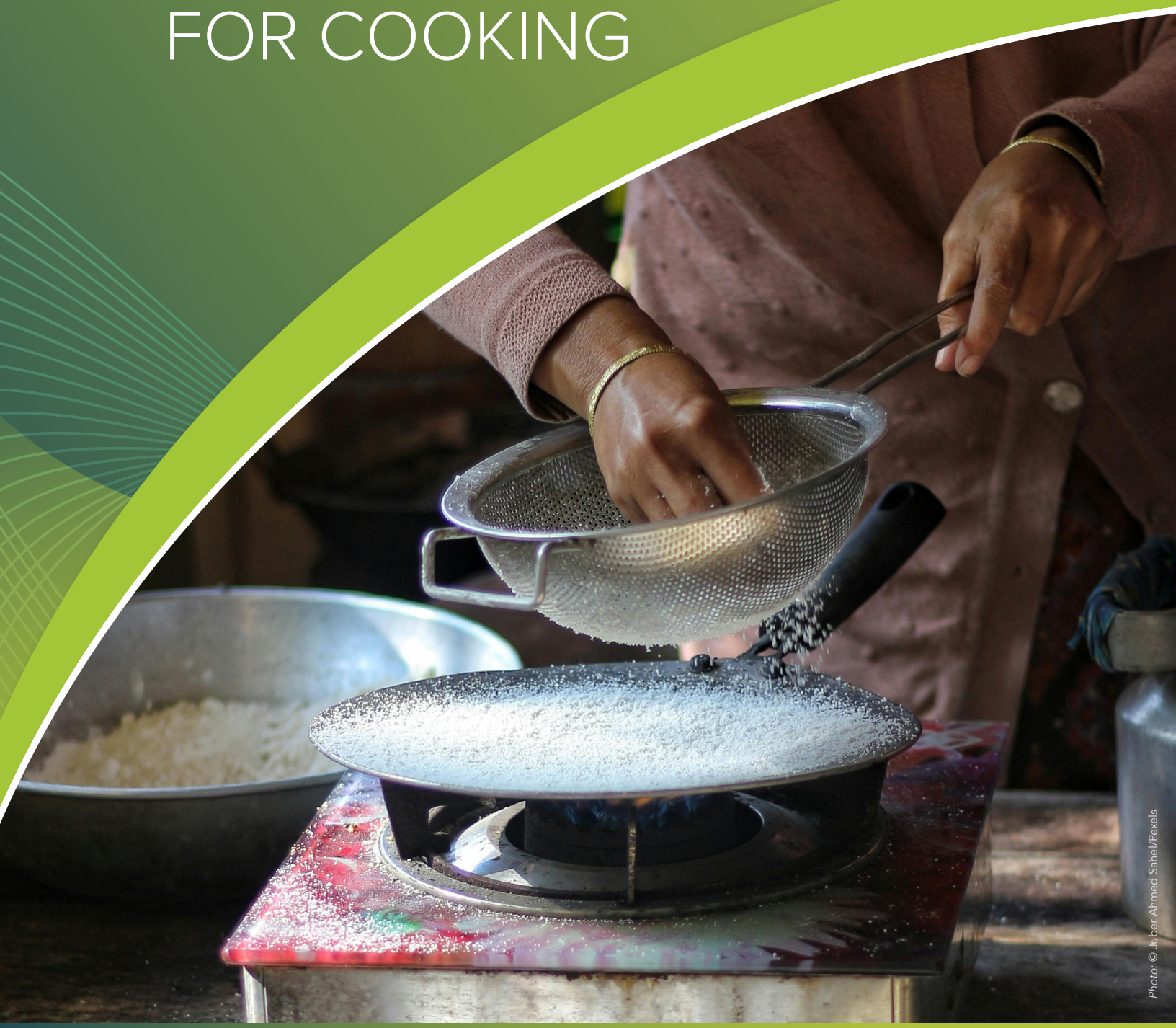
CHAPTER 2

ACCESS TO CLEAN FUELS AND TECHNOLOGIES FOR COOKING



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Main messages

- **Global trend.** In 2024, an estimated 75 (71–78)[12] percent of the global population relied primarily on clean cooking fuels and technologies. Although this figure represents notable progress since 2010, roughly a quarter of the world's population—around 2.0 (1.8–2.4) billion people—remains dependent on polluting fuels and technologies for cooking.
- **Target for 2030.** Projections of current trends suggest that 79 (74–81) percent of the global population will have access to clean cooking by 2030, leaving 1.8 (1.6–2.2) billion people mainly reliant on polluting cooking. Slow progress in some parts of the world, combined with population growth and challenges to energy security, progress to narrow the global access deficit may slow and ultimately falter in the long-term.
- **Regional highlights.** The percentage of the population with access to clean cooking has almost doubled in most of Asia since 2010. However, the total population without access is growing in Oceania (excluding Australia and New Zealand), in Sub-Saharan Africa, and in Western Asia and Northern Africa. Some 970 (930–1,000) million people lack access in Sub-Saharan Africa alone, and that figure may reach 1 billion by 2027. By 2030, 58 percent of the global access deficit is projected to fall within Sub-Saharan Africa.
- **Urban-rural divide.** Access to clean cooking in rural areas in 2024—where an estimated 56 (51–60) percent of people —lags well behind urban areas, where the access rate is 89 (86–90) percent. Yet the urban-rural divide is narrowing as rural access rises. Of the 2.0 (1.8–2.4) billion people without access, 1.5 (1.4–1.7) billion live in rural areas.
- **The top 20 countries with the largest access deficits.** Three-quarters of the people without access to clean cooking in 2024 can be found in 20 countries. But a few of those countries account for the most marked decreases in the clean cooking access deficit since 2010. India alone accounts for about 40 percent of the decreases in the access deficit; China for a further 30 percent; and Indonesia for about 10 percent.
- **Global and regional fuel trends.** About two-thirds of all people in low- and middle-income countries (LMICs) mainly used gaseous fuels, such as liquefied petroleum gas (LPG), natural gas, or biogas, for cooking in 2024. Use of charcoal is also growing, particularly in Sub-Saharan Africa.
- **Electricity for cooking.** Even though 92 percent of households in LMICs had access to electricity in 2024, electricity remains a small part of the clean cooking energy mix. It is reported as the primary source of cooking energy primarily in urban areas. Its role is greater in LMIC's of Northern America and Europe.
- **Clean cooking in public institutions.** Schools, clinics, hospitals, prisons and other public institutions still rely on polluting fuels, creating health, financial, and environmental burdens. But within the problem lies an opportunity. Moving to electricity, biogas, or LPG in such institutions is highly scalable because of the predictability of their energy needs. Electric cooking in schools can cut costs by 26–85 percent, reduce smoke exposure, and improve efficiency. With expanding programs across Africa and other regions, complemented by global initiatives, schools offer an often overlooked opportunity to advance access to clean cooking while delivering myriad benefits.

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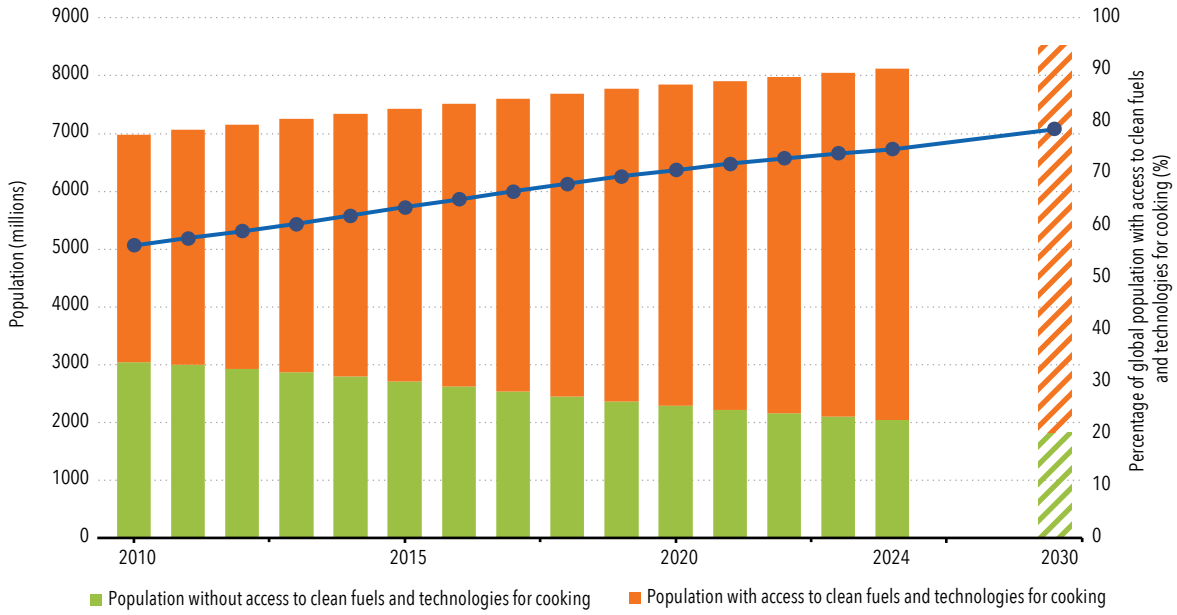
12 Throughout the chapter, figures appearing after estimates inside brackets/parentheses are 95 percent uncertainty intervals, as defined in annex 1. Clean fuels and technologies include stoves powered by electricity, LPG, natural gas, biogas, solar, and alcohol, as defined by the normative technical recommendations of the World Health Organization (WHO 2014). Detailed datasets with country data for the SDG 7 indicator discussed in this chapter can be accessed at no charge at https://trackingsdg7.esmap.org/downloads or https://www.who.int/data/gho/data/themes/air-pollution/household-air-pollution.

