EXECUTIVE SUMMARY

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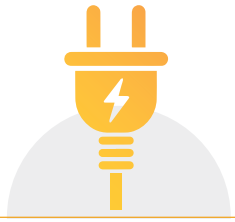
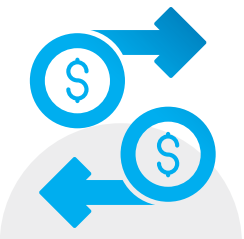
Since its inception in 2018, Tracking SDG 7: The Energy Progress Report has become the global reference for information on progress toward the achievement of Sustainable Development Goal 7 (SDG 7) of the UN 2030 Agenda for Sustainable Development. The aim of SDG 7 is to "ensure access to affordable, reliable, sustainable, and modern energy for all." This report therefore summarizes global progress on electricity access, clean cooking, renewable energy, energy efficiency, and international cooperation to advance SDG 7. 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 for 2025.

Progress toward 2030 targets remains off track, particularly in Sub-Saharan Africa, owing in part to the COVID-19 pandemic and 2022 energy crisis. Nonetheless, globally, policy progress and technological advances have shown some promising results, notably in boosting renewable energy deployment and achieving modest (though still insufficient) improvements in energy efficiency. Elements of the SDG 7 agenda gained new momentum through various agreements in recent years, including the consensus reached at the 2023 United Nations Climate Change Conference (COP28) to triple global renewable power capacity and double the global average annual rate of improvement in energy efficiency by 2030, and through the 2025 Dar es Salaam Declaration to expand electricity access, a declaration endorsed by 48 African countries.

Scaling up clean cooking and electricity access, boosting renewable energy use, and improving energy efficiency are essential for the achievement of the goals of SDG 7—and for meeting the development and socioeconomic environmental and socioeconomic challenges reflected in the SDG agenda as a whole. These goals will demand a fundamental shift in energy production, distribution, and consumption, supported by greater investment, enabling policies, continued innovation, enhanced ambition and long-term planning. Addressing uneven progress and regional disparities requires collaboration among governments, the private sector, international organizations, and civil society, including on ensuring access to adequate financing and technical assistance. To foster inclusive transitions, particular attention is required to help women and marginalized communities benefit from the energy transition. Empowering people—especially young people—with the skills and knowledge to engage in the energy sector fosters a forward-looking mindset that is crucial for long-term progress.

FIGURE ES.1 • PRIMARY INDICATORS OF GLOBAL PROGRESS TOWARD THE SDG 7 TARGETS

INDICATOR		2015	LATEST YEAR
7.1.1 Proportion of population with access to electricity		**958 million** people without access to electricity	**666 million** people without access to electricity (2023)
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	**2.1 billion** people without access to clean cooking (2023)
7.2.1 Renewable energy share in total final energy consumption		**15.6%** share of total final energy consumption from renewables	**17.9%** share of total final energy consumption from renewables (2022)
7.3.1 Energy intensity measured as a ratio of primary energy and GDP		**4.26 MJ/USD** primary energy intensity	**3.87 MJ/USD** primary energy intensity (2022)
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		**12.1 USD billion** international financial flows to developing countries in support of clean energy	**21.6 USD billion** international financial flows to developing countries in support of clean energy (2023)
7.b.1 Installed renewable energy-generating capacity in developing and developed countries		**248 watts per capita** installed renewables capacity	**478 watts per capita** installed renewables capacity (2023)

SDG 7.1.1 • ACCESS TO ELECTRICITY

Almost 92 percent of the world's population now has access to electricity, in contrast to 87 percent in 2010. In 2023, increases in the number of people with access to electricity outpaced population growth, raising the rate of global access to 92 percent and reducing the number of people without electricity to 666 million—19 million fewer than the previous year. While this marks a positive trend, the growth rate needs to accelerate sharply to reach universal access by 2030. The population remaining unconnected is likely to live in remote areas, have lower incomes, and face greater conflict and violence than populations connected to date. Thus, renewed commitment and focus are needed to close the gap and reach universal electricity access.

