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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 report is produced annually by the five custodian agencies responsible for tracking progress toward the goal. The custodian agencies are 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 aim of SDG 7 is to “ensure access to affordable, reliable, sustainable, and modern energy for all.” This report thus summarizes global progress on energy access, energy efficiency, renewable energy, clean cooking, 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.

Figure ES.1 offers a snapshot of the primary indicators for 2023, which was the mid-point of the implementation of the UN 2030 Agenda.

Despite some progress across the indicators, the current pace is not adequate to achieve any of the 2030 targets for SDG 7. As in previous years, rates of progress vary significantly across regions, with some regions making substantial gains and some slowing their progress or even moving backward. Among the major economic factors impeding the realization of the goal are the uncertain macroeconomic outlook, high levels of inflation, debt distress in a growing number of countries, inequitable distribution of finance and other resources, supply chain bottlenecks, and soaring prices for materials. The effects of the COVID-19 pandemic, the war in Ukraine, and the steady rise in energy prices since summer 2021 have been a further drag on progress, particularly in the most vulnerable countries and those that were already lagging behind.

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		957.5 million people without access to electricity	685 million people without access to electricity (2022)
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 (2022)
7.2.1 Renewable energy share in total final energy consumption		16.7% share of total final energy consumption from renewables	18.7% share of total final energy consumption from renewables (2021)
7.3.1 Energy intensity measured as a ratio of primary energy and GDP		4.9 MJ/USD primary energy intensity	4.6 MJ/USD primary energy intensity (2021)
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		12.3 USD billion international financial flows to developing countries in support of clean energy	15.4 USD billion international financial flows to developing countries in support of clean energy (2022)
7.b.1 Installed renewable energy-generating capacity in developing and developed countries		250 watts per capita installed renewables capacity	424 watts per capita installed renewables capacity (2022)

SDG 7.1.1 • Access to electricity

91 percent of the world's population has access to electricity, in contrast to 78 percent in the baseline year of 2000. There is much to celebrate in this progress. For example, 48 countries achieved universal access to electricity between 2010 and 2020. However, population growth outpaced access growth between 2020 and 2022, leaving 10 million more people without access in 2022 than in 2021. Multiple factors contributed to this reversal, among them disruptions to energy markets and prices stemming from global shocks such as COVID-19, the war in Ukraine, and instability in the Middle East. At the same time, the remaining unelectrified population is more challenging to serve because much of it is remote and low-income. Under current scenarios, the energy access gap is projected to improve modestly, closing to 8 percent in 2030, leaving an estimated 660 million people without access.

The largest growth in access between 2020 and 2022 was seen in Central and Southern Asia, where connections increased by an average of 40.1 million people per year—nearly double the growth in population (20.6 million). In contrast, the average annual increase in access in Sub-Saharan Africa during the same period (31.1 million) just barely exceeded average annual population growth (28.7 million). As a result, Sub-Saharan Africa's share of the global deficit ballooned from 49.6 percent in 2010 to 83.3 percent in 2022. In Latin America, 18 countries achieved universal access over these same years.

The urban-rural divide continues to shrink. Electricity access in urban areas increased from 96 percent in 2010 to 98 percent in 2022, staying ahead of population growth. Informal peri-urban settlements will present a stiff challenge to bringing urban access rates to 100 percent. Access deficits in rural areas shrank from 886 million globally in 2010 to 562 million in 2022. The steepest decline was in Central and Southern Asia (from 383 million to just 24 million). By contrast, the deficit grew in rural areas of Sub-Saharan Africa (from 376 million to 473 million).

Decentralized renewable energy can bring electricity to the difficult-to-reach rural locations where much of the remaining unconnected population lives. In 2022, the IEA estimated that 2.5 million households gained electricity access thanks to solar-home systems and smaller solar lighting systems. The World Bank finds that in total, stand-alone off-grid solar solutions, including solar lights and solar home systems, were estimated to serve 490 million people in 2022. IRENA estimates that 158 of the 490 million had access to solar lights and home systems meeting international quality standards. The World Bank has estimated around 47 million people were connected to 19,000 mini grids as of 2022. Hydropower and solar technologies are increasingly being deployed and now account for a third of total mini-grids installed. Decentralized solutions (including stand-alone systems in remote and sparsely settled areas) offer a cost competitive alternative to grid expansion and can be rapidly deployed to meet levels of demand too low to justify grid investments. In addition, the productive uses in rural communities, such as solar water pumps, refrigerators, agro-processing machinery, and a wide range of equipment for microenterprises, contribute to socioeconomic development and improve quality of life. Together, these can increase incomes and raise productivity, contributing to job creation, the emergence of new enterprises, and economic growth.