- **Clean cooking and displaced populations.** Some 48.9 million forcibly displaced people may lack access to clean cooking based on the latest estimates from the Global Platform for Action. Yet these estimates remain largely absent from national data gathering and planning. Closing this data gap is essential to achieving universal access and ensuring that no one is left behind.
- **Policy insights.** Accelerating access to clean fuels and technologies for cooking demands high-level political leadership paired with cross-ministerial coordination to align policies on energy, health, development, climate, agriculture, and food security. Regional cooperation, such as the G20's clean cooking roadmaps, and enhanced climate finance mechanisms can build political commitment and bridge funding gaps, but broad success in ensuring access to clean cooking for those most in need will ultimately hinge on localized solutions—for example, solutions tailored to rural areas, public institutions, or to the 20 highest-deficit countries, which account for around 75 percent of the global access gap can ensure clean cooking access for those most in need.
- **Lighting the way to household energy transitions.** While the global shift to clean cooking remains uneven, progress in household lighting demonstrates what targeted action can achieve: The global population relying primarily on kerosene, oil, gasoline, paraffin or diesel lamps, or solid fuels for lighting dropped from an estimated 1.2 (0.7–2.0) billion people in 2000 to about 200 (90–410) million in 2024. The drop to 2 (1–5) percent of the global population means that a billion fewer people are no longer exposed to the most polluting and hazardous lighting options.

Are we on track?

In 2024, an estimated 75 (71–78) percent of the global population had access to clean cooking fuels and technologies such as electricity, LPG, natural gas, biogas, solar, and alcohol-based stoves. This marks an increase of 18 percentage points over 2010 (figure 2.1). Yet, despite this steady progress, an estimated 2.0 (1.8–2.4) billion people continue to rely mainly on polluting fuels—such as firewood, charcoal, crop waste, kerosene, and coal—for most of their household cooking. The impacts are profound, affecting the health of women and children disproportionately, threatening livelihoods, and complicating efforts to meet international environmental and development targets.

Figure 2.1 • Absolute number of people (left axis, bars) and percentage of the global population (right axis, line) with access to clean cooking, 2010–30

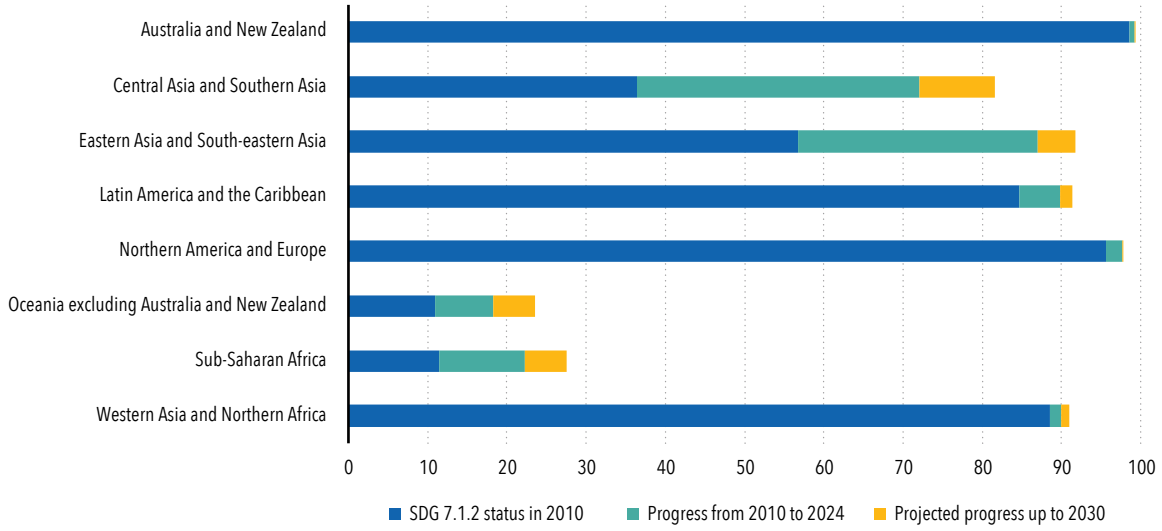


Source: WHO 2026.

Current projections suggest that 79 (74–81) percent of the global population will have access to clean cooking by 2030. If those projections are borne out, roughly 1.8 (1.6–2.2) billion people will be left without access and dependent on polluting fuels, falling starkly short of the universal access target set of Sustainable Development Goal (SDG) 7.

Despite a steady increase in the global percentage with access to clean cooking, much of the world is far from achieving universal access. Figure 2.2 shows, by region, the percentage of the population with access to clean cooking in 2010, progress from 2010 to 2024, and projected progress through 2030. In Central, Eastern, South-eastern, and Southern Asia, the percentage with access to clean cooking approximately doubled from 2010 to 2024.

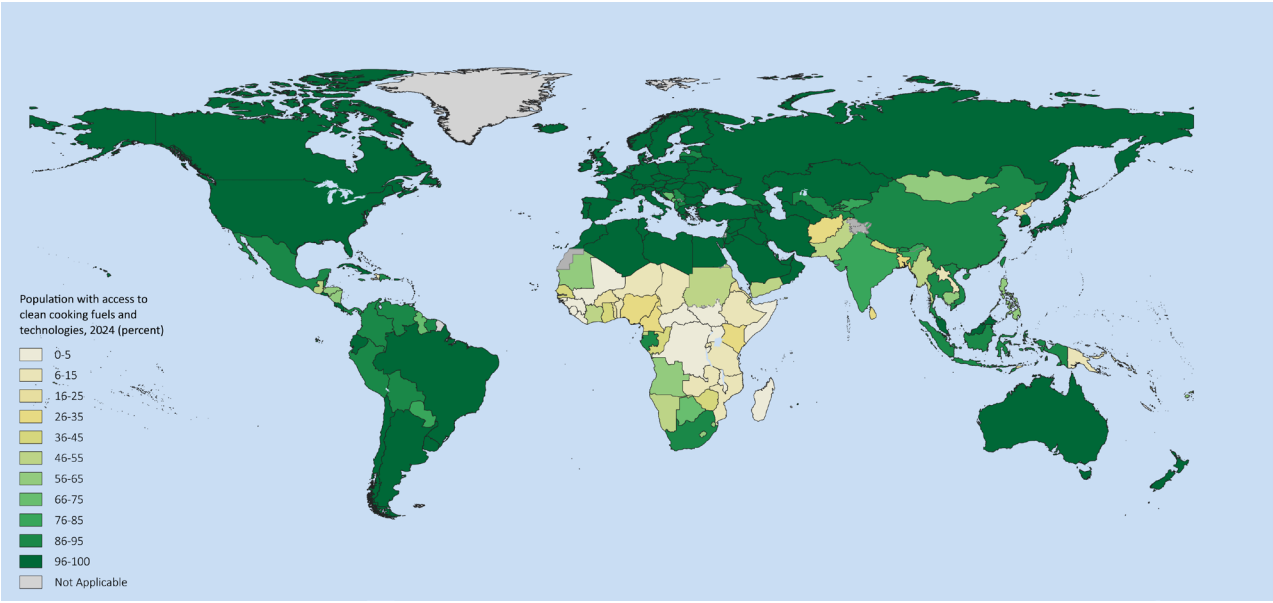
Figure 2.2 • Progress toward universal access to clean cooking, 2010–30



Source: WHO 2026.

To achieve SDG 7, most regions will have to progress faster than they are currently projected to do through 2030. But the scale of the challenge in Sub-Saharan Africa and Oceania (excluding Australia and New Zealand) is unlike that in any of the world's other regions. Here, those who have access to clean cooking are in a small minority—about 1 in 5 people. Especially low rates are found along a belt that begins in Western Africa and cover much of the Sahel and Eastern Africa (figure 2.3).

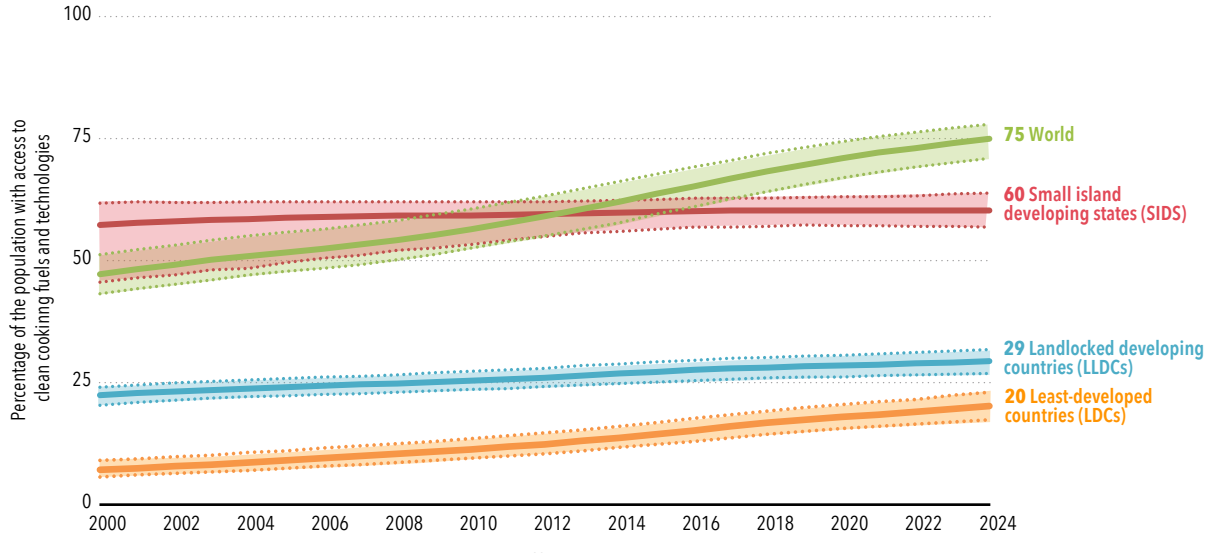
Figure 2.3 • Share of population with access to clean cooking fuels and technologies, 2024 (percent)



Source: WHO 2026.