The greatest growth in access between 2020 and 2023 occurred in Central and Southern Asia, while the pace of progress in Sub-Saharan Africa calls for significant acceleration. Central and Southern Asia have both made significant strides toward universal access, reducing their access gap from 414 million in 2010 to just 27 million in 2023. In Sub-Saharan Africa, 35 million people gained access to electricity in 2023, but population growth over the same period was 30 million, so the net electricity access gap for the region fell by just 5 million (from 570 million in 2022 to 565 million in 2023). The region now accounts for 85 percent of the global population without electricity, up from 50 percent in 2010. Of the countries with the largest access deficits (according to 2023 data), 18 of the top 20 were in Sub-Saharan Africa. As in the previous year, the deficits in Nigeria (86.6 million), the Democratic Republic of Congo (79.6 million), and Ethiopia (56.4 million) alone accounted for more than one-third of the world's population without electricity. Thus new efforts must focus on Sub-Saharan Africa, and especially on the countries with the greatest access gaps.

The urban-rural divide continues to shrink. Rural areas continued to bear the brunt of the electricity access challenge, with 84 percent of those lacking electricity in 2023 living in rural communities. While overall progress in rural electrification outpaced that in urban areas, it was driven largely by advancements in Central and Southern Asia, where the number of people without access in rural areas dropped from 383 million in 2010 to just 24.8 million in 2023. In Sub-Saharan Africa, meanwhile, rural population growth outpaced electrification efforts, leaving 451.1 million people in rural areas without electricity in 2023.

Mini-grid and stand-alone off-grid solar solutions continue to be key to expanding electricity access owing to their ease of deployment and their ability to meet lower and more dispersed loads cost effectively. While electrification programs have traditionally focused on extending the national grid, recent experience in high-deficit countries in Sub-Saharan Africa shows that grid-extension costs are prohibitive for areas with dispersed or remote populations—and grid supply is often unreliable. Decentralized energy solutions provided 55 percent of the new connections in Sub-Saharan Africa between 2020 and 2022, proving resilient to macroeconomic challenges, as more than 50 million off-grid solar products were sold in both 2022 and 2023. Decentralized energy solutions can usually be deployed faster than grid extension at a lower cost per connection, offering the option to attract both private and public sector finance. Mini-grids are reliable and can support a wide variety of productive uses.

To realize the full potential of off-grid products to deliver reliable, affordable, and sustainable electrification solutions, more granular data, tailored funding mechanisms, and technical expertise will be needed. Improving data quality, frequent monitoring of progress, and a willingness to revisit priorities are crucial to successful implementation of decentralized renewable energy. Addressing regulatory obstacles and bureaucratic bottlenecks and complementing traditional financing with innovative approaches (such as blended financing or monetization of environmental benefits) remain priorities. Greater use of off-grid products can also strengthen women and girl's equitable economic participation in the energy workforce by making electricity more affordable for female-headed households.

SDG 7.1.2 • ACCESS TO CLEAN FUELS AND TECHNOLOGIES FOR COOKING

Although some progress has been made over the past two decades, the world is still not on track to achieve universal access by 2030 to clean cooking fuels and technologies (such as stoves powered by electricity, liquefied petroleum gas, natural gas, biogas, or ethanol). In 2023, as in 2022, 74 percent of the world's population had access, up from 64 percent in 2015. Still, roughly a quarter of the world's population—around 2.1 billion people—remains dependent on polluting fuels and technologies (charcoal, coal, crop waste, dung, kerosene, and wood) for cooking. If current trends continue, only 78 percent of the global population will have access to clean cooking by 2030. This shortfall would leave nearly 1.8 billion people without clean cooking fuels and solutions.