Increases in access to electricity must accelerate to achieve SDG 7.1, and decentralized renewable energy will play a central role. Achieving SDG 7.1 by 2030 is possible only by deploying a combination of grid, mini-grid, and stand-alone off-grid solutions that leverage the faster deployment of distributed renewables to meet current levels of demand quickly. National and regional electrification programs using public funding to unlock private co-investment at scale can bring these solutions to life.

SDG 7.1.2 • Access to clean fuels and technologies for cooking

While there has been some progress in the global rate of access over the past two decades, the world is still not on track to achieve universal access to clean cooking by 2030. In 2022, 74 percent of the world's population had access to clean cooking fuels and technologies (such as stoves powered by electricity, liquefied petroleum gas, natural gas, biogas, or ethanol), up from 64 percent in 2015, but approximately 2.1 billion people still relied on polluting fuels and technologies (charcoal, coal, crop waste, dung, kerosene, and wood) as their main source of energy for cooking. If current trends continue, only 79 percent of the world's population will have access to clean cooking by 2030. This leaves nearly 1.8 billion people in 2030 vulnerable to the adverse effects of polluting cooking fuels and technologies on their health and livelihoods, not to mention their environment.

By region, the access deficit has fallen consistently in Eastern Asia and South-eastern Asia since 2000, and in Central Asia and Southern Asia since 2010. Looking at countries, the improvement has been driven chiefly by progress in the most populous low- and middle-income countries, such as India, China, Indonesia, Nigeria, and Pakistan. In Sub-Saharan Africa, however, there has been a clear upward trend in the deficit, as access to clean cooking has failed to keep pace with growing populations. Most of the global access deficit can be found in countries in that region, as well as in Central Asia and Southern Asia. In 2022, an estimated 79 percent of the population in Sub-Saharan Africa and 33 percent of people living in Central Asia and Southern Asia were still using polluting fuels and technologies for cooking.

The urban-rural gap across regions has been narrowing in all regions except Sub-Saharan Africa, where it is rising sharply. In Sub-Saharan Africa, only 7 percent of rural households have access to clean cooking, while the figure is 40 percent in urban areas. In Latin America and the Caribbean, one of the most urbanized regions in the world, around 35 percent of the rural population still lacks access to clean fuels and technologies for cooking, around twice as much compared to urban areas. The heavy use of traditional biomass among rural populations results in higher household air pollution and adverse health outcomes, particularly among women and children.

Among the specific fuels and technologies being used by low- and middle-income countries in 2022, gaseous fuels (liquefied petroleum gas, natural gas, biogas) remain the main energy source for cooking among 60 percent of people (4 billion), while electricity was the main fuel for 8 percent (550 million). Unprocessed biomass (wood, crop waste, dung), a polluting alternative, was the main fuel for 26 percent of people (1.7 billion) and charcoal for 4 percent (241 million). The use of gas (LPG, natural gas, and biogas) as the primary fuel is increasing at a faster rate than electricity, both in rural areas and overall. However, in urban areas, the use of electricity is rising faster than gas. It should be noted that the simultaneous use of several different fuels and technologies is extremely common, and that household energy survey data may not fully reflect the actual fuels and technologies being used or their proportions.

The vast majority of low- and middle-income countries will miss the 2030 universal access target unless efforts are strengthened. However, there is growing momentum on the international agenda to advance clean cooking efforts, particularly in Africa, through various multi-lateral fora, such as G7, G20, and COP, and increasing financial commitments from countries and companies. At the international level, collaborative efforts that focus on scalable and sustainable policies and interventions across governments, nongovernmental organizations, the private sector, and communities are the key to raising investment in universal access to clean cooking by 2030, and so reaping long-lasting health, social, and climate benefits.