The challenge of addressing low rates of clean cooking is not geographically bounded; it is faced by many least-developed countries (LDCs), landlocked developing countries (LLDCs), and small island developing states (SIDS) around the world. In 2024, only 20 (17–23) percent of people living in LDCs had access to clean cooking; 29 (27–32) percent had access in LLDCs; and 60 (57–64) percent had access in SIDS—all trailing the global average (figure 2.4). Access to clean cooking in SIDS used to exceed the global average but has fallen behind since the early 2010s owing to slower progress.

Figure 2.4 • Access to clean cooking fuels and technologies in LDCs, LLDCs, SIDs, and worldwide, 2000–24



Source: WHO 2026.

Note: Shaded areas are 95 percent uncertainty intervals.

Substantial barriers still impede progress toward universal access to clean cooking, including rapid population growth in the areas facing the greatest deficits, insufficient financing to scale up clean cooking solutions, and gaps in policies and regulations that could otherwise promote equitable access.

Without stronger commitments and new policies backed by financial support, most LMICs will fall short of universal access by 2030. In high-income countries, meanwhile, the vast majority of the population has transitioned to clean fuels and technologies for cooking, but 2 (1–7) percent still lacked access in 2024—about 30 (10–90) million people.

Over the past decade, global progress in access to clean cooking has averaged just 1.3 percentage points per year, slowing to 1.1 points over the last five years.

Looking beyond the main indicators

The access deficit

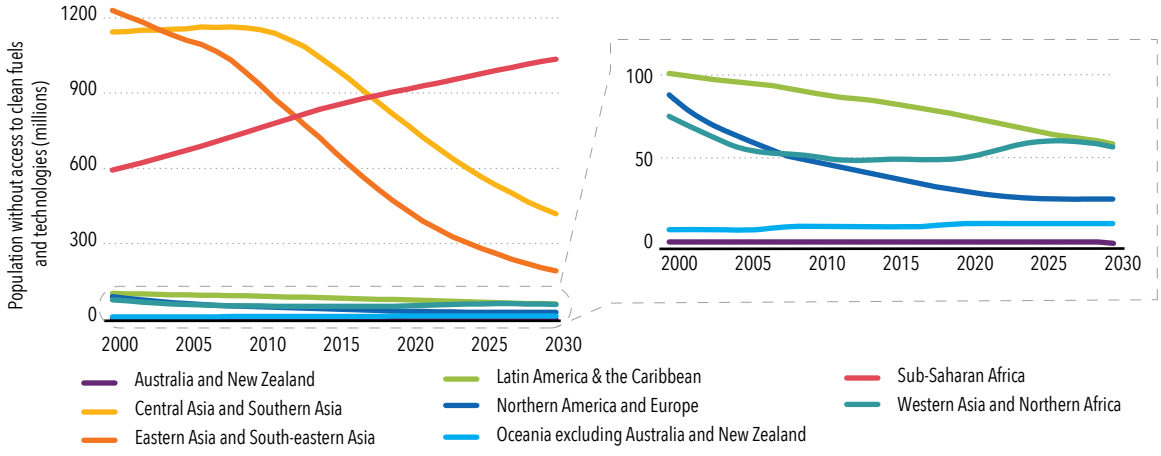
The main SDG 7.1.2 indicator focuses on the percentage of the population with access to clean fuels and technologies, but the absolute number of people without access—also known as the access deficit—often provides a more nuanced picture of progress towards universal access.

The global access deficit decreased only gradually between 1990 and 2020—from 3.4 (3.2–3.7) billion to 3.0 (2.8–3.3) billion. Thus, for two decades the deficit dropped by no better than 19 million people on average per year, as gains in the access rate as a percentage were largely offset by population growth.[13] In the years since 2010, the global deficit decreased much more rapidly (see figure 2.1), about 72 million people per year. As of 2024, 1 billion fewer people lived in households that relied mainly on polluting fuels and technologies for cooking than in 2010, a great stride forward on the path to universal modern energy.

However, this progress has not been felt equally across all parts of the globe, and disparate regional trends now threaten long-term global progress. Figure 2.6 shows the access deficit by region, with estimates for 1990–2024 and projections through 2030. Most of the reduction in the global access deficit has taken place in Central Asian and Southern Asian countries and in Eastern Asian and South-eastern Asian countries; the number of people without access has also decreased consistently in Latin America and the Caribbean and in Northern America and Europe. However, the deficit has grown in some of the small island developing states of Oceania and, since the 2010s, in Western Asia and Northern Africa.

The most pressing situation is Sub-Saharan Africa, where the number of people without access to clean cooking fuels and technologies continues to grow. In 2024, only 22 (20–25) percent of people in the region had access to (figure 2.5). This means that 78 (75–80) percent—970 (930–1000) million people—still mainly rely on polluting fuels and technologies to do their cooking. Although a growing number of Sub-Saharan African countries are taking steps to promote cleaner alternatives, population growth continues to outpace gains in access. The overall number without access in Sub-Saharan Africa is currently increasing by around 14 million per year and is expected to surpass 1 billion by around 2027.

Figure 2.5 • Number of people without access to clean fuels and technologies, by region, 2000-2030

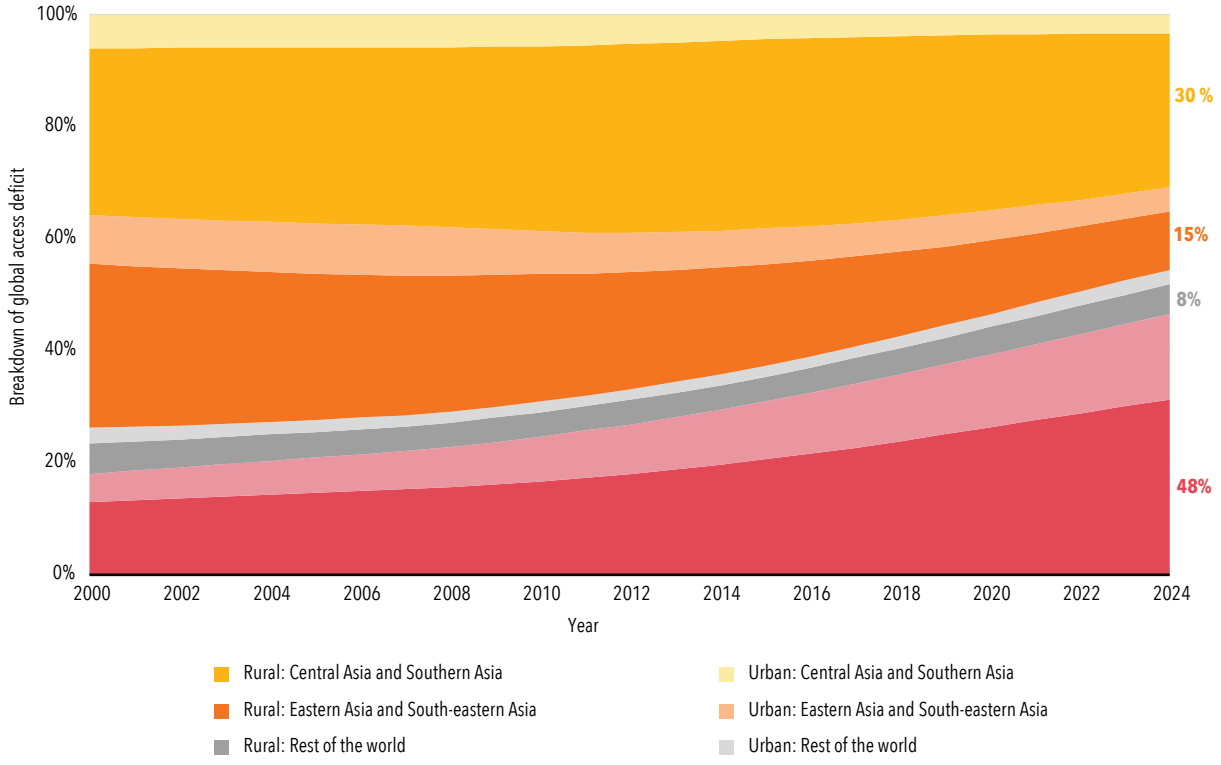


Source: WHO 2026.

13 If the proportion of the population with access to clean cooking remains constant, population growth will increase the absolute number of people both with and without access. Therefore, in a growing population, the access rate must increase at a minimum rate for the number of people without access to remain constant or increase at a higher rate for the number without access to decrease.

As the access deficits in each region change over time, the makeup of the global number of people without access also changes (figure 2.6). In 2000, Central and Southern Asia and Eastern and South-eastern Asia together accounted for 73 percent of the global access deficit, while Sub-Saharan Africa made up 18 percent. By 2024, Sub-Saharan Africa accounted for 48 percent of the global total, reflecting substantial progress in several Asian LMICs regions and the growing deficit in Sub-Saharan Africa. Without new interventions, the access deficit epicenter shifts to Sub-Saharan Africa where it is projected that 58 percent of people living in households without access to clean cooking by 2030.