By region, access deficits have been shrinking in Eastern Asia and South-eastern Asia, as well as in Central Asia and Southern Asia—thanks largely to policy measures and rising incomes. However, in Sub-Saharan Africa, the number of people lacking access continues to grow at a rate of 14 million people yearly, with gains in access outpaced by rapid population growth. Moreover, in 2023, the proportion of the population that had access to clean cooking fuels and technologies was 60 percent in small island developing states (SIDS), only 28 percent in landlocked developing countries (LLDCs), and a mere 21 percent in least-developed countries (LDCs)—figures that lag significantly behind the global average. Of the 20 countries with the highest access deficits, eight (all of them LDCs) house large numbers of displaced populations. In the same eight countries, fewer than 10 percent of households use clean fuels, reflecting severe infrastructure gaps that exacerbate socioeconomic effects and heighten the vulnerabilities of these populations.

Sub-Saharan Africa continues to show a notably wider gap between urban and rural access, with 42 percent of the urban population having access compared with just 7 percent in rural areas. Globally, urban access averages around 89 percent, while rural access is around 55 percent. The lower access levels in Sub-Saharan Africa influence the global averages considerably. If Sub-Saharan Africa is excluded, the global access rate would be 94.5 percent in urban areas and 67.3 percent in rural areas.

In 2023, the dominant cooking fuels in low- and middle-income countries were gaseous fuels (liquefied petroleum gas, natural gas, and biogas) and electricity. In rural and peri-urban areas, solid biomass, such as wood, dung, and agricultural residues remain common fuels. The lack of access to clean cooking affects the poor and vulnerable disproportionately, placing a particularly heavy burden on women and children, exposing them to household air pollution and limiting their educational and economic opportunities because of the substantial amount of time they spend on cooking and gathering fuel.

At the current pace, the vast majority of low- and middle-income countries are likely to miss the 2030 universal access target unless efforts are strengthened. Although global progress over the past decade has been considerable—lifting tens of millions of people annually out of reliance on polluting fuels—in smaller, less-developed countries (including LDCs, LLDCs, and SIDS) the adoption of clean cooking has stagnated.

With just five years left to achieve universal access to clean cooking under SDG 7, urgent action is needed. Governments and stakeholders across sectors need to scale up investments, prioritize vulnerable populations, and integrate clean cooking into broader energy access efforts to ensure a just and inclusive transition for the sake of health, equity, and climate protection. Moreover, it is worth noting that while clean cooking has become a major focus of energy transition in many countries, transitioning to cleaner energy for household heating and lighting also contributes to better health and climate outcomes.

SDG 7.2 & 7.b.1 • RENEWABLE ENERGY

In 2022, the global share of renewable energy sources in total final energy consumption (TFEC)—a main indicator of progress—stood at 17.9 percent, having gradually increased by over three percentage points in the preceding 15 years. TFEC continued to rise despite the disruption caused by the pandemic and the ensuing energy crisis. While no quantitative milestone has yet been set for target 7.2 to significantly increase the share of renewable energy in the energy mix, current trends indicate that progress has not been sufficient to accomplish international climate and development objectives, including the pledge to triple global renewables-based power capacity by 2030.

To keep global climate targets within reach, the deployment of renewable energy must accelerate across the key categories of electricity, heat, and transport. Renewables-based electricity use rose by almost 8 percent from 2021 to 2022, and it has risen by 56 percent from 2015. As of 2022, renewables made up almost 30 percent of global electricity consumption. Continuous new capacity additions—mainly in wind and solar photovoltaics (PV)—more than tripled wind and solar PV generation in 2022 over 2015. (During the same period, hydropower remained predominant, meeting 15 percent of global electricity demand.)

Progress across regions and countries varies widely depending on resource availability, policy support, consumption patterns, access to adequate financing, and energy efficiency performance. The share of modern uses of renewable energy is the largest in Latin America and the Caribbean, at 28 percent of TFEC in 2022, due to use of bioenergy for industrial processes, biofuels for transport, and hydropower generation. While renewable energy constitutes around two-thirds of TFEC in Sub-Saharan Africa, modern uses of renewables—excluding traditional uses of biomass—represent only 12 percent of TFEC in the region.