SDG 7.2 • Renewable energy

Target 7.2 aims at increasing the share of renewable energy in the global energy mix and raising per capita generating capacity from renewable sources. In 2021, the share of renewable energy in total final energy consumption (TFEC) was 18.7 percent. The share of modern renewables—that is, excluding traditional uses of biomass—was a low 12.5 percent—just four percentage points higher than in 2010. This is despite significant growth in modern renewable energy consumption, which increased by over 30 percent during this period, owing chiefly to the deployment of electricity generated from renewable sources. While no quantitative milestone has been set, the current trend is neither in line with the target nor consistent with internationally agreed climate objectives.

To keep global climate targets in reach, the deployment of renewable energy must accelerate across the three key categories of electricity, heat, and transport. Renewable electricity represents one-third of global renewable energy consumption and half of modern renewable energy consumption. Use of renewable electricity increased by almost half between 2015 and 2021, driven mostly by wind and solar PV deployments. The rise increased renewables' share in total electricity consumption from 23 percent to 28.2 percent. Meanwhile, renewables' share in energy used for heating was 23.5 percent in 2021, but more than half of that came through traditional use of biomass (of which 95 percent was in Africa and Asia). Excluding renewable electricity and ambient heat, the share of modern renewables was just 10.4 percent. Renewables' share in transport energy demand climbed to 4.4 percent of in 2021, up from 3.5 percent in 2015, when biofuels (crop-based ethanol and biodiesel) still dominated. The growth was driven by the rise in electric vehicle sales and a higher proportion of renewables in transport-related electricity. Renewable electricity used in vehicles and trains grew 34 percent during this period, representing almost one-fifth of growth in renewables' share in total energy consumed for transport.

Renewables-based generating capacity continues to rise. In 2022, it reached 424 watts per capita globally: 1,073 watts per person in developed countries and 293 watts per capita in developing countries. The 2022 average is more than double that of ten years prior.

Progress across regions and countries varies widely depending on resource availability, policy support, consumption patterns, and energy efficiency performance. Latin America and the Caribbean show the highest share of use of modern renewable energy, at 28 percent of TFEC in 2021, chiefly due to the consumption of bioenergy for industrial processes and biofuels for transport, as well as the important role of hydropower in the region. Between 2010 and 2021, the United Kingdom and Indonesia made the greatest progress in the use of modern renewables (up 9 and 7 percentage points, respectively, in TFEC). The two countries were closely followed by China, India, and Germany, which chalked up increases of between 6 and 7 percentage points.

The actions needed to triple renewable capacity by 2030 as agreed at COP28 in Dubai vary significantly by country, region, and technology. The so-called UAE Consensus that emerged from the meeting calls for a tripling of the world's renewable power capacity by 2030. That consensus, agreed to by more than 130 countries, must now be embedded in national and international renewable energy targets and plans—accompanied by strong policy action. Deployment efforts in developing countries should be underpinned by international collaboration and finance to help achieve global energy and climate ambitions while reducing inequalities.

SDG 7.3 • Energy efficiency

Target 7.3 calls for doubling the globe’s progress on energy efficiency and reaching rates of improvement in energy intensity of 2.6 percent annually between 2010 and 2030—double the average of the previous two decades. However, because global progress was slower than hoped in all years except 2015, the rate of improvement in energy efficiency required from 2022 to 2030 must now exceed 3.8 percent, roughly in line with the International Energy Agency’s Net Zero Emissions by 2050 Scenario and the COP28 agreement to double progress in energy efficiency.

Regional trends show disparities in energy efficiency progress in 2021, following the COVID-19 slowdown during 2020. Despite increases in energy consumption, all regions reduced their energy intensities—a good sign in what is still an anomalous year in terms of energy trends due to the pandemic. The economic recovery boosted GDP growth to above 4.5 percent in all regions, with Central and Southern Asia growing at a 7.6 percent rate. With respect to energy intensity, Oceania achieved the greatest improvement (at 7 percent). However, Northern America and Europe improved by a mere 0.2 percent, putting downward pressure on global progress.