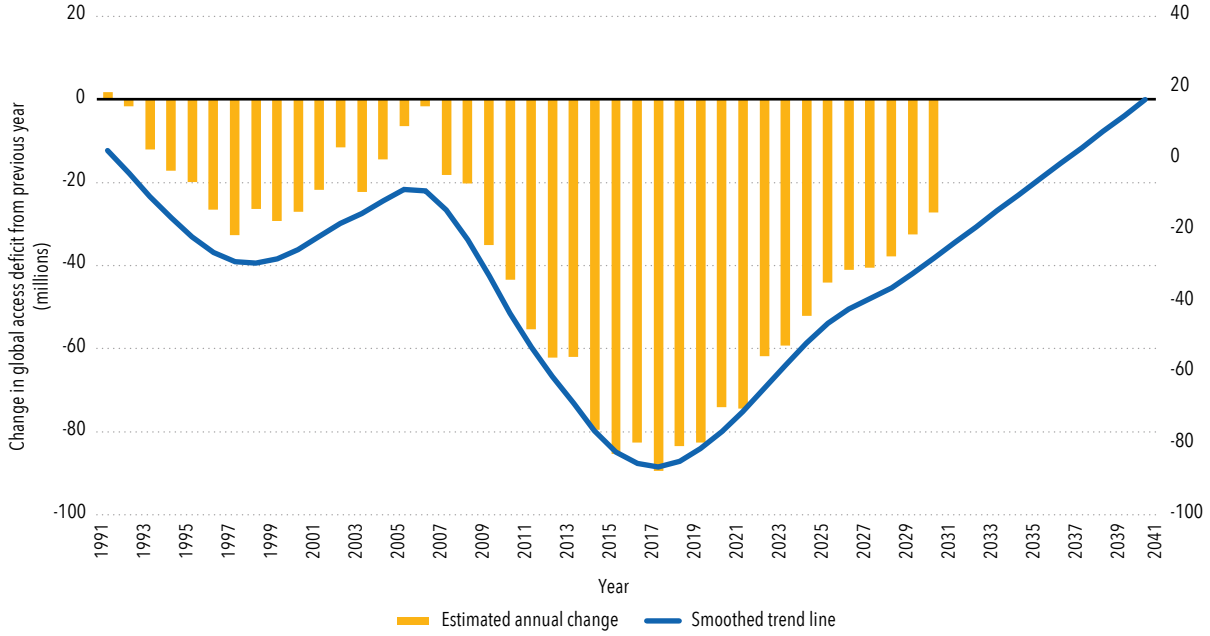
Figure 2.6 • Comparison between the three largest access-deficit regions and the rest of the world, 2000–24



Source: WHO 2026.

The global access deficit is on track to stop decreasing in the 2030s. Figure 2.7 shows the estimated annual change in the global access deficit—that is, the annual drop in the number of people still lacking access to clean cooking. The rate of decrease was fastest in the mid to late 2010s, with the global deficit dropping by about 80 million people each year. Since 2020, estimates and projected trends show a sharp deceleration of progress, with the annual decrease shrinking to about 30 million by 2030. Without new interventions, particularly in Sub-Saharan African and Asian countries with low clean cooking rates, the global access deficit may change directions and begin to widen again.

Figure 2.7 • Annual change in the number of people globally without access to clean fuels and technologies, 2000–30



Source: WHO 2026.

A scenario where the global access deficit begins to grow would be devastating for health and sustainable development. The most recent WHO data found that household air pollution from polluting fuels and technologies caused an estimated 2.9 million premature deaths in 2021, including over 309,000 children under five. Because these impacts grow with the number of people exposed to toxic cooking smoke, a future where the global access deficit stops shrinking is unacceptable.

The scale of the issue is even greater when considering the full extent of polluting fuel use in the home. The parallel use of polluting and clean cooking options, as well as the use of polluting fuels and technologies for heating or lighting can negate or minimize anticipated benefits, a subject discussed in the "Policy Insights" section, and in box 2.1.

Chief among the obstacles to promote clean cooking is the practice of using multiple fuels and technologies simultaneously ("stacking"), a common practice across income levels that can become problematic when economic instability or supply shortages force reliance on more polluting options. Supporting transitions to stacks of cleaner energy—where households rely on multiple clean cooking fuels and technologies (such as electricity and biogas)—is critical for full realization of clean cooking's benefits for health, gender equity, social equality, and climate mitigation.

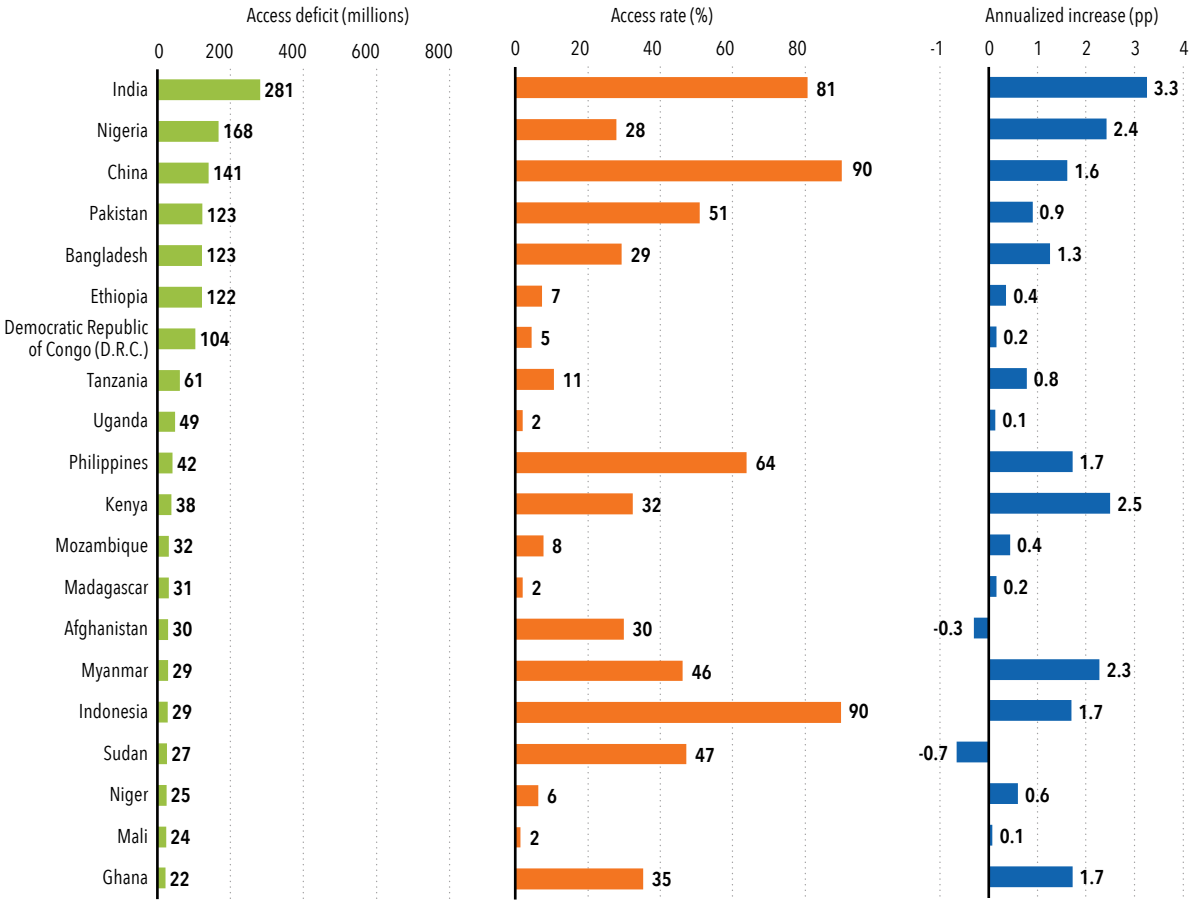
Addressing the stacking challenge demands tailored interventions that account for local economic conditions, local practices in cooking and other domestic energy use, infrastructure limitations, and the availability of sustainable clean energy options.

The top 20 access-deficit countries

The global access deficit is heavily concentrated: Just 20 countries account for about 75 percent of the total, with most located in Sub-Saharan Africa and the remainder in Asia. Eight of these countries—all LDCs with substantial displaced populations—have particularly severe shortfalls. No more than 10 percent of households use clean fuels in the Democratic Republic of Congo, Ethiopia, Madagascar, Mali, Mozambique, Niger, Uganda, and the United Republic of Tanzania (figure 2.8).

Fourteen of the top 20 access-deficit countries have access rates of around 50 percent or less. Because of their large populations, China and Indonesia have the 3rd and 16th highest absolute deficits, despite the fact that 90 percent of their households mainly use clean cooking fuels and technologies (figure 2.9). India has the highest access deficit of all countries but has made notable progress, achieving annualized increases of about 3 percentage points in recent years.

Figure 2.8 • Top 20 countries with the largest access deficit in 2024 (green), their access rate (orange) and annualized increase in access (blue), based on a 2019–24 average

