TRACKING SDG7

THE ENERGY PROGRESS REPORT 2021

A joint report of the custodian agencies

IEA International Energy Agency

IRENA International Renewable Energy Agency

United Nations Statistics Division

THE WORLD BANK IBRD • IDA | WORLD BANK GROUP

World Health Organization

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EXECUTIVE SUMMARY

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Community work for rural electrification

OVERVIEW

The 2021 edition of *Tracking SDG 7: The Energy Progress Report* monitors and assesses achievements in the global quest for universal access to affordable, reliable, sustainable, and modern energy by 2030. The latest available data and selected energy scenarios reveal that at today's rate of progress, the world is not on track to achieve SDG 7. This is particularly true of the most vulnerable countries and those that were already lagging. This report also examines various ways to bridge the gaps, chief among them the goal of significantly scaling up renewable energy while maximizing its socioeconomic benefits. Figure ES.1 offers a snapshot of the primary indicators.

This report was prepared as the COVID-19 pandemic and its broad social and economic disruptions entered a second year. The consequences of the pandemic are considered in this report, along with results from global modeling exercises—first to determine whether current policy ambitions are meeting the SDG 7 targets and, second, to identify what additional actions might be needed. The report also examines the investments levels required to achieve the goals. It presents scenarios drawn from the International Energy Agency's (IEA) flagship publication, *World Energy Outlook* (IEA 2020b), and the International Renewable Energy Agency's (IRENA) *Global Renewables Outlook: Energy Transformation 2050* (IRENA 2020a).

While renewable energy has demonstrated remarkable resilience during the pandemic, the unfortunate fact is that gains in energy access throughout Africa are being reversed: the number of people lacking access to electricity is set to *increase* in 2020, making basic electricity services unaffordable for up to 30 million people who had previously enjoyed access. The COVID-19 crisis has revealed the stark worldwide inequalities in access to reliable energy and health care, especially in rural and peri-urban areas, and has highlighted the need to expand energy access to help populations mitigate the effects of the crisis.

With the world preparing for the September 2021 launch of the first United Nations High-Level Dialogue on Energy in decades, the time is right to enhance international collaboration and progress toward SDG 7. In this context, the SDG 7 custodian agencies—IEA, IRENA, the United Nations Statistics Division (UNSD), the World Bank, and the World Health Organization (WHO)—urge the international community and policy makers to safeguard existing gains toward SDG 7; not to lose sight of the need for continued action on affordable, reliable, sustainable, and modern energy for all; and to maintain a strategic focus on the vulnerable countries needing the most support.

Universal access to electricity. SDG target 7.1 is universal access to affordable, reliable, sustainable, and modern energy services; 7.1.1 focuses on access to electricity. Recent progress in access to electricity was mixed, as is the outlook for 2030. While the share of people with access grew up to 90 percent in 2019, 759 million people still lack it. Half live in fragile and conflict-affected settings and 84 percent in rural areas. The IEA's Stated Policies Scenario projects that in 2030 some 660 million people will still lack access to electricity. About 940 million people will have to be connected by 2030 to reach universal access. The COVID-19 crisis threatens progress in some parts of the world. In Sub-Saharan Africa, the number of people without access to electricity most likely grew in 2020. This means the access rate will have to more than triple between now and 2030. In Sub-Saharan Africa alone, this would mean connecting around 85 million people each year through 2030.

Clean cooking solutions. If clean cooking fails to secure a foothold in the global political agenda, 2.4 billion people will be left with no access in 2030, according to IEA's Stated Policies Scenario. Continuing to rely on polluting fuels and inefficient technologies will have dramatic consequences for the environment, economic development, and most notably, on the health of women and children. The challenge in Developing Asia and Sub-Saharan Africa is to understand, first, how cultural, economic, and social factors combine to slow progress; and, second, how to expand acceptance of affordable and available solutions centered on cleaner fuels, cookstoves with very low emissions, and efficient electric appliances that can be plugged into the grid or run on solar photovoltaic (PV) panels connected to a battery.

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

2010		Latest Data
1.2 billion people without access to electricity		**759 million** people without access to electricity (2019)
3 billion people without access to clean cooking		**2.6 billion** people without access to clean cooking (2019)
16.4% share of total final energy consumption from renewables		**17.1%** share of total final energy consumption from renewables (2018)
5.6 MJ/USD primary energy intensity		**4.8 MJ/USD** primary energy intensity (2018)
10.6 USD billion international financial flows to developing countries in support of clean energy		**14 USD billion** international financial flows to developing countries in support of clean energy (2018)

Renewable energy. SDG target 7.2 is defined as a substantial increase in the share of renewable energy in the global energy mix. Renewable energy has seen unprecedented growth over the past decade, particularly for the generation of electricity. During the COVID-19 pandemic, renewables have proven more resilient than other parts of the energy sector, and their short-term outlook shows resilience in all regions, helped along by supportive policies and falling technology costs. Despite progress, however, the share of renewables in total final energy consumption (TFEC) is still only 17 percent, not much higher than the year before—because TFEC has grown at the same rate as renewables. The fact is that deployment levels of renewables are still quite far from those needed to meet SDG 7 and to achieve a meaningful decarbonization of the energy sector. The IEA's Sustainable Development Scenario shows that intensified policy support and cost reductions could push the share of modern renewables in TFEC above 25 percent, with renewables accounting for a little more than half of electricity supply. IRENA's Transforming Energy Scenario goes further, showing how the rapid growth in renewable energy could continue over the coming decade, with its share in TFEC reaching 28 percent by 2030 and the share of renewable sources in power generation reaching 57 percent. In the power sector, both the IEA and IRENA scenarios envisage that solar PV and wind will account for most renewables-based electricity generation by 2030. The outlook for the use of renewables in transport and heat is not as strong. Despite its large share of final energy consumption, heat receives limited policy attention globally compared with other end-use sectors.

Energy efficiency. SDG target 7.3 is to increase the global rate of improvement in energy efficiency by 2030 to 2.6 percent annually (doubling the average of 1.3 percent achieved annually between 1990 and 2010).[1] The rate of global primary energy intensity improvement—defined as the percentage decrease in the ratio of global total primary energy supply per unit of gross domestic product—has slowed in recent years. In the IEA's Stated Policies Scenario, lower fuel prices are a key reason for a further slowing of the rate at which the energy intensity of the global economy improves. The annual rate of improvement stays at around 2 percent annually for 2019–25 before rising slightly in subsequent years. In contrast, in the Sustainable Development Scenario, the average rate of improvement needed to meet the SDG 7.3 target has increased to 3 percent per year between 2018 and 2030, an increase of 0.4 percent from initial estimates prepared when the SDGs were developed.