Between 2010 and 2021, 14 of the 20 countries with the largest energy supply accelerated their rate of improvement in energy intensity over the previous decade. But only three (China, the United Kingdom, and Indonesia) exceeded the 2.6 percent improvement target. This group formerly included Japan and Germany, until a slowdown in 2021 pulled their average below the threshold. Six countries (Mexico, France, Indonesia, Japan, Türkiye, and Italy) more than doubled their rate of improvement in 2010-21 compared with 1990-2010. That group includes both high-income and major emerging economies, suggesting that all types of countries can make major improvements in energy efficiency.

End-use trends showed improvements in energy intensity across all sectors in the 2010-21 period. In industry—comprising energy-intensive economic activities—energy intensity improved by an average of 1.6 percent per year. Passenger transport reached a similar rate (1.6 percent), though the rate of improvement in freight transport was significantly lower (0.4 percent). The residential sector (which comprises final uses such as heating, cooling, and cooking) showed an average annual improvement of 0.9 percent. Energy intensity in agriculture improved at an annual rate of 1.6 percent for the 2010-21 period, matching the rate for industry and passenger transport.

Shifts to more efficient and renewable sources for the generation of electricity and to the electrification of end uses are contributing to improvements in energy intensity. Increased generating efficiency reduces energy intensity through improvements in fossil fuel generation, phase-outs of inefficient technologies, and a growing share of renewables to the electricity mix. The efficiency of generation using fossil fuels has increased steadily since 2010, despite a stall in 2021, following the record increase in energy demand as the pandemic eased. End-use electrification is reducing energy intensity through the adoption of heat pumps and electric vehicles, the electrification of basic industries in emerging market and developing economies, and other means.

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

Although international public financial flows to developing countries in support of clean energy research and renewable energy production rebounded to USD 15.4 billion in 2022 (a 25 percent increase from 2021), support remains far short of the 2016 peak of USD 28.5 billion. While there is no quantitative target for international public financial flows under indicator 7.a.1, the current trend shows that the world is not on track to meet the goal of expanding access to clean energy research and technologies for countries in need, especially among least-developed countries, landlocked developing countries, and small island developing states.

A relatively small group of funders is responsible for most flows; their decision-making significantly affects flow levels and the technologies funded. The 2022 comeback was driven almost entirely by European sources. It was characterized by multipurpose financial instruments and a broad range of renewable energy technologies and electrification programs, technical assistance, energy efficiency programs, and other supporting infrastructure.

Regionally, international public investment flows changed substantially between 2021 and 2022 in all developing regions except Sub-Saharan Africa. After four years of decline from the 2016 peak and a year of stagnation during the pandemic, flows increased substantially between 2021 and 2022 in most world regions, led by Latin America and the Caribbean (which showed an increase of nearly USD 2 billion), Western Asia and Northern Africa (up by nearly USD 1 billion), and the category of “unspecified countries” (up by more than USD 1 billion). On the other hand, flows to Sub-Saharan Africa increased only modestly; those to Central Asia and Southern Asia decreased substantially (by nearly USD 1.2 billion); and those to Eastern Asia and South-eastern Asia also fell, but less dramatically.

Country commitments remain heavily concentrated, although they are gradually diversifying. In 2021, 80 percent of commitments were spread among 19 countries, as opposed to 25 countries in 2022. The top five recipients of international public flows in 2022 were Brazil, South Africa, Egypt, Uzbekistan, and India. The 45 least-developed countries received slightly more (+8 percent) international flows for clean energy in 2022 (USD 2.3 billion) than in 2021 (USD 2.1 billion), but relative to the total flows the share of money going to these countries decreased from 17 percent to 15 percent, below the historical average of 21 percent. The 40 small island developing states received the highest disbursements on a per capita basis. Some of these states are among the most successful in attracting international public flows.

Debt instruments accounted for two-thirds of flows in 2022, down from more than 90 percent in 2010, and the share of grants, equity, and guarantees grew by 50 percent over 2021. The choice of financial instrument is as important as the quantity of flows, as many recipient countries struggle with high ratios of debt to GDP. Incurring more debt would likely hinder their development and their capacity to repay loans. Ideally, international public financing for recipient countries should include larger shares of nondebt instruments and concessional loans rather than loans at market rates.