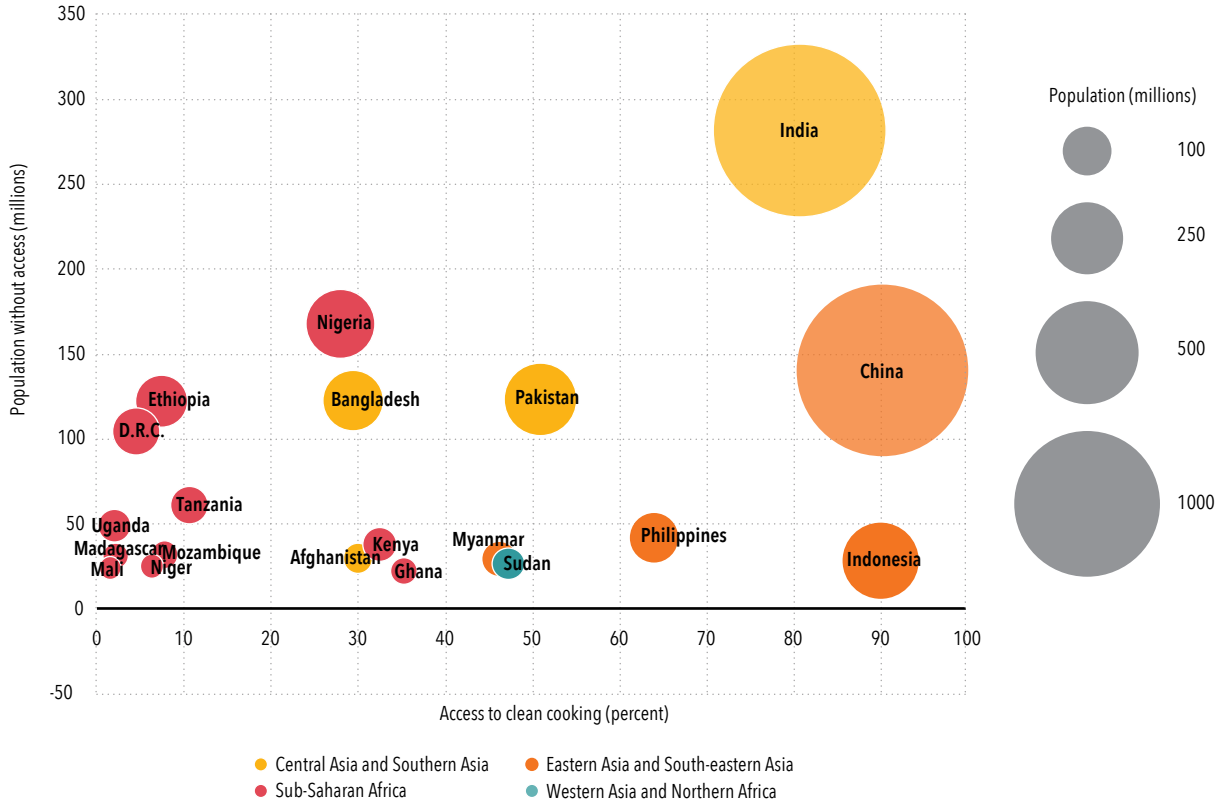


Source: WHO 2026.

pp = percentage point.

While the access deficit remains concentrated in a few countries in 2024, it is also true that transitions in these same countries account for much of the progress made to reduce the global access deficit since 2010. Progress in India alone accounts for about 40 percent of total national decreases in the population without access since 2010[14]; China approximately accounts for a further 30 percent, and Indonesia 10 percent. Once these countries complete or nearly complete their transitions, progress in the global level indicator will slow and likely stall, without stronger interventions elsewhere.

Figure 2.9 • Relationship between access rate, population without access, and population size among the 20 countries with the largest populations without access



Source: WHO 2026.

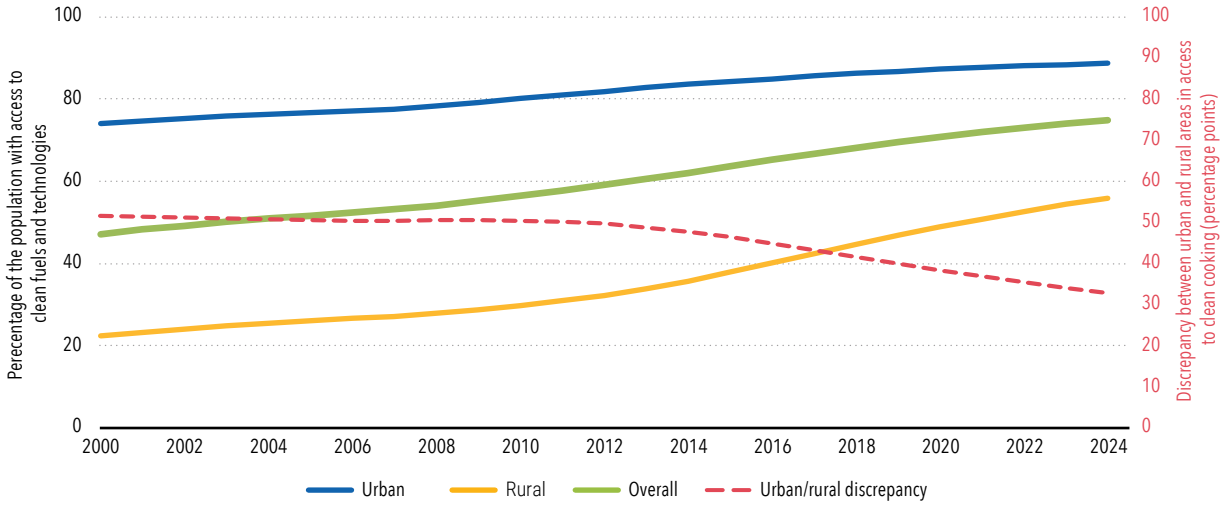
The urban-rural divide

The gap in access to clean cooking between urban and rural households persists, with urban households being more likely to use mainly gas and electric stoves. In 2024, 89 (86–90) percent of people in urban areas have access to clean cooking, compared with 56 (51–60) percent of people in rural areas (figure 2.10).

Of the 2.0 (1.8–2.4) billion people living in households without access worldwide in 2024, 1.5 (1.4–1.7) billion live in rural areas. The global urban-rural divide is narrowing over time, as urban areas in many countries approach 100 percent access and rural access rates rise, especially in some LMICs.

14 "Total national decreases" is calculated as the sum of the drop in the population lacking access in countries where the access deficit fell during the period 2010 to 2024 (that is, excluding countries where the population without access increased).

Figure 2.10 • Percentage of people with access to clean cooking in urban areas, rural areas, and overall (solid lines), and difference in access between urban and rural areas (dashed line), 2000–24

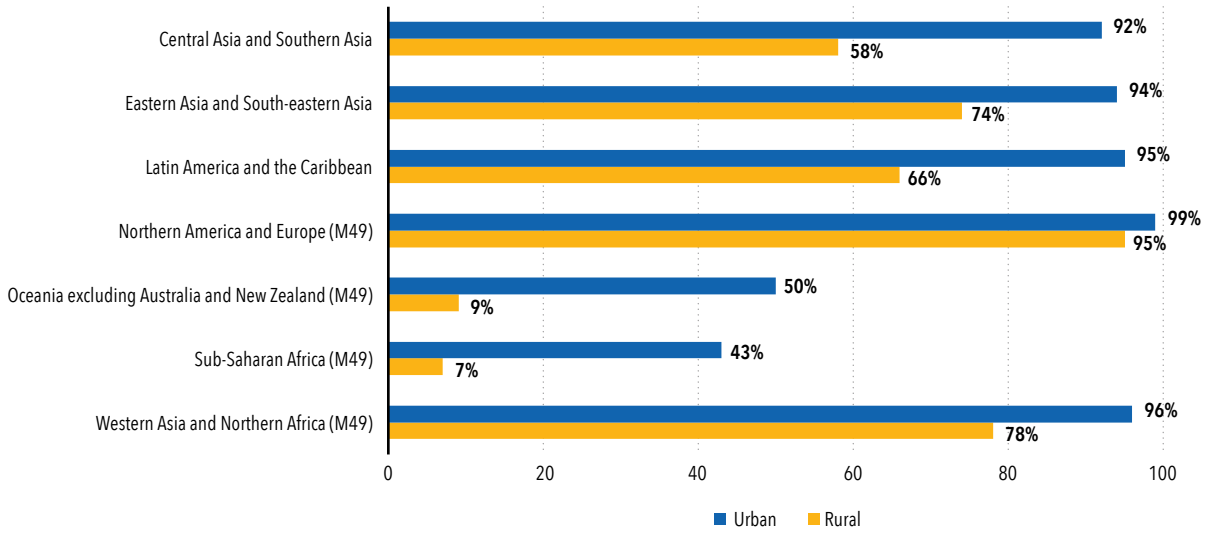


Source: WHO 2026.

Typically, urban areas of LMICs have stronger infrastructure, more reliable energy supplies, and higher incomes. Rural areas, by contrast, lack the infrastructure and market base for large-scale fuel and appliance distribution (ESMAP 2020). Rural access is most dire in Sub-Saharan Africa—where only 7 (6–9) percent of people mainly use clean fuels and technologies—and in Oceania (excluding Australia and New Zealand), where rural access is only 9 (4–26) percent.

Urban access to clean cooking has surpassed 90 percent in Central Asia and Southern Asia, Eastern Asia and South-eastern Asia, Latin America and the Caribbean, and in Western Asia and Northern Africa, but rural access ranges from 58 percent to 78 percent among these regions. In much of the world, therefore, rural areas are proving to be the last bridge to cross in pursuit of universal access (figure 2.11).

Figure 2.11 • Percentage of population with access to clean fuels and technologies for cooking, by residence and region (2024)



Source: WHO 2026.

Changes in the fuel mix

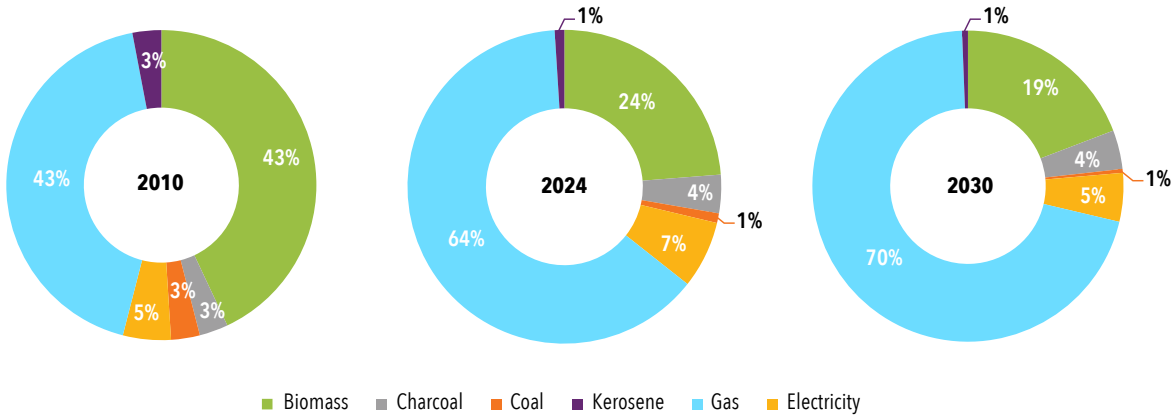
The fuel mix in low- and middle-income countries continues to evolve. As of 2024, gaseous fuels (LPG, natural gas, and biogas) are the dominant energy source, mainly used by 64 (59–68) percent of the population in LMICs. Up to 2020, unprocessed biomass fuels were mainly used by more than half of people in rural areas of LMICs—where they are often gathered at no financial cost—but this dropped to 42 (37–48) percent by 2024, and most rural inhabitants now mainly rely on gaseous fuels or electricity.