International public financial flows. The SDG 7.a.1 indicator measures international public financial flows to developing countries in support of renewable energy. These flows amounted to USD 14 billion in 2018, a 35 percent decrease from an all-time high of USD 21.9 billion the year before. Nevertheless, the overall trend in public financial flows has been positive over the past decade, increasing threefold during the period 2010–18 when viewed as a five-year moving average. This trend, however, masks some important distributional discrepancies, with financial commitments concentrated in a few countries and thus failing to reach many of those most in need of international support. The 46 least developed countries (LDCs) received a mere 20 percent of public financial flows over the period 2010–18 and a total of USD 2.8 billion in 2018—the same level as in 2017 but lower than in 2016 and 2015. IEA and IRENA scenarios project that renewables investment needs to increase considerably — in the power sector alone, investment would need to grow from USD 300 billion to USD 550-850 billion a year throughout 2019-30. This would need to be supported by additional investments to an expanded and modernized electricity network and grid battery storage. International public financial flows are critical to reach these investment levels and to leverage the necessary amounts of private capital, especially in the midst of the COVID-19 pandemic, which has dramatically increased investors' risk perception and shifted public funding priorities in developing countries.

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Although innovative policies and technologies continue to emerge and bring positive benefits to the energy sector, the impact of the COVID-19 pandemic has left us in a very different place from that foreseen in early 2020. The SDG 7 goals are now in jeopardy, and some elements of those goals are even more distant than before.

Conversely, the pandemic could also have a positive impact on reaching the goals. In a number of advanced economies, a decline in interest rates and accommodative monetary policy by central banks mean that base lending rates will stay lower for longer. Given the capital-intensive nature of many clean energy technologies, this could translate into lower deployment costs. Recovery plans designed to kickstart economic growth, protect workers, and create jobs could provide a substantial boost to the deployment of renewable energy technologies—for example, by developing strategies that make use of existing skills in the energy sector to support clean energy transitions. Lower fossil fuel prices could make it easier for governments to phase out fossil fuel subsidies. Part of how we get on track toward meeting SDG 7 depends on how governments respond to the economic crisis and the role of recovery packages in shaping a more sustainable future.

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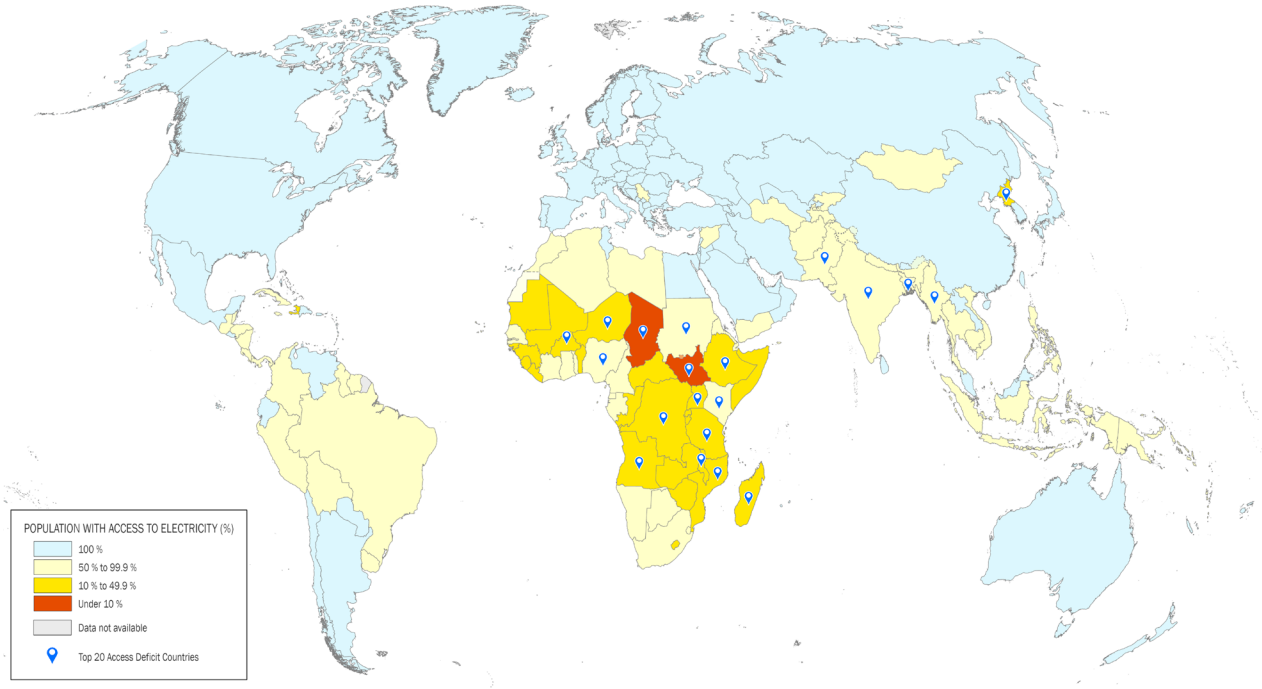
1 Revisions of underlying statistical data and methodological improvements explain the slight changes in historical growth rates from previous editions. The SDG 7.3 target of improving energy intensity by 2.6 percent per year in 2010–30 remains the same, although the latest data for the period 1990–2010 showed a rate of improvement in energy intensity of 1.2 percent per year.

ACCESS TO ELECTRICITY

The share of the global population with access to electricity (SDG 7.1.1) rose consistently from 83 percent in 2010 to 90 percent in 2019. Noteworthy electrification efforts brought access to 1.1 billion people worldwide between 2010 and 2019, shrinking the number of those without access from 1.2 billion in 2010 to 759 million in 2019.

The global advance in electricity access since 2010 masks unequal progress across regions (figure ES.2). In Latin America and the Caribbean, and in Eastern Asia and South-eastern Asia, the advance in electrification was enough to approach universal access, with more than 98 percent of the population enjoying access to electricity by 2019. That same year in Western Asia and Northern Africa, and in Central Asia and Southern Asia, 94 and 95 percent of the populations, respectively, had access to electricity. By contrast, Sub-Saharan Africa remains the world region with the largest access deficit, accounting for three-quarters of the global deficit. In Sub-Saharan Africa, the access rate was 46 percent in 2019, and 570 million people still did not have access to electricity. However, between 2017 and 2019, progress in access outstripped population growth, resulting in a drop in the number of unelectrified people in the region.