The share of renewable sources in energy consumption varies widely at the national level. Only 11 countries among the top 20 energy-consuming countries recorded a higher TFEC in 2022 than in 2021. The Republic of Korea led the field in growing the modern use of renewables (+16 percent), followed by Türkiye (+15 percent). Brazil and Canada continued to lead in the share of modern uses of renewables (45 and 24 percent of TFEC, respectively). And between 2010 and 2022, the United Kingdom, Germany, and China achieved the largest increases in the share of modern uses of renewables in TFEC (+10, +8, and +8 percentage points, respectively).

In 2022, renewable sources accounted for around 21 percent of the world's use of energy for heat, while their share in transport-related TFEC rose to 3.9 percent, up from 3 percent in 2015. Global final energy consumption for transport increased 4 percent (+5 EJ) in 2022. The number of electric vehicles on the road swelled from 11.3 million in 2020 and 16.5 million in 2021 to more than 26.3 million in 2022. Including the charging of those vehicles, the renewable share of total electricity used in transport climbed from 20 percent in 2010 to 29.6 percent in 2022.

Installed renewable energy capacity reached an all-time high of 478 watts per capita in 2023, but greater efforts are needed on target 7.b: expanding infrastructure and upgrading technology to supply modern and sustainable energy services for all in developing countries. Continuing the theme of disparities, developed countries (at 1,162 watts per capita) have 3.4 times more renewable power per capita than developing countries (341 watts per capita). Sub-Saharan Africa remains critically behind at only 40 watts per capita, a level that only allows for basic energy services such as lighting or phone charging. Although LDCs (40 watts per capita), LLDCs (105 watts per capita), and SIDSs (110 watts per capita) have made gradual progress in expanding renewable capacity, deployment remains well below developing country and global levels.

Sustained action is needed to drive the uptake of renewable energy solutions. Assessments by IEA and IRENA indicate that current ambitions fall short of achieving the COP28 goal to triple global renewable power capacity by 2030. The gap risks slowing the penetration of renewables and electrification in end-use sectors—such as industry, transport, and buildings—which is critical for raising the share of renewables in TFEC. Accelerated electrification and renewable energy deployment are essential to align with the COP28 target and advance the broader energy transition outcomes envisioned at COP28.International efforts must intensify to address the uneven deployment of renewable energy, specifically supporting countries that are at risk of being left behind. However, tripling renewable capacity on its own does not ensure that deployment of renewables will be equitable, even where renewables can help close the energy access gap, support community development and productive uses, and foster sustainable industrialization. Tailored action spanning a wide range of policy interventions—including in access to adequate financing, technology and knowledge exchange, and capacity building—is needed to enable equitable energy access and the ability to escape the cycles of poverty and exploitation that stifle economic development.

SDG 7.3 • ENERGY EFFICIENCY

SDG 7.3 calls for the rate of global improvement in energy intensity to double by 2030, relative to the 1990–2010 average. Sluggish global progress in recent years means that, going forward, energy intensity will have to improve by 4 percent per year on average in order to meet the original SDG 7.3 target. This is roughly consistent with the goal of doubling the global average annual rate of energy efficiency improvement by 2030 agreed on at COP28. The global trend shows that primary energy intensity, defined as the ratio of total energy supply to gross domestic product (GDP), declined by 2.1 percent in 2022—a substantial improvement over the 0.5 percent witnessed in 2021.

The global energy crisis in 2022 was a severe shock to energy markets across the world. In every major region, energy supply grew more slowly than GDP; with total energy supply decreasing by around 5 percent in Europe. As economic growth outpaced energy demand, energy intensity improved in all major regions in 2022, albeit at different speeds. It fell by more than 4 percent in Northern America and Europe and by almost 6 percent in Oceania. The slowest progress, under 1 percent, came in Eastern and South-eastern Asia. Energy intensity in other major regions improved at rates similar to the global average of around 2 percent.

From 2010 to 2022, energy intensity accelerated (relative to 1990–2010) in 15 of the 20 countries with the largest total energy supply. These countries are central to achieving SDG target 7.3, since they represent 75 percent of the world's energy use—and GDP. In this period, the annual rate of improvement in energy intensity more than doubled in Australia, France, Italy, Japan, the Republic of Korea, Mexico, Saudi Arabia, Thailand, and Türkiye. But the 2.6 percent improvement rate required to meet SDG target 7.3 was exceeded only by China, France, Germany, and the United Kingdom.