As 685 million people continue to live without access to energy and clean cooking, adequate financing to ensure universal access must be a key priority. More innovative financing instruments and initiatives are needed to support underinvested countries to benefit from the energy transition without compromising their fiscally constrained economies. Here, public finance will play a pivotal role in providing energy service solutions to unserved and underserved areas, mobilizing private capital to this end, and bridging end users’ affordability gaps. Within the wider public finance ecosystem, multilateral development banks, governments, and other relevant actors should work together to shift the focus of energy transition projects from simple bankability toward impact at the program or portfolio levels.

The outlook for SDG 7

Certain policy responses to the global energy crisis appear likely to improve the outlook for renewables and energy efficiency. However, the energy crisis, inflation, and a dour macroeconomic outlook will probably hold back progress on access to electricity and clean cooking, as well as growth in financial flows.

Access to electricity. Despite setbacks between 2020 and 2022 due to recent global crises, initial data for 2023 gathered by IEA indicates that the number of people globally without access to electricity has returned to a downward trend, albeit tepidly, with increases in solar home system sales in Sub-Saharan Africa helping close some of the gap left by debt-laden utilities after the crisis. Still, 660 million people will still lack access in 2030, 85 percent of them in Sub-Saharan Africa. Achieving universal access by 2030 will require significant investment, policy support, and the deployment of renewable energy.

Access to clean cooking. The IEA and WHO estimate that 1.8 billion people will still lack access to clean cooking by the end of the decade under today's policies and if current trends continue. Significant progress has been made in Asia, but in Sub-Saharan Africa the number of people without access is growing, as access to clean cooking has failed to keep pace with population growth. New commitments to prioritize clean cooking within multi-lateral fora and in African countries, are improving the outlook, compared to previous years. This outlook has further upside potential due to the additional commitment of USD 2.2 billion at the Summit for Clean Cooking in Africa, which comes in addition to the African Development Bank's commitment of USD 2 billion over the next 10 years, as well as funding already available from the World Bank and GCF.

Renewable energy. Strong growth in electricity generation from renewable sources is expected to continue, with renewables surpassing coal as the largest source of electricity generation by 2025 under today's policies. In the UAE Consensus, more than 130 countries pledged to triple total global installed renewable power capacity by 2030 over the 2022 level. The current pipeline of announced renewable projects will bring the world around 80 percent of the way to this target, according to IEA. However, IRENA calls for more policy interventions and to further increase ambitions to close the final gaps with more international cooperation and financial support. Still more is needed outside the electricity sector. IEA's Net Zero Emissions by 2050 Scenario and IRENA's 1.5°C Scenario, both of which outline ambitious energy pathways to SDG 7, estimate that modern renewables must reach 32-35 percent of TFC by 2030 to keep the world on track, whereas under current policies this share reaches only 23 percent by the end of the decade, up from 18 percent today.

Energy efficiency. The global push for energy efficiency has gained momentum, driven by increasing energy costs and concerns over energy security. Despite this, early estimates for 2023 show only a modest 1.3 percent rate of improvement in energy intensity. Achieving the 3.8 percent annual rate of improvement in energy efficiency to meet SDG 7.3 will require robust policy actions and a significant increase in investment. Doubling the current rate of energy efficiency, as agreed in the UAE Consensus, may require even more ambitious action.

Financing and investment needs. The achievement of the SDG 7 targets demands a substantial increase in clean energy investments. IEA estimates an average annual investment of around USD 3 trillion in the energy sector by 2030, with significant portions dedicated to renewable power and end-use efficiency. Simultaneously, IRENA's 1.5°C Scenario will require an average annual outlay of USD 4.5 trillion in investments through 2030. These investments would focus on renewables, energy efficiency, and low-carbon technologies and would include power grids, storage, and other enabling infrastructure. Closing the investment gap, particularly in developing countries, is paramount for advancing the energy transitions and ensuring universal access to clean energy and technologies.