FIGURE ES.2 • Share of population with access to electricity in 2019

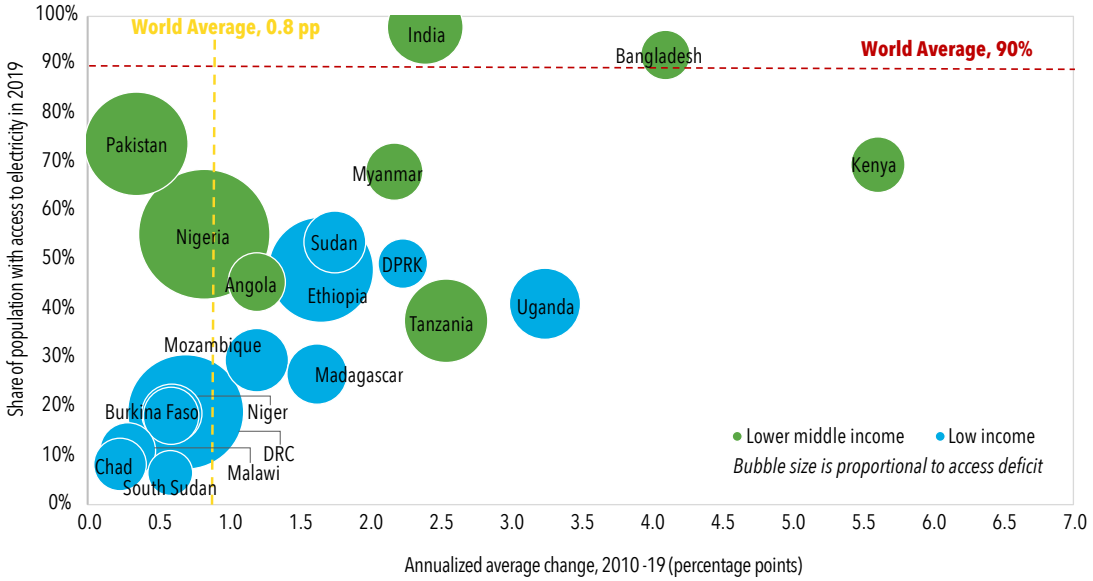


Source: World Bank 2021.

Note/disclaimer: This map was produced by the Geospatial Operations Support Team of the World Bank based on the Cartography Unit of the World Bank. The boundaries, colors, denominations, and other information shown on any map in this work do not imply any judgment on the part of the custodian agencies concerning the legal status of or sovereignty over any territory or the endorsement or acceptance of such boundaries.

Twenty countries with the largest populations lacking access to electricity accounted for 76 percent (580 million people) of the global access deficit (figure ES.3). Efforts in these countries are particularly important to make significant progress toward universal access. The three largest deficit countries—Nigeria, Democratic Republic of Congo, and Ethiopia (which replaced India in third place in 2019)—are in Sub-Saharan Africa. In 2019 these three countries accounted for 90 million, 70 million, and 58 million unserved people. Of the 20 countries, Bangladesh, Kenya, and Uganda have made the most progress in electrification, achieving annual growth in access of more than 3 percentage points since 2010, while more than half of the countries expanded electrification by less than 2 percentage points annually. In 9 out of the 20, access kept pace with population growth between 2010 and 2019.

FIGURE ES.3 • Electricity access in the top 20 access-deficit countries, 2010–19



Source: World Bank 2021.

Note: A country's "access deficit" is defined as the number of people in the country without access to electricity.

DPRK = Democratic People's Republic of Korea; DRC = Democratic Republic of Congo.

Major disparities in urban vs. rural access to electricity are also observable. The access rate in rural areas improved faster than in urban settings over the 2017–19 period, outpacing population growth. Nonetheless, in 2019, rural areas still accounted for 84 percent of the global population living without access to electricity (640 million unserved people). Meanwhile, urban areas have been approaching universal access, with the access rate standing more than 97 percent since 2016 (leaving 116 million people with no access in 2019). Fifty-eight percent of the unserved urban population in 2019 lived in fragile and conflict-affected settings.

Electrification through decentralized renewables-based solutions has advanced significantly since 2010, accelerating in recent years. The number of people connected to mini-grids (all technologies) more than doubled between 2010 and 2019, growing from 5 to 11 million people (IRENA 2020b). In 2019, 105 million people had access to off-grid solar solutions, rising from 85 million in 2016 (GOGLA 2020). Forty-nine percent of them reside in Sub-Saharan Africa, while 29 percent inhabit South Asia. According to analysis from RISE (ESMAP 2020), policy frameworks to support mini-grid and off-grid systems developed more rapidly after 2010 than did those for on-grid electrification.[2]

Despite the remarkable growth in electrification observed over the last decade, the world may still fall short of 100 percent access to electricity by 2030. Without taking into account disruptions from the COVID-19 crisis, annual growth in access would have to be an average growth of 0.9 percentage points per year by 2030 to meet the goal, higher than the 0.74 percentage points observed for the past three years. The annual rate of growth in electrification will have to improve greatly to close the gap by 2030. Under current policies and with the impact of COVID-19, 660 million people will remain without electricity access in 2030 (IEA 2020).

Owing to the socioeconomic impact of the COVID-19 pandemic, and given the complexities faced by the remaining unserved population, closing the access gap will become increasingly challenging. The balance between affordability and financial viability required to leave no one behind will not be easy to find. Reaching the last-mile households (who are mostly poor, vulnerable, and remote) while accelerating electrification in low-income countries, fragile countries beset by conflict and violence, and countries housing refugee camps occupied by millions of displaced people is the formidable challenge governments and the international community must overcome. Extraordinary measures must be designed and implemented to ramp up

2 RISE (Regulatory Indicators for Sustainable Energy) assesses countries' policy and regulatory support for each of the four pillars of sustainable energy: access to electricity, access to clean cooking (for 55 access-deficit countries), energy efficiency, and renewable energy.

electrification efforts to the levels required to achieve the 2030 target.

ACCESS TO CLEAN FUELS AND TECHNOLOGIES FOR COOKING

In 2019, the share of the global population with access to clean cooking fuels and technologies grew to 66 percent (confidence intervals of 59–71 percent) from 63 (56-68) percent in 2018. The global population without access was 2.6 (2.2–3.1) billion people. Access to clean fuels and technologies in 2018 was only 9 percentage points higher than in 2010, when it stood at 57 percent (52–62 percent) of the global population. Recent trends suggest that the world will fall short of the 2030 target for universal access by almost 30 percent, reaching only 72 percent of the population. Increases of more than 3 percentage points per year would be required to achieve the goal of universal access to clean fuels and technologies by 2030. Without urgent action, the environmental, social, and health toll caused by household air pollution is likely to continue, affecting women and children in particular, because they bear a disproportionate share of the burden of gathering fuel and tending polluting stoves.