Progress in energy intensity across end-use sectors improved in 2010 and 2022 over the previous decade. The average improvement rate for buildings rose from 1.2 percent per year in 2000–10 to 1.3 percent per year in 2010–22, and for industry from 0 to 1.4 percent per year. For passenger vehicles the annual improvement rate rose from 0.7 percent in 2000–10 to 1.6 percent in 2010–22, while heavy-duty trucks saw a smaller change, from 0.4 to 0.5 percent in the same period.

Shifts to more efficient and renewable sources for the generation of electricity, coupled with the electrification of end uses, are contributing to improvements in energy intensity. Between 1990 and 2010, the efficiency of

generation went from about 40 to 42 percent. The pace quickened to about 46 percent between 2010 and 2022, meaning that efficiency of generation improved twice as fast in nearly half the time—largely due to the integration of renewable energy.

SDG 7.a.1 • INTERNATIONAL PUBLIC FINANCIAL FLOWS TO DEVELOPING COUNTRIES IN SUPPORT OF CLEAN ENERGY

Financial flows to developing countries to support clean energy research and development and renewable energy production reached USD 21.6 billion in 2023—a 29 percent increase from 2022. While there is no quantitative target for international public financial flows under indicator 7.a.1, developing countries received lower flows in 2023 than in 2016, when international flows peaked at USD 28.4 billion. Nevertheless, the tri-year growth during 2021–23 is a positive sign, especially as it occurred amid crises (economic, health-related, and geopolitical) that prompted donors to redirect funds to other priorities, such as humanitarian aid and health. Most of the growth occurred in major developing economies, as opposed to least-developed countries (LDCs), landlocked developing countries (LLDCs), and small island developing states (SIDS). LDCs' share of overall flows dropped by 0.5 percentage points, for example, as growth in non-LDC economies outpaced that of LDCs. Accelerating the growth trajectory while expanding finance to those furthest behind will be key to driving progress toward SDG 7.

Only two world regions have seen real progress in international public flows, compared with their historic peak in 2016. Central Asia and Southern Asia attracted record-high flows of USD 5.6 billion, a more than 2.5-fold increase between 2022 and 2023. Developing countries in Northern America and Europe also reached a record high, surpassing USD 1 billion for the first time since 2000. While Sub- Saharan Africa, Western Asia and Northern Africa, and Eastern Asia and South-eastern Asia saw a substantial increase between 2022 and 2023, the flows remained well below their peak levels. Flows to Latin America and the Caribbean and to Oceania dropped to USD 3.47 billion and USD 64 million, respectively.

Country commitments remain heavily concentrated, although they are gradually diversifying. The top five country recipients of international public flows in 2023 were India (almost USD 3 billion), Türkiye (USD 1.4 billion), Uzbekistan (USD 1.2 billion), South Africa (USD 935 million), and Nigeria (USD 829 million). The number of countries and territories accounting for 80 percent of flows grew from 19 in 2021 to 25 in 2022 and then to 29 in 2023. Forty-three LDCs received flows during 2023, though 81 percent of those flows went to just 9 countries. Flows to LLDCs increased by almost 33 percent to reach USD 3.62 billion in 2023. Flows to SIDS increased by 31.5 percent, reaching USD 401 million in 2023 (Although SIDS have historically received the smallest amounts of investment in absolute terms, they are among the highest recipients on a per capita basis.)

Since 2010, international public financial flows for clean energy have remained largely debt based. Debt-based instruments drove most of the increase in international public flows in 2023, with their share expanding from 70 percent to 83 percent between 2022 and 2023. Grants account for 9.8 percent of flows, having declined by 39 percent. Equity financing accounts for 3.7 percent of flows; guarantees for 3 percent. Although this capital structure is unlikely

to change in the future, there have been calls over the past few years to move away from profit-driven debt-based financing to more grants and concessional debt. This is especially relevant as major central banks raised interest rates to their peak levels by 2023, pushing the cost of new and existing debt to record highs.