Charcoal has a growing number of users as the main cooking fuel, reaching 4 (3–4) percent of people in LMICs in 2024—about 240 million people—compared to 3 (2.5–3.3) percent in 2010. Much of this growth has taken place in Sub-Saharan Africa, due to a slight increase in its use in rural areas: from 6 (5–8) percent in 2010 up to 9 (7–11) percent in 2024. The change came on top of a slight increase in the already high rate of use in urban areas—from 26 (24–29) percent in 2010 to 30 (25–34) percent in 2024—and population growth.

The WHO Guidelines for indoor air quality: household fuel combustion (WHO 2014) advise against using coal and discourage kerosene use to meet household energy needs. The shares of both have since greatly diminished (figure 2.12), though they are still used as the main fuel source by about 80 million people in LMICs worldwide. The percentage mainly using coal for cooking in 2024 was effectively 0 in all regions except Eastern Asia and South-eastern Asia, where 1 (0–4) percent still make primary use of it. Use of kerosene was also very close to 0 percent in most regions, but as of 2024 it is still mainly used by 3 (1–5) percent in Oceania (excluding Australia and New Zealand) and 1 (1–2) percent in Sub-Saharan Africa.

Electricity plays a growing role in LMICs. In 2024, it was used by 6 (4–10) percent of people as their main energy source for cooking. Use of electricity as the main fuel is lowest in rural areas of Central Asia and Southern Asia—1 (0–2) percent of the population—and highest in urban areas of Northern America and Europe—20 (13–44) percent of the population.

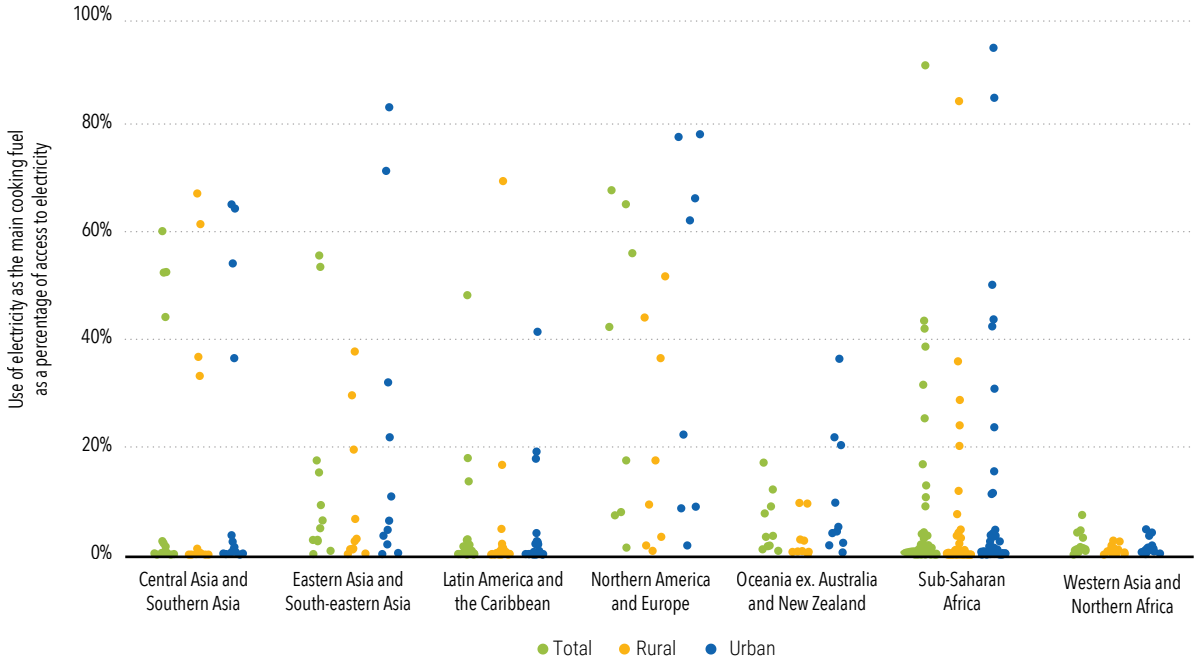
Figure 2.12 • Comparison of the percentages of people in LMICs relying primarily on various fuel types for cooking in 2010, 2024, and projected in 2030



Source: WHO 2026.

Viewed from a different angle, only a small fraction of the population with access to electricity (SDG 7.1.1) reports using electricity as their main source of energy for cooking. Figure 2.13 shows the percentage of the population in individual LMICs using electricity as their primary cooking fuel in 2024 as a fraction of the percentage of the population with access to electricity in the same year. The rates range from 0 percent in many LMICs to more than 90 percent in urban areas of South Africa. Broadly, use of electricity for cooking is higher in urban areas—which also tend to have higher rates of electricity access. This likely aligns with urban residents having greater access to more adequate electricity supplies to meet the power needs of cooking, which is often energy intensive.

Figure 2.13 • Use of electricity as the main fuel for cooking in LMICs in 2024 (percentage share)



Source: WHO 2026.

Use of electricity for cooking also varies by region. The share using electricity as their primary cooking fuel is about 1 percent for a typical (median) LMIC in Central Asia and Southern Asia, Latin America and the Caribbean, Sub-Saharan Africa, and Western Asia and Northern Africa. Use tends to be higher in a typical LMIC in Oceania excluding Australia and New Zealand (about 3 percent) and Eastern Asia and South-eastern Asia (about 6 percent) and tends to be highest in a typical LMIC in Northern America and Europe (about 30 percent). In all regions, some LMICs have a much higher percentage use of electricity access for cooking than others.

The variability in the percentage use across the urban/rural divide, across regions, and across LMICs in the same part of world suggests that use of electricity as the main cooking fuel does not simply increase proportional to overall access to electricity. Instead, it depends on a range of factors, including affordability of electricity and appliances, the reliability of supply, the relative costs of electricity and alternative fuels, cultural practices and preferences, housing characteristics, and the availability of infrastructure and policies that support sustained use.

Policy insights

Progress has been made across all SDG 7 targets since the launch of the 2030 Agenda for Sustainable Development, yet clean cooking lag furthest behind. In 2024, about 75 (71–78) percent of the global population had access to clean cooking fuels and technologies, marking an increase of 18 percent compared with 2010. Yet around 2.0 (1.8–2.4) billion people still rely on polluting fuels and technologies for cooking, and current trends suggest that about 1.8 (1.6–2.2) billion people could still be left behind in 2030.

Looking only at the main indicators, however, can mask much of the important progress that has been made to date in some of the enabling conditions needed to accelerate the transition. Those enabling conditions include greater political demand and commitment, increased investments (see chapter 5), improved technical competence, and overall readiness of national governments to scale up clean cooking. Progress in these areas should therefore be monitored with process indicators alongside clean cooking access rates to better capture a country's readiness and progress in implementation. This also points to the need for a fuller government systemic approach to measuring progress.

The policy case for clean cooking is further reinforced by its health, gender, social, and other implications. WHO estimates that household air pollution resulting from inefficient household energy use was responsible for 2.9 million deaths in 2021, including more than 309,000 deaths among children under five (WHO 2025a). This is likely an underestimate given the increased risk from household air pollution resulting from stove-stacking and inefficient energy use for lighting and other household energy uses (box 2.1). Women and children continue to bear a disproportionate burden linked to gendered patterns of unpaid household work, including cooking, fuel collection, and care responsibilities. Polluting cooking is a major source of outdoor air pollution, as well, adding to the health toll by increasing health and climate risks for all community members. A more multidimensional approach to tracking household energy access and use, including time spent, affordability, safety, convenience, and user needs, could better identify the households and population groups most affected and inform targeted interventions. Clean cooking as part of a broader clean household energy agenda should therefore be treated not only as an energy access issue, but also as a practical intervention for public health, gender equality, and cleaner air, with additional benefits for climate change mitigation.

Box 2.1 • Looking beyond cooking: trends in access to clean lighting

The *WHO Guidelines for indoor air quality: household fuel combustion* (WHO 2014) emphasize the importance of addressing all fuels and technologies used in the home, for lighting as well as for heating and cooking. A renewed push to complete the transition to universal access to modern energy for lighting is low-hanging fruit for SDG 7, since the overall energy requirement for lighting is relatively low compared to that for cooking and heating, and since options like solar systems require comparatively little infrastructure to deploy.

An exploratory statistical analysis of household survey data on fuels and technologies used for lighting has revealed strong global shifts toward cleaner solutions in the past two decades[15].

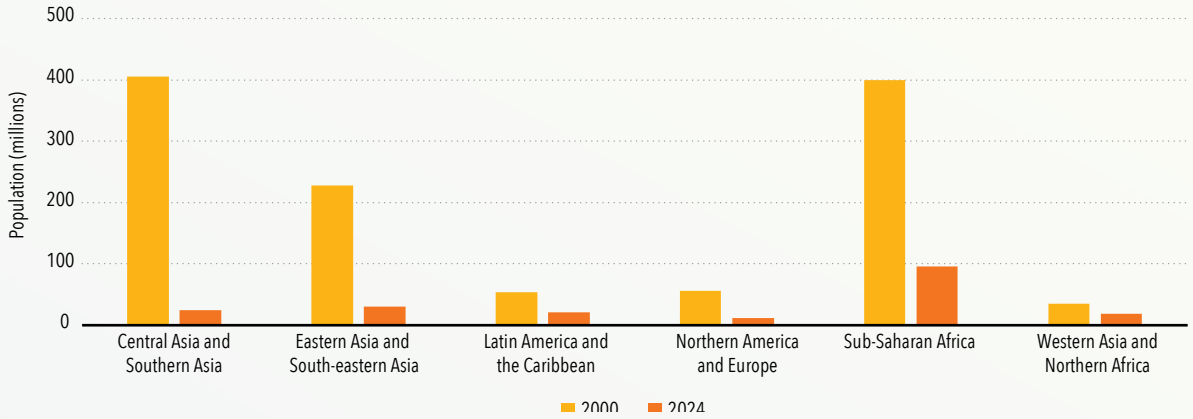
In 2000, an estimated 1.2 (0.7–2.0) billion people—or 19 (12–32) percent of the global population—mainly relied on kerosene, oil, gasoline, paraffin or diesel lamps, or solid fuel to meet their lighting needs, all at the expense of high exposure to pollution at the point of use. By 2024, this number had dropped sharply to 200 (90–410) million, or 2 (1–5) percent, meaning about 1 billion fewer people were exposed.