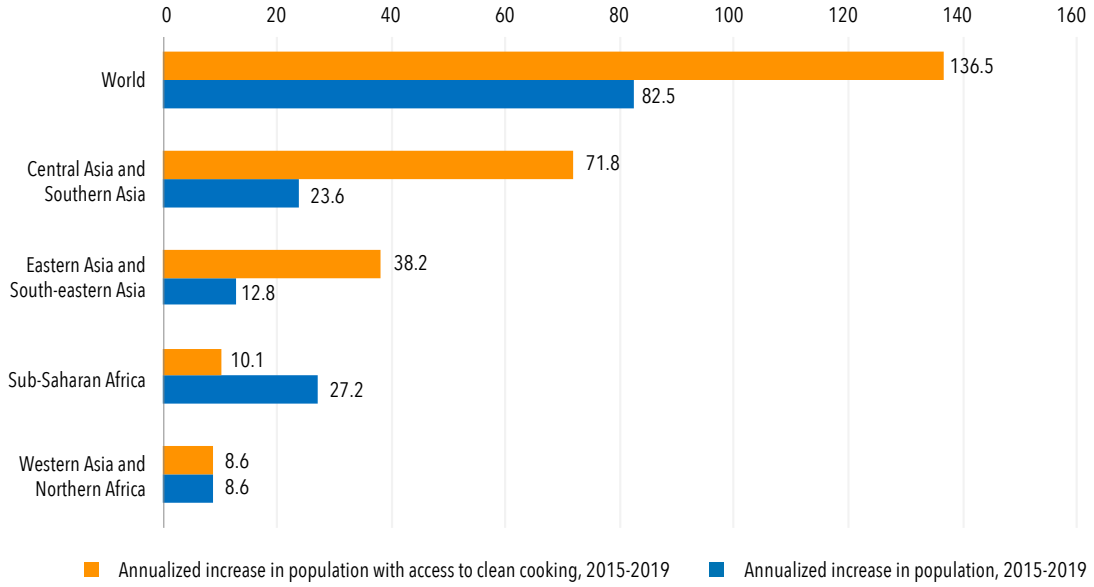
From 2010 to 2019, the global rate of access to clean cooking fuels and technologies increased annually by 1.0 percentage point (0.2–1.8). The gains were predominantly driven by increases in large, populous countries—mostly in the Central and Southern Asia region and the Eastern and South-eastern Asia region. Notably, progress by the five most populous low- and middle-income countries (Brazil, China, India, Indonesia, and Pakistan) was substantially faster than global progress overall. On a global scale, the percentage of the population gaining access has been largely matched by population growth, causing a decades-long stagnation in the number of people without access to clean cooking, referred to here as the "access deficit." Figure ES.4 illustrates the annualized increase in the number of people with access to clean cooking fuels and technologies compared with the annualized population increase, by region, for the 2015–19 period. Stagnation in the global access deficit disguises key regional trends. The access deficit has fallen steadily in Eastern and South-eastern Asia since 2000, and in Central Asia and Southern Asia since 2010. In Sub-Saharan Africa, meanwhile, growth of the population with access to clean cooking fuels and technologies has failed to keep pace with overall population growth; the region's access deficit rose by a factor of more than 50 percent after 2000, reaching a total of 910 million (880–930) people in 2019.

The top 20 access-deficit countries accounted for 81 percent of the global population without access to clean fuels and technologies in the period 2015 to 2019. In seven of these countries, the proportion of the population with access is no more than 5 percent. The seven are the Democratic Republic of Congo, Ethiopia, Madagascar, Mozambique, Niger, Tanzania, and Uganda. Sixteen of the twenty countries have access rates of less than 50 percent. On a positive note, Cambodia, Indonesia, and Myanmar achieved annual gains in access exceeding 2 percentage points in the period 2015–19.

The urban-rural discrepancy in access to clean cooking fuels and technologies dropped worldwide over the past decade. In 2019, the difference in access was 42 percentage points (31–51), with 85 percent (77–88) of urban dwellers having access, compared with 42 percent (35–50) of those living in rural areas. The access gap between the two areas has been decreasing since 2010, owing first to increased access in rural areas and second, to urban population growth, which is beginning to outpace access. The access disparity between urban and rural areas has been declining in most regions, except in Sub-Saharan Africa, where it grew from

23 percentage points in 2010 to 29 percentage points in 2019.

FIGURE ES.4 • Annualized increase in population and in the number of people with access to clean cooking (millions), 2015–19, by region



Source: WHO Global Health Observatory and UN population estimates.

Among low- and middle-income countries, the use of gaseous fuels (LPG, natural gas, and biogas) rose steadily from 36 percent (31–41) in 2000 (1.8 billion people) to 51 percent (45–58) in 2019 (3.3 billion people), overtaking unprocessed biomass fuels (wood, crop waste, and dung) as the predominant type of cooking fuel. Use of electricity for cooking has also risen, from 3 percent (2–4) in 2000 (140 million people) to 7 percent (4–12) in 2019 (450 million people), though the increase was far more notable in urban areas. Between 2000 and 2010, increases in the use of clean fuels appear to be explained by steep declines in the use of coal—particularly in rural areas, where it fell from 11 percent in 2000 to 2 percent in 2019, and kerosene, particularly in urban areas, where its use dropped from 9 percent in 2000 to 2 percent in 2019.

Among all the SDG 7 targets, clean cooking presents the greatest cause for concern owing to its slow progress. A continuation of a business-as-usual agenda is no longer acceptable: Clean cooking fuels and technologies must be made a top political priority with targeted policies. To achieve the universal target, a multisectoral and a coordinated effort is needed. All household energy needs, including cooking energy and electricity access, should be integrated into a national energy plan. Given the status of access to clean cooking, it is not possible to overstate the urgency for action, especially in Sub-Saharan Africa, where access is particularly low, and the absolute number of people relying on polluting cooking fuels and stoves continues to rise.

The WHO's guidelines on indoor air quality: household fuel combustion (WHO 2014) provide useful and accepted benchmarks on fuel use, emissions, human exposure levels, and health risks. The WHO Clean Household Energy Solutions Toolkit (CHEST) supports sector professionals and policy makers with ways to implement the recommendations contained in the WHO guidelines.

Finally, there is an urgent need to scale up investment. Public and private finance for clean cooking remains far below the necessary level. The economic costs of reliance on polluting fuels make a strong case for investment by countries to promote immediate transitions to clean cooking fuels and technologies.

