 2024, at USD 14.4 billion (59 percent of total flows), followed by concessional loans at USD 4.8 billion (19 percent). Grants increased by 39 percent to reach USD 3.3 billion, raising their share of total flows from 10 percent in 2023 to 13 percent in 2024. Equity financing, by contrast, remained marginal, declining to USD 571 million and representing roughly 2 percent of total flows. Of the 65 donors that made commitments in 2024, only 11 provided any equity contributions. Dedicated risk-mitigation instruments, including guarantees and credit lines, grew to USD 1.1 billion (5 percent of total flows). However, their reach remained limited to just six recipient countries, including two LLDCs, down from ten in 2023. Overall, concessional loans, grants and dedicated risk-mitigation support, despite some growth in recent years, remain insufficient relative to the financing needs across developing countries.

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1 The true scale of solar-related investment may be higher than the figure attributed solely to solar would indicate owing to reporting methods.

The outlook for SDG 7

Outlook for progress toward 2030 goals. A series of crises, including current energy crises, are creating headwinds. Even so, policy and technological innovations have delivered meaningful results, especially in boosting renewable energy deployment and improving energy efficiency. The COVID-19 pandemic and the 2022 energy crisis slowed progress in electricity access, notably in Africa, where advances have been reversed. The SDG 7 goal of achieving universal energy access by 2030—as well as related efforts to put the world on a 1.5°C pathway—require investment and policy support for renewables, energy efficiency, and energy access. Unfolding developments connected with ongoing wars and related impacts on energy and economic systems may further impact the outlook to 2030.

Outlook for access to electricity. Progress on electricity access has been significant in the past two decades. Since 2000, the world has reduced the number of people without access by 925 million, and 40 countries have reached at least near-universal access. However, the International Energy Agency (IEA) projects that around 645 million people will lack electricity access in 2030—85 percent of them in Sub-Saharan Africa—underscoring the need to step up efforts. Achieving universal electricity access by 2030 will require significant investment and policy support, as well as accelerated deployment of renewable energy. Debt burdens, cuts in international aid, and population growth outpacing electrification are the main headwinds, making an increase in concessional finance and robust national electrification plans indispensable.

Outlook for access to clean cooking. Universal access to clean cooking by 2030 remains out of reach under current policies and investment. The IEA and the World Health Organization (WHO) estimate that between 1.6 and 1.8 billion people will still lack access to clean cooking by the end of the decade. On the positive side, these estimates project a continued decline in the use of polluting fuels and an increase in the use of gaseous fuels and electricity for cooking. Improvements out to 2030 will continue to be marked by strong regional disparities, as has been the case in past years. While significant progress has been made in Asia, the number of people without access to clean cooking in Sub-Saharan Africa is increasing, largely because the rate of population growth is outpacing gains in access. According to IEA estimates, reaching full clean cooking access by 2030 would require USD 8 billion annually until the gap is closed, half of it for Sub-Saharan Africa alone.

Outlook for renewable energy. Renewable energy is the fastest-growing energy source today, with renewables surpassing coal as the predominant electricity source globally in 2025. To meet the tripling pledge in the COP28 outcomes (as well as climate targets, the IEA's Net Zero Emissions by 2050 Scenario, and IRENA's 1.5°C Scenario) far more ambitious investment and policy support will be required. In other words, modern uses of renewables must reach a 32–35 percent share of TFEC and 68 percent of electricity generation by 2030. At the same time, coal remained the largest source of electricity, providing 34 percent of global generation. Current NDC collective targets amount to only about 5.8 TW—roughly half the tripling goal—meaning ambition must nearly double within less than five years.

Outlook for energy efficiency. Early estimates for 2024 show only a 1 percent annual rate of improvement in energy intensity, against a 2 percent annual improvement average since 2010. Given today's policy trends, that improvement rate is expected to accelerate to around 2.2 percent annually, owing to the increased electrification of end uses. But doubling the average annual rate by 2030 will require strong policy action and a substantial increase in investment. The IEA's Net Zero Emissions scenario estimates the necessary rate of improvement to be just over 4 percent, slightly higher than the SDG 7.3 target of 3.8 percent. IRENA's 1.5°C Scenario estimates more than 5 percent per year will be needed from 2025 to 2030. Energy efficiency is therefore central to meeting sustainability and climate goals.

Investment needs. Achieving the SDG 7 targets will require a substantial increase in clean energy investment. The IEA and IRENA estimate average annual energy-transition related investment in the range of USD 3–5 trillion by 2030, up from the USD 2.2 trillion placed in a comparable set of energy investments today. Though today's rate is twice the amount flowing to fossil fuels, it remains insufficient. IEA's Net Zero Emissions by 2050 Scenario calls for average annual energy investments of USD 3 trillion through 2030; IRENA estimates that the UAE Consensus targets on renewables and efficiency will require around USD 5 trillion per year. Investment in renewable power capacity must rise to USD 1.5 trillion annually. Energy efficiency investment must grow sevenfold to approximately USD 2.6 trillion per year. Investment flows remain heavily concentrated in China, the European Union, and the United States, leaving emerging markets and developing economies critically underfunded. Addressing the investment gap, particularly in developing economies, is essential for advancing the energy transition and ensuring universal access to sustainable energy.