While the global trend is positive, regional progress is uneven (figure 2.1.1). Notably, in Central Asia and Southern Asia the percentage of people mainly relying on polluting lighting options dropped from 27 (8–54) percent in 2000 to just 1 (0–5) percent in 2024—a decrease of almost 400 million people suggesting a near complete transition. Most of the progress occurred in rural areas, where the percentage relying mainly on polluting fuels and technologies dropped from 35 (11–68) percent to 2 (0–6) percent.

The overall percentage also decreased substantially in Sub-Saharan Africa, from 62 (44–80) percent in 2000 to 8 (2–19) percent in 2024. In Oceania (excluding Australia and New Zealand), the share of people still exposed to polluting fuels and technologies for lighting in 2024 was similar, at 8 (0–37) percent. Because of its large population, Sub-Saharan Africa makes up almost half of the population remaining exposed in 2024.

The gap in access to modern lighting solutions can also be found on the urban–rural dimension, though this gap has been steadily closing since 2000. As of 2024, 1 (0–4) percent of people in urban areas mainly rely on polluting lighting, compared to 4 (2–9) percent in rural areas.

Figure B2.1.1 • Population mainly using polluting fuels and technologies (kerosene, paraffin, oil, diesel, gasoline, and solid fuels) for household lighting



Source: Joint analysis by the University of Glasgow and WHO

Note: Oceania (excluding Australia and New Zealand) is not plotted but amounts to about 1 million people mainly using the polluting options in 2024.

15 Joint analysis by the University of Glasgow and WHO of household survey data on fuels and technologies used for lighting

Securing high-level political support

Since the inception of the Agenda for Sustainable Development, building political support for clean cooking at the global and national levels has been a priority. The lack of high-level support and commitment has been a persistent challenge, one reflected in the historical under-recognition of the problem, limited policy action on the ground and ultimately leading to detrimental impacts like unpaid time, labor, and health and safety costs of the most vulnerable populations, particularly women and children and those displaced populations living in fragile settings. With many competing priorities, securing political commitment early on helps to ensure that clean cooking stays high on the policy agenda and receives adequate funding. Sustained commitment is also needed to enhance coordination and cooperation locally and regionally, and to ensure that the necessary infrastructure, supply chains, and regulatory mechanisms are in place for successful adoption of clean cooking practices in communities.

Political support for clean cooking has grown significantly on the global and national stages over the past decade. The 2024 Clean Cooking Summit in Africa—co-chaired by Tanzania, Norway, the African Development Bank, and the International Energy Agency—marked a major turning point by mobilizing a record USD 2.2 billion in pledges, securing a Clean Cooking Declaration from more than 130 governments and organizations. Funding of USD 470 million has already been disbursed ahead of the pace needed to reach the 2030 targets, and a follow-up summit is planned for the latter half of 2026. In 2025, several key global events promoted clean cooking, gaining commitments from heads of states, ministers, and other decision-makers working in finance, climate, and health, among other sectors. For example, clean cooking was included for the first-time as a standing item under South Africa's G20 presidency (building on the road map developed under Brazil's presidency), with G20 leaders recognizing the benefits for dignity, health, climate, and gender equality that clean cooking affords and calling for investment to accelerate access to clean cooking in Africa. The *G20 Clean Cooking Legacy Programme and the Voluntary Infrastructure Investment Action Plan: Closing the Clean Cooking Gap* were launched together, setting out a pathway for enhanced investment, infrastructure, and finance for clean cooking (G20 2024).

At COP30 (the 30th session of the United Nations Climate Change Conference), held in Brazil in November 2025, clean cooking was included as an outcome under the *United Arab Emirates Just Transition Work Outcome Programme* (UNFCCC 2025). Inclusion recognizes the need for parties to the UNCCC and other stakeholders to scale up access to clean cooking. The World Bank's Global Air Pollution Challenge of halving the number of people exposed to high levels of PM2.5 by 2035, together with the related flagship report, recognized clean cooking as a key pathway to clean air for all, providing some key policy measures complemented by success stories on the ground (World Bank 2025a).

At WHO's 78th World Health Assembly in 2025, health ministers from all WHO Member States adopted an "Updated Roadmap for an enhanced global response to the adverse health effects of air pollution". The road map sets a voluntary target to reduce the health impacts from air pollution by 50 percent and calls on the health sector to promote the adoption of clean cooking as a means to achieve the target (WHO 2025b). Similarly, the UN General Assembly's recent "Political Declaration on Noncommunicable Disease and Mental Health" recognizes access to clean cooking fuels and technologies as a key intervention to address the burden of noncommunicable disease, particularly among women living in LMICs (UN General Assembly 2025). Gaining political commitment at the highest levels and integrating clean cooking goals into other initiatives can help to ensure that action on clean cooking is prioritized as a cross-sector development priority.

Facilitating cooperation at the national and regional levels

High-level political support can lay the groundwork for cooperative integration of clean cooking into the policy frameworks of multiple ministries and other units of national government.

Considering the breadth of the clean cooking ecosystem, a national strategy to ensure coherence among the policies and actions of various ministries and institutions improves efficiency and maximizes the impact of limited resources. Such whole-of-government approaches are attractive to donors and private-sector actors who want to ensure positive returns and impacts from their investments in local infrastructure and clean cooking markets.

For example, Kenya's National Cooking Transition Strategy (2024–2028), supported by the president's office and grounded in the Kenyan constitution's declaration of a "right to a clean and healthy environment," establishes an ambitious target for achieving universal access to clean cooking by 2028 (Ministry of Energy and Petroleum 2024). The strategy has identified three key constraints for clean cooking in their national context and lays out five action areas supply, affordability, local manufacturing and production, awareness-raising, and accountability. It also quantifies the needed investment and expected benefits for the nation's economy, health, climate, and environment. The strategy identifies the Ministry of Energy and Petroleum as the lead agency and sets out the roles of other national and local entities (e.g. county governments, Ministry of Health, National Treasury, Ministry of Environment, Climate Change and Forestry, standards bureau) in implementation. It further elucidates local barriers and opportunities and delineates their interconnected nature, calling for holistic and systematic change, including ensuring clean cooking in public institutions like schools (box 2.2). This kind of framework amplifies coordination capacity, translates national ambition into a clear implementation structure, and supports a systematic approach to tracking progress.

Other countries, too, are translating ambitious targets into implementable plans through national and local coordinated action. The government of India's Pradhan Mantri Ujjawala Yojana (PMUY) and Give It Up Campaign have demonstrated how high-level political support can help spread access rapidly and equitably, in part by strengthening distribution and delivery systems and improving public communication (Government of India, Ministry of Petroleum and Natural Gas N.d.).

New national programs backed by African political leaders in countries like Ethiopia, Tanzania, and Uganda are helping to move the regional needle on access to clean cooking (MoWE 2025; Ministry of Energy 2024; MEMD 2025). Each of these countries is implementing a national strategy that includes key objectives for relevant government institutions and ministries. For example, Tanzania's implementation matrix calls on the Ministry of Community Development and Gender, the Ministry of Education, and the Ministry of Health to raise public and institutional awareness of clean cooking. It calls on the private sector to work with the ministries of Finance and Energy to lower the costs of energy and appliances for clean cooking (Ministry of Energy 2024). Such coordination can also help ensure that policies address both supply-side constraints and household-level factors, such as affordability, decision-making, user preferences, and the appliance needs of women and other primary cooks.

Clean cooking is also a recurring theme in countries' newly updated Nationally Determined Contributions submissions in 2025, reflecting a determination to transition from traditional biomass to modern cooking solutions, including electric cookstoves, biogas systems, and improved cookstoves.

Box 2.2 • Clean cooking in schools

While global tracking of progress on clean cooking has focused largely on households, schools and other public institutions prepare meals for hundreds of millions of people every day, often using firewood or charcoal. This creates a set of environmental, financial, and social challenges. Polluting fuels expose cooks and schoolchildren to harmful smoke; contribute to deforestation, forest degradation, and emissions; and strain school budgets. In many contexts, procuring, transporting, and storing fuel also create a substantial administrative and logistical burden.

Clean cooking solutions address these challenges. The case for action is particularly strong in institutional settings because cooking demand is strong, regular, and predictable, which makes transitions easier to plan, finance, and scale than is the case in dispersed household markets. Emerging global initiatives, including efforts by the School Meals Coalition, are increasingly recognizing school cooking, in particular, as a major, aggregated energy demand that can unlock investment while improving the sustainability of school meal programs.

In cases where electricity is available, "eCooking" presents a particularly compelling opportunity. Electric cooking eliminates smoke exposure in kitchens, improves working conditions, and avoids the supply chain risks associated with biomass and LPG fuels. It also aligns with broader energy system objectives by creating productive and predictable electricity demand, including during off-peak periods. A growing body of evidence shows that these benefits can be achieved alongside significant fuel cost savings. Emerging studies across multiple countries report reductions in cooking costs of 26–85 percent, enabled by the use of efficient eCooking appliances such as electric pressure cookers and eBoilers (Khalifa and others 2025). In parallel, schools often report substantial time savings, reducing the labor burden on kitchen staff.