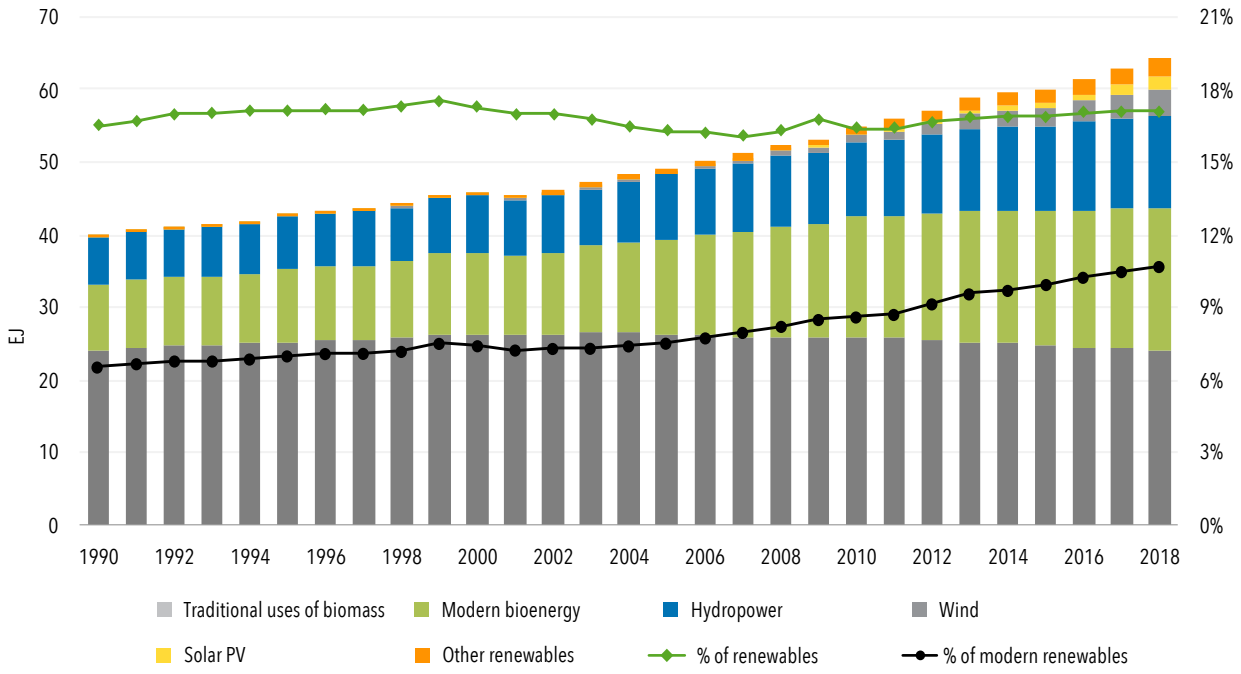
RENEWABLE ENERGY

Although renewable energy has shown unprecedented growth in recent decades, its share in TFEC has remained steady because consumption of renewables and TFEC have increased at similar rates. In 2018, renewable energy consumption, including traditional uses of biomass, grew 2.1 percent, as did TFEC, leaving renewables at the same 17.1 percent share of TFEC as in 2017. This underscores the importance of further scaling up renewable energy while containing energy consumption through energy efficiency so as to progress toward the SDG 7.2 target.

As in previous years, the fastest progress in renewable energy consumption is in the electricity sector, whereas the transport and heat sectors show much slower advances. Renewables consumption in the electricity sector grew almost 7 percent between 2017 and 2018, bringing its share to 25.4 percent —up from 24.7 percent in 2017. By way of comparison, the consumption of nonrenewables in the electricity sector increased by 3 percent year-on-year in 2018.

Hydropower remains by far the largest source of renewable electricity globally, followed by wind and solar PV. Together, wind and solar PV have shown the fastest growth rates among renewable electricity sources and are responsible for more than half of the increase in renewable electricity consumption observed over the past 10 years (figure ES.5).

FIGURE ES.5 • Renewable energy consumption by technology and share in total final energy consumption (TFEC), 1990–2018



Source: IEA 2020a; UN 2020.

In terms of new installations of electricity generation capacity, renewables have shown strong growth, moving up 7.9 percent in 2018 and 7.4 percent in 2019 (IRENA, 2020b; UN 2021). Since 2015, renewables have consistently outpaced installations in nonrenewable capacity. Renewable electricity now accounts for almost half of global modern renewable energy consumption and three-quarters of its year-on-year increase.

But electricity represented only 21 percent of global energy consumption in 2018, whereas heat and transport accounted for 47 percent and 32 percent, respectively. Ensuring access to affordable, reliable, sustainable, and modern energy for all implies a substantial increase in the share of renewable energy in these end-use sectors.

Renewable heat consumption (excluding traditional uses of biomass) increased 1.2 percent year-on-year in 2018, reaching 9.2 percent of total heat consumption, the same as in the two preceding years, and only one percentage point higher than ten years earlier.

Despite its dominant share in final energy consumption, the heat sector receives conspicuously little policy attention and support, despite the fact that demand for heating and cooling is expected to climb as building floor area continues to grow globally and developing countries expand their industries (IEA 2019). Mitigating the climate impact of this trend will require a rapid penetration of renewable heating technologies.

Decarbonizing heating and cooling uses will require governments to implement comprehensive policy packages that combine efficiency and renewable energy sources while phasing out the use of fossil fuels. Renewables-based electrification, renewable gases, sustainable biomass, direct use of geothermal heat, and solar thermal heat are all relevant technologies that could benefit from stronger policy support. Such policies will have to address long-standing barriers and be aligned with broad socioeconomic objectives and consolidated international actions. For instance, the phasing out of fossil fuel subsidies will require careful adjustment (or implementation) of fiscal and social policies to avoid adverse effects on vulnerable communities (IRENA, IEA, REN21 2020). Clear targets and policy consistency will be essential in order to provide investors the transparency and certainty they need. Integrated long-term plans should articulate with energy efficiency targets and include development plans for large infrastructure, such as district heating and cooling networks, which can be more efficient than decentralized systems in densely populated areas.

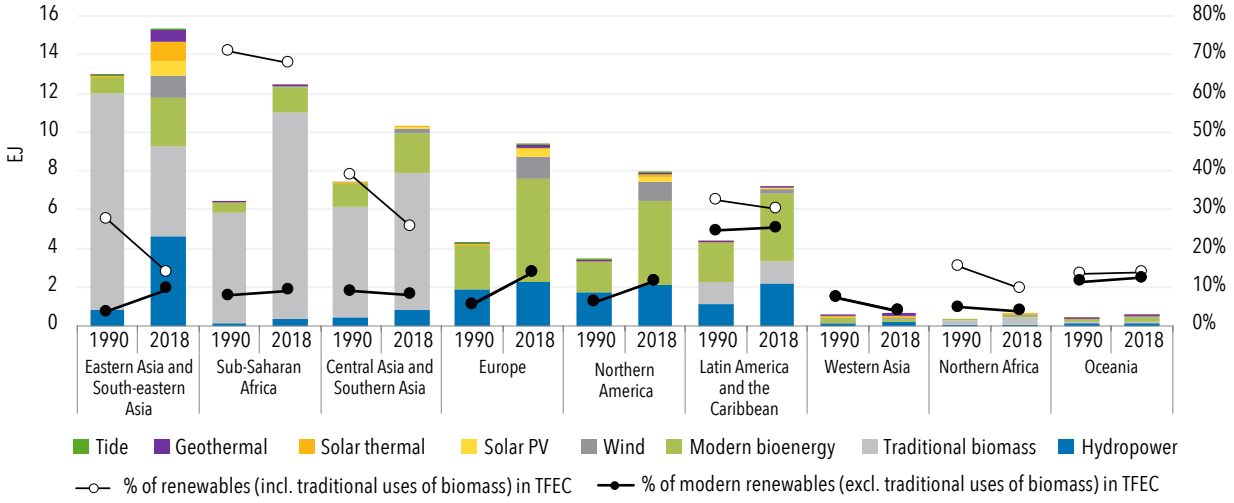
Renewable energy used in transport grew by 7 percent in 2018, the largest increase since 2012, bringing its total share of renewable energy to 3.4 percent, up from 3.3 percent in 2017. Biofuels, primarily crop-based ethanol and biodiesel, supplied 91 percent of that renewable energy. Nevertheless, the expansion of renewable electricity and of sales of electric vehicles are leading to record increases in the use of renewable electricity in transport.

Behind the global figure, important regional disparities should be noted. In 2018, as in all previous years since 1990, Sub-Saharan Africa has the largest share of renewable sources in its energy supply, with traditional uses of biomass representing more than 85 percent of the renewable energy consumed in the region. When traditional uses of biomass are excluded, Latin America and the Caribbean show the highest share of modern renewable energy consumption. This is due to the region's use of hydropower for electricity generation, of bioenergy for industrial processes (in particular in the sugar and ethanol industry), and of biofuels for transport.