Solar energy drove most of the growth in 2023, as flows increased by 84 percent to reach USD 9.44 billion, accounting for 44 percent of the total in 2023—solar's highest ever share in a single year. A substantial portion of commitments went to isolated grids and stand-alone systems. Flows to wind and hydropower energy projects remained below their peaks but increased by 41 percent and 61 percent to reach USD 2.4 billion and USD 2.3 billion respectively, collectively making up 22 percent of the total. The remaining 34 percent of flows funded projects involving electrification, energy efficiency, expansion of grid transmission and distribution, or multiple renewables.

Lack of sufficient and affordable financing remains one of the key reasons for the slow, uneven progress in achieving SDG 7. A suite of actions is needed to scale up investments while ensuring their equitable distribution. Necessary actions include reforming multilateral and bilateral lending to expand the availability of public capital; mobilizing more concessional finance, grants, and risk mitigation instruments; improving risk tolerance among donors; and enacting appropriate national policy frameworks, regulations, and reforms through integrated and rigorous planning. The exact mix of these actions must be tailored to suit the context in which they are applied.

THE OUTLOOK FOR SDG 7

Access to electricity. Since 2010, the world has reduced the number of people without access to electricity by 665 million, and 21 countries have reached at least near universal access. However, IEA projects that 645 million will still lack access in 2030, even though a fifth of the countries that still lack universal access are on track to reach near universal access by 2030 under today's policies. Achieving universal access will require a renewed focus on Sub-Saharan Africa, where 85 percent of the population lacking access resides. The push will require strong buy-in and commitment from African countries in order to attract the substantial investment and policy support that will be needed. Stronger efforts and enhanced cooperation are well underway and should help to narrow the gap in coming years.

Access to clean cooking. Since 2010, the number of people with no access to clean cooking has dropped by 900 million, predominantly through the use of liquified petroleum gas (LPG). Estimates from IEA and WHO project a continued decline in the use of polluting fuels and an increase in the use of cleaner fuels (predominantly liquefied petroleum gas) and electricity for cooking. Yet universal access by 2030 remains out of reach under current policies and investments. The same estimates show that 1.8 billion people will still lack access to clean cooking by the end of the decade, with around 58 percent of them in Sub-Saharan Africa, 36 percent in Asia, and the 4 percent in Latin America and the Caribbean. Heading to 2030, improvements will continue to be marked by strong regional disparities. Achieving universal clean cooking access would require strong policy commitment and investments of USD 10 billion annually through 2030.

Renewable energy. Renewable energy is the fastest-growing energy source today. Under today's policies, global projections show renewables set to surpass coal as the predominant source for electricity in 2025. To meet the pledge to triple renewables made at COP28, the world would need to reach at least 11,000 gigawatts of global installed renewable power capacity by 2030. This roughly translates to uses of sustainable renewables (notably off-grid solar) reaching an expected 32–35 percent share in TFEC by 2030 based on IEA and IRENA scenarios. Under current plans and policies the world is expected to make significant progress, though a gap of between 3.8 and 4.2 terawatts will remain in 2030.

Energy efficiency. The focus on improving energy efficiency has gained important political momentum, driven by rising security concerns, recent energy price spikes, and the increased ambitions expressed in the doubling target agreed at COP28. Early estimates for 2024 show a modest annual energy intensity improvement rate of 1 percent, around half the pace of progress achieved over 2010–19. Achieving the COP28 target of doubling global energy intensity by 2030 will require robust policy action and a significant increase in investment. The rate of improvement will have to be just over 4 percent to achieve the target, double the projected rate under today's policies to 2030.

Financing and investment needs. Achieving the SDG 7 targets demands a substantial increase in clean energy investments. IEA and IRENA estimate that average annual investments related to the energy transition will have to be in the range of USD 4.2–4.5 trillion by 2030. Addressing the investment gap, particularly in developing economies, and tackling the high cost of capital, will be critical.