Recent experiences across East Africa illustrate how this transition is moving from individual school pilots toward more systematic scaling. In Kenya, where most schools are already connected to electricity, national strategies now explicitly identify schools as a priority segment for eCooking, while 36 schools in Tanzania and more than 100 in Uganda are transitioning to eCooking as part of scale-up programs funded by under the UKAid Modern Energy Cooking Services (MECS) programme. This program and a growing number of partners are demonstrating practical delivery models for both grid-connected and solar off-grid electric cooking systems, while generating the evidence needed to shape policy and investment. As these approaches mature, clean cooking in schools offers a clear opportunity to deliver simultaneous gains in health, education, energy access and climate outcomes—making it a vital, and previously overlooked, frontier for achieving SDG 7.

Image 1 • Cooking posho in a 230L ECOCA eBoiler at Buddo Parents' Academy, Kampala, Uganda

Credit: Jacob Fodio Todd, MECS

Image 2 • Cooking maize on a traditional three-stone fire stove at a school in Zambia

Credit: Nancy Serenje, CEEEZ.

Turning national commitments into regional impacts

The advantages of building strong regional ecosystems for clean cooking are many. For one, regional cooperation can strengthen national implementation. Working across national borders to build or share common infrastructure for supply, lowers transaction costs, strengthens local markets, and promotes cooperative regulatory mechanisms for manufacturing and deployment. The recently launched G20 South Africa clean cooking road map, mentioned earlier, takes full advantage of this promise. The road map calls for feasibility studies on the potential for regional clean cooking infrastructure clusters, local value chains for market development, and the possible establishment of regional infrastructure investment funds and risk-sharing instruments to support funding and finance for clean cooking.

In Latin America and the Caribbean, access to clean cooking has improved significantly over the past two decades, but sizeable gaps remain, especially in rural areas (ten countries account for more than 90 percent of the remaining gap in access.) To help accelerate a full regional transition, the ministries of energy in the region have renewed their commitment to advancing clean cooking. In this context, with the support of World Bank and the Inter-American Development Bank, a regional road map was developed with clear targets and mandates to achieve universal access to clean cooking. The road map aims to eliminate the use of open fires for at least 95 percent of the population by 2030 and accelerate the transition to modern energy–based cooking services by 2035 for 97.5 percent of the population, with the remaining 2.5 percent using improved cookstoves. The road map also calls for regional platforms for data and testing standards, aggregated procurement, regional supply chains, pooled-risk sharing, and technical assistance (World Bank 2026).

The Pan American Health Organization (PAHO) and its Member States have also recognized the importance of clean household energy to achieve regional public health goals. As part of PAHO's Disease Elimination Initiative, Member States are aligning action to eliminate the use of polluting fuels for cooking by 2030 to achieve public health goals. The initiative mobilizes the health sector to eliminate the use of polluting fuels in households as part of a comprehensive strategy to achieve reductions in communicable disease targets and improve the health of women and children. Leveraging the supportive voice of health care professionals to promote clean cooking helps drive needed behavior changes in households and ensure that policy decisions on clean cooking are informed by health evidence .

Although the nations of the region are diverse, they share key challenges like affordability, the need for enhanced monitoring, and building household confidence in the use of cleaner cooking options.

Regional cooperation need not focus on clean cooking alone. The point is that clean cooking should be integrated into broader energy, environment, or other development programs, including those focusing on forcibly displaced persons (box 2.3). Integration ensures that clean cooking remains an area of policy relevance and action. For example, the Breath of Change: Solutions for Cleaner Air for the Indo-Gangetic Plains and the Himalayan, presents a regional road map for clean air focusing on reducing air pollution levels to 35 µg/m3 by 2035 through policy actions in five key pollution emitting sectors (household energy use, industry, agriculture, waste management, and transport) common across Bangladesh, Bhutan, India, Nepal, and Pakistan (World Bank 2025b). The strategy recognizes the transboundary nature of the local airshed and the need for countries to cooperate on monitoring systems, governance, and financing to improve air quality in the region. The regional angle helps position clean cooking as part of wider environmental and health strategies, while maintaining its distinct role within the household energy sector.

Box 2.3 • The clean cooking deficit in settings hosting forcibly displaced populations

Despite global progress, a major share of the clean cooking access deficit remains overlooked in settings marked by fragility and displacement. An estimated 48.9 million forcibly displaced people—including refugees and internally displaced persons—lack access to clean cooking.[a] To put this number into perspective, the Global Platform for Action estimates that forcibly displaced people represent 1.4 percent of the global population but could amount to potentially 2.5 percent of those without clean cooking worldwide as per comment below.

These populations are often excluded from national statistics, policy frameworks, and energy planning processes, masking the scale of need and limiting targeted interventions. Yet access to clean cooking is critical in these contexts, underpinning health, protection, environmental sustainability, and livelihoods, while reducing risks such as exposure to harmful smoke and gender-based violence linked to fuel collection.

Most forcibly displaced people without access live in low-income and fragile settings, where structural barriers—including weak infrastructure, financing gaps, and policy fragmentation—impede progress.

Advancing clean cooking access in displacement settings is therefore essential to achieving universal access by 2030. It requires the systematic inclusion of displaced populations in data collection, national energy planning, and investment strategies to ensure that no one is left behind.

a. Philip Sandwell and Paul Quigley (2026) Quantifying the global sustainable energy access gap amongst forcibly displaced people. Geneva. GPA Secretariat, UNOPS. Please see: https://www.humanitarianenergy.org/assets/resources/Quantifying_the_sustainable_energy_deficit_in_displacement_and_fragile_settings.pdf.

Enhanced frameworks for climate finance

Financing remains one of the key constraints to a full transition. The case for greater investment is strengthened by the multiple benefits of clean cooking, including reduced household air pollution exposure, time savings, lower pressure on forest resources in some settings, and reduced emissions of black carbon, a short-lived climate pollutant. These benefits make clean cooking relevant not only to health and development, but also to climate finance. Recent advances in the voluntary carbon markets have facilitated financing for clean cooking while strengthening confidence in credit quality. Enhanced cooperation between the environment and energy sectors could help unlock much-needed climate finance for clean cooking while advancing broader efforts to mitigate climate change.

In 2025, the Integrity Council for the Voluntary Carbon Market approved several cookstove carbon-crediting methodologies (including the CLEAR methodology (Clean Cooking Alliance 2025)), subject to conditions related to fuel-use estimation and monitoring (Integrity Council for the Voluntary Carbon Market 2025). The move is important because stronger methodological requirements can improve confidence in credit quality and help channel finance into clean cooking projects. Other instruments are also emerging. For example, the World Bank launched a Clean Cooking Outcome Bond for Ghana to mobilize results-based finance for expanding clean cooking (World Bank 2025c). These developments suggest that climate finance may become an increasingly important complementary source of support for clean cooking, particularly where public resources are limited.

But climate finance alone will not be sufficient. Strong government leadership, transparent accounting, proper safeguards, and alignment with national priorities are still essential. Where appropriate, funding windows, results-based finance, credit guarantees, and technical assistance can also use gender-sensitive criteria to support women as beneficiaries, workers, entrepreneurs, and leaders in the clean cooking value chain.

Conclusions

The global trajectory toward universal access to clean cooking fuels and technologies reflects both significant advances and enduring disparities. By 2024, approximately 75 (71–78) percent of the global population had gained access to clean cooking solutions, representing an 18 percentage-point increase since 2010. Despite this progress, an estimated 2.0 (1.8–2.4) billion people—primarily in LMICs—remain dependent on polluting fuels such as biomass, charcoal, and kerosene. This reliance exacerbates household air pollution, disproportionately affecting the health of women and children, while also impeding progress toward SDG 7. Regional disparities are particularly pronounced: Sub-Saharan Africa and Oceania (excluding Australia and New Zealand) exhibit access rates of just 22 (20–25) percent and 9 (4–26) percent, respectively, highlighting the urgent need for targeted interventions. Projections indicate that, given current trends, 1.8 (1.6–2.2) billion people will still lack access by 2030, underscoring the inadequacy of incremental progress in meeting global targets.

Addressing this challenge will require a multifaceted approach to integrate policy, finance, and regional collaboration. High-level political commitment, as demonstrated by national strategies in Kenya and India, has proven instrumental in accelerating access. Regional initiatives, such as the G20 South Africa Clean Cooking Roadmap and Latin America's coordinated frameworks, offer scalable models for resource-sharing and infrastructure development. Financing remains a critical constraint, but innovative mechanisms—including climate finance instruments, targeted subsides, and results-based funding models—present opportunities to mobilize resources and ensure that no one is left behind in the clean energy transition. Targeting rural populations, educational institutions, and other key settings where clean cooking initiatives can deliver simultaneous benefits for public health, educational achievement, livelihoods, nutrition, and environmental sustainability must remain a central priority at the national and global levels.

Efforts to achieve universal access to clean cooking are likely to be adversely affected by the current geopolitical crises in different parts of the world. These crises can reduce energy supplies, increase fuel price volatility, and make clean cooking solutions less accessible and affordable for households. Ensuring the widespread availability of affordable clean cooking solutions is therefore a key factor for accelerating the adoption of clean cooking fuels and technologies, which is vital to protect the health and well-being of people and planet. Maximum efforts must be made to ensure that a variety of clean cooking options are available, affordable, and accessible by all, particularly those most vulnerable.

In the absence of targeted and scalable interventions, particularly in light of the current geopolitical circumstances, the number of people lacking access to clean cooking may plateau, halting the progress made in recent years. If progress stalls, the world will fail to meet SDG 7 targets, leaving billions without clean cooking and deepening inequalities in health, gender roles, and climate effects.