At national levels, the share of renewable sources in energy consumption varies widely depending on resource availability, policy support, and the impact of energy efficiency and consumption patterns on total energy demand (figure ES.6). Of the top 20 energy-consuming countries, Brazil and Canada had the highest shares of modern renewables in 2018, relying on hydropower for electricity and bioenergy for heat and transport. China accounted for almost a fifth of global modern renewable energy consumption, yet this represented less than 10 percent of its TFEC. Germany, Italy, and the United Kingdom achieved the most progress in the share of modern renewables in TFEC between 2000 and 2018, mostly through the deployment of bioenergy (in particular for heat), wind, and solar PV, and by stabilizing or lowering their TFEC. The largest advances in 2018 were observed in Spain at +1.7 percentage points, owing to higher hydropower generation, followed by Indonesia at +1.4 percentage points, where a rapid uptake of bioenergy for power generation played a substantial role.

For the first time in 2018, a majority of new renewable electricity capacity was installed in developing countries, but substantial efforts will still be required to reach SDG 7. As demonstrated in the tracking of SDG indicator 7.b.1, developing countries had 219 watts per capita of installed renewable electricity capacity in 2019, a quarter of the 880 watts per capita in developed countries, which mirrors the differential in overall generating capacity.

FIGURE ES.6 • Renewable energy consumption and share in total final energy consumption by region, 1990 and 2018



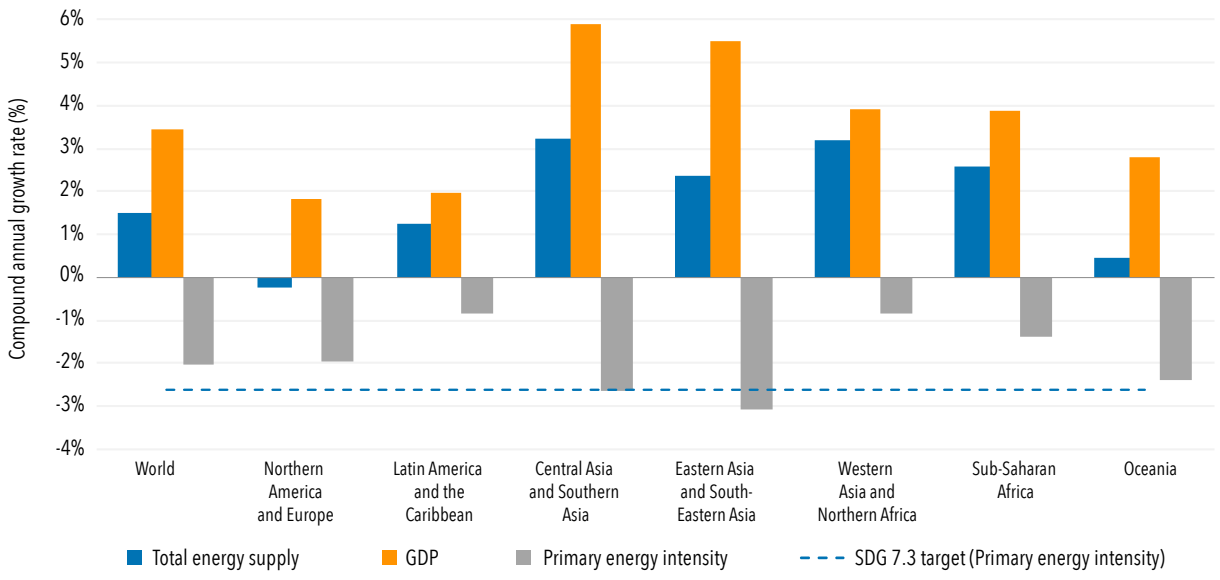
Source: IEA 2020a; UN 2020.

ENERGY EFFICIENCY

The rate of improvement in global primary energy intensity—the global proxy for improvements in energy efficiency—has slowed in recent years. Global primary energy intensity improvement is defined as the percentage decrease in the ratio of global total energy supply per unit of gross domestic product (GDP). It was 4.75 megajoules (MJ) per U.S. dollar (2017 PPP [purchasing power parity]) in 2018, a 1.1 percent improvement from 2017. This was the lowest annual rate of improvement since 2010. This is well below the annual 2.6 percent initially projected as a prerequisite to reaching the target of SDG 7.3, which continues to require an average annual rate of 3 percent every year through 2030 in order to meet the goal of doubling the global rate of improvement in energy intensity. While early estimates for 2019 indicated an upward trend, with an improvement rate of 2 percent, the outlook for 2020 suggests lower levels (0.8 percent) as a result of the COVID-19 pandemic and its disruptions. Nonetheless, the 3 percent target remains well within reach, provided sufficient and systematic investments are made in cost-effective energy efficiency improvements. Given the multiple benefits of energy efficiency, it is an obvious choice for government support, as reflected in the spate of recent stimulus packages throughout the world.

Since 2010, primary energy intensity worldwide has improved, although stark differences in trends are observable across regions (figure ES.7). Emerging economies in Central Asia and Southern Asia and in Eastern and South-eastern Asia have seen a spike in economic activity. The rise in total energy supply associated with such growth, however, has been mitigated in part by notable improvements in energy intensity, which have lowered the global energy intensity average. Over the same period, the total energy consumption of mature economies in Northern America and Europe fell slightly, reflecting slower economic growth and a decoupling of the economy from energy usage. Western Asia, Northern Africa, Sub-Saharan Africa, and Latin America and the Caribbean recorded the smallest average energy intensity gains over the period 2010–18 (less than 1.4 percent improvement per year), but these trends differed across regions. In Latin America and the Caribbean growth in both total energy supply and GDP was among the lowest worldwide, but it is also the least energy intensive region in the world, at 3.3 MJ/U.S. dollar (2017 PPP). In Western Asia, Northern Africa, and Sub-Saharan Africa, growth in both total energy supply and GDP was among the highest worldwide.

FIGURE ES.7 • Growth rates in total energy supply, GDP, and primary energy intensity at the world and regional levels, 2010–18



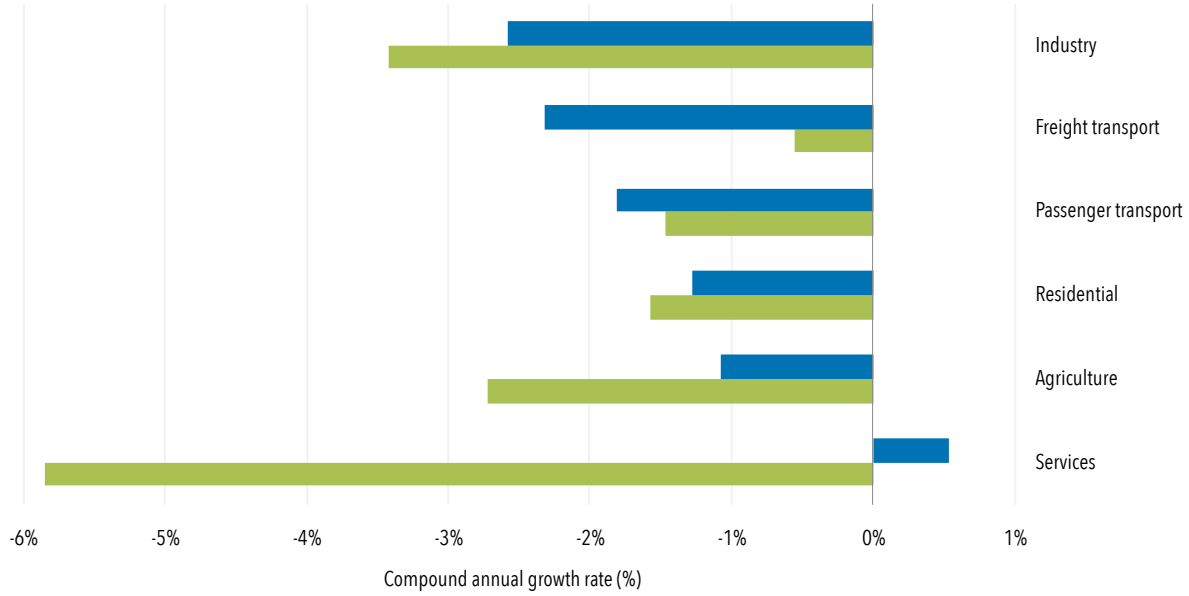
Source: IEA 2020a, UN 2020, and World Bank 2020.

Note: Most of the energy data cited here comes from a joint dataset built by the International Energy Agency (https://www.iea.org/data-and-statistics/) and the United Nations Statistics Division (https://unstats.un.org/unsd/energystats/). GDP data is sourced from the World Bank's World Development Indicators database (http://datatopics.worldbank.org/world-development-indicators/).

GDP = gross domestic product.

Using different energy intensity metrics, it is possible to examine the impact across different sectors. Compared with the period 1990–2010, the rate of improvement in energy intensity slowed across all sectors, with the exception of transport, where fuel efficiency standards drove improvements (figure ES.8). The decline in the rate of improvement from one period to the next is most noticeable in services, where energy intensity has worsened since 2010, but also in agriculture and, to a lesser extent, industry. All three of these sectors were significantly influenced by emerging economies, which rapidly improved their energy intensity during the period 1990–2010 as they mechanized production and shifted to higher-value goods and services.

FIGURE ES.8 • Compound annual growth rate of energy intensity by sector, 1990–2010 and 2010–18



Source: IEA 2020a, UN 2020, and World Bank 2020.

Note: See note to previous figure.

The impact of improvements in primary energy intensity is revealed by trends among its underlying components. Between 1990 and 2018, global GDP increased by a factor of 2.5 while global total energy supply grew by less than 65 percent. Growth in energy supply picked up in 2017 and continued to rise in 2018, growing 2.5 percent.

The difference in growth rates for global GDP and total energy supply is reflected in steady improvements in global primary energy intensity, which fell by a third between 1990 and 2018, signaling the gradual decoupling of economic growth from energy use. In the period 2010–18, global primary energy intensity fell by nearly 15 percent, one and a half times more than declines observed in the decade from 2000 to 2010.

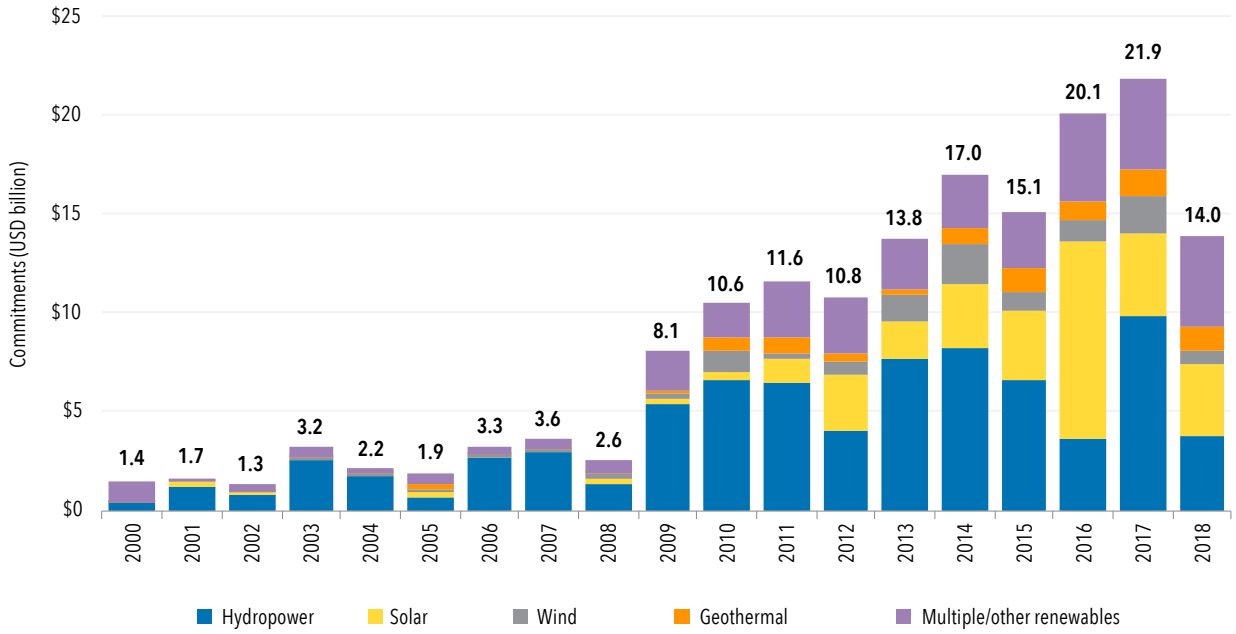
Improved energy efficiency at scale would be a key factor in achieving affordable, sustainable energy access for all. The recent slowdown of improvements in energy intensity, the significant potential opportunities for investment and economic recovery, and the pressing need for expanded access all point to the need for urgent action by governments to enact policies that would foster rapid progress toward the necessary annual improvement.

INTERNATIONAL PUBLIC FINANCIAL FLOWS TO DEVELOPING COUNTRIES IN SUPPORT OF CLEAN ENERGY

Although renewable energy investments are primarily sourced from the private sector, the public sector remains a critical source of finance, particularly for many developing countries. This edition of the *Energy Progress Report* includes, for the first time, a full chapter on SDG indicator 7.a.1 in order to illustrate trends in the use of international public finance to support renewable energy in developing countries.

Findings suggest that, although commitments dropped from an all-time high of USD 21.9 billion in 2017 to USD 14.0 billion in 2018, international public financial flows saw a threefold increase over the period 2010–18, viewed as a five-year moving average (figure ES.9).

FIGURE ES.9 • International public financial flows (commitments) to developing countries in support of clean energy, 2000–18, by technology (at 2018 prices and exchange rates)



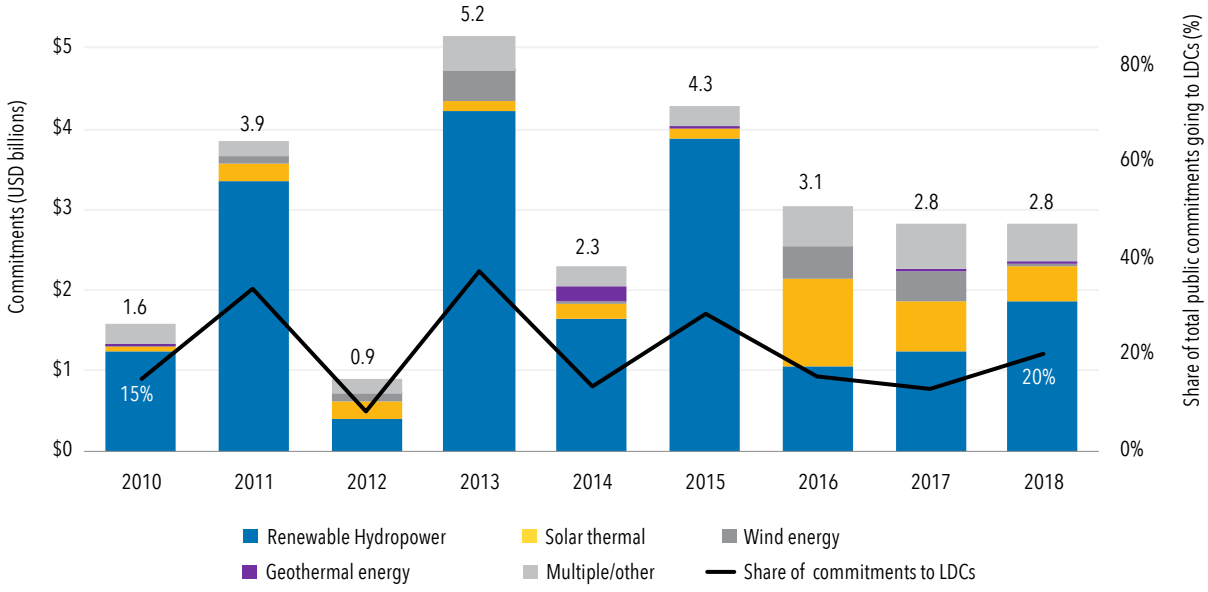
Source: IRENA and OECD 2021.

While notable across all technologies, the significant decline in 2018 was primarily attributable to a 61 percent drop in hydropower commitments, following a peak in 2017 owing to a large single-project commitment. In the period 2010–18, hydropower received the largest share of commitments, while more recent years have seen flows increasingly redirected toward solar energy, which received 20–25 percent of total commitments in 2016–18. Lately, a larger share of commitments has also been targeted toward other (or multiple) renewables including non-technology-specific support to multipurpose green funds and infrastructure such as grids and storage.

International public financial flows grew across all regions over the period 2010–18, with the largest increases observed in Central and Southern Asia, and Oceania, which showed six- and fourfold increases, respectively (when viewed as a five-year moving average). Sub-Saharan Africa, on the other hand, saw only a doubling of financial flows over the same period.

A closer look at the data reveals that investments were concentrated in a few countries, although the distribution across population has improved since 2010. The 46 LDCs received around 20 percent of commitments over the 2010–18 period and a total of USD 2.8 billion in 2018, the same level as in 2017 yet lower than in 2016 and 2015 (figure ES.10). Most of these countries are found in Sub-Saharan Africa, home to most of the world's top access-deficit countries.

FIGURE ES.10 • International public financial flows (commitments) to LDCs in support of clean energy, 2000–18, by technology (at 2018 prices and exchange rates)



Source: IRENA and OECD 2021.

In light of the current COVID-19 crisis and in line with the urgent need to scale up overall investment in renewable energy, international public financial flows to developing countries need to rise substantially and target more of the countries that have fallen furthest behind in reaching SDG 7.

Closing the investment gaps in developing countries will require substantial and coordinated efforts from a variety of stakeholders. When resources are limited, they should be used strategically to mobilize additional private capital, especially in sectors and regions that private investors perceive as too risky to invest in. In those markets where the private sector can finance generating capacity, public sources can be harnessed to finance infrastructure (such as grid refurbishment and extension), system flexibility (including energy storage), and instruments to de-risk projects, among other uses.

Since the COVID-19 outbreak, donors have deployed more and more capital for emergency response, with their initial focuses the protection of lives and livelihoods and the reduction of debt loads. In the post-COVID transition phase, aligning public financial flows toward low-carbon and climate-resilient development will be critical to help accelerate progress toward SDG 7, thereby securing broader economic development and boosting employment.

TRACKING PROGRESS ACROSS TARGETS: INDICATORS AND DATA

Well-designed and well-funded data collection on national energy statistics and trends plays a fundamental role in how countries monitor their progress in achieving the targets of SDG 7. It also enables international organizations to track progress on a global basis.

The international custodian agencies charged with tracking progress toward the SDG 7 targets collect and validate data from national administrations; they then elaborate the data into indicators used to measure progress toward the targets. Each target is monitored using one or more indicators, in line with the framework devised by the United Nations Statistics Division. Progress toward increasing the share of renewable energy in the global energy mix, for example, is measured by the share of renewable energy share in total final energy consumption. Similarly, progress in energy efficiency is monitored through the energy intensity of the economy, measured in terms of primary energy intensity and GDP.

Chapter 7 presents the indicators adopted by the custodian agencies for each target.[3] It also describes the work done at national and international levels to obtain the underlying data. For example, SDG indicator 7.a.1 focuses on public financial flows to developing countries in support of clean energy research and development and renewable energy production. The indicator measures public financial flows based on data extracted from IRENA and OECD databases.

Rigorous and consistent methodology is a particular concern if data are to be comparable across countries and credible in the eyes of policy makers. In this report, the methodology used to track each target is explained in technical terms at the end of the chapters devoted to the SDG 7 targets and then summarized in layman's terms in chapter 7, along with observations on how data collection and methodologies (which are mutually dependent) can and should be improved and further standardized.

Good-quality data are vital for informed policy making at country, regional, and international levels. Improved data quality worldwide is made possible through national and international cooperation. At the national level, cooperation among statistical offices across policy domains is key to optimizing the use of data-collection resources. For example, household surveys could and should be redesigned to support tracking across SDG 7 targets. International cooperation strengthens the effort to track progress toward SDG 7 by raising awareness about the need for good-quality data, standardized methodologies, and common frameworks for surveys.

As the staff of the custodian agencies work together to track progress toward SDG 7, they are grateful for the work and dedication of their colleagues pursuing similar ends in national administrations worldwide.

3 This report is based on the work of the several custodian agencies in tracking progress across the SDG 7 targets: 7.1—access (World Bank, WHO); 7.2—renewables (IEA, IRENA, UNSD); 7.3—energy efficiency (IEA, UNSD); 7.a—international cooperation (OECD, IRENA); 7.b—public financial flows (IRENA).

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