



ACCELERATING SDG 7 ACHIEVEMENT

# POLICY BRIEF 9

## SDG 7 IN ASIA AND THE PACIFIC

### 7 AFFORDABLE AND CLEAN ENERGY



PART IV: REGIONAL PERSPECTIVES

# **POLICY BRIEF #9**

## **SDG 7 IN ASIA AND THE PACIFIC**

Developed by

The UN Economic and Social Commission for Asia and the Pacific (ESCAP)

In collaboration with

TERI, the World Bank, and the International Energy Agency (IEA)

# Key Messages

## Status and progress towards achieving SDG 7 in Asia and the Pacific

- Although the region made remarkable progress on electricity access in the last decade, according to the data from “Tracking SDG7: The Energy Progress Report 2019,” over 231 million people still have no access to electricity, around 5 per cent of the region’s population. The region is on track to nearly reach universal access to electricity by 2030, however there are some countries with acutely low access rates, mainly Pacific Island countries.
- Around 2 billion people, nearly half the population, rely on polluting and unhealthy cooking fuels and technologies, and the region is far from being on track to achieve universal access to clean cooking by 2030.
- The share of renewable energy, including both traditional and modern forms, reached 16 per cent of the region’s total final energy consumption in 2016, down from 44.5 per cent in 1990, though up from a low of 15.8 per cent in 2011.
- The region has demonstrated a long-term steep decline in energy intensity, falling from 9 MJ/2011 PPP\$ in 1990 to 5.4 MJ/2011 PPP\$ in 2016, converging with the global average.

## Priority actions

Governments in the Asia-Pacific region need to maintain their commitments in order to sustain the recent increases in electricity access rates. The need to complete the last mile places emphasis on off-grid solutions, which require the respective authorities to enact adequate regulations, including provisions for potential integration of on-grid and off-grid infrastructure. Countries with acutely low access rates require particular attention from both their governments and development partners.

Given the slow progress in access to clean cooking, national targets for clean cooking fuels and technologies should be established, and clean cooking must be better integrated into energy policy frameworks. Greater investments are needed to support the expansion of technology and fuel distribution networks, and the development of options that align with consumer needs and cultural preferences.

The dramatic cost reduction of renewable energy technologies, particularly in the power sector, presents an opportunity to meet additional demand with renewable energy sources instead of fossil fuels. To realize this scenario, concerted efforts at promoting renewables are needed in Asia and the Pacific, with supportive policies and initiatives from governments and other stakeholders, directed at areas such as carbon pricing, expanded financing, and energy market and fossil fuel subsidy reforms. Governments can affect investment flows towards modern renewable energy by reducing risks, extending fiscal and non-fiscal incentives, and providing more conducive legal frameworks and regulatory stability for the business and technology choices of investors.

Tightened energy efficiency regulations are particularly urgent for the industry sector, which is responsible for more than 35 per cent of regional sectoral fuel consumption. Such efforts must target large, as well as small and medium-sized, enterprises. In the building sector, a priority is to develop stringent building codes for new buildings. Considering the continuous growth of the transport sector, the implementation of efficiency measures in this sector will become especially important in the long term, in order to ensure energy efficiency potential gains are maximized.

## SDG 7 in Asia and the Pacific

The Asia-Pacific region comprises 58 economies, ranging from developed to least-developed, with a population of 4.5 billion, about 60 per cent of the world's total. Economies in the region produce approximately one third of the world's gross domestic product (GDP), consume half of the global energy supply, and include important oil and gas producers. As the region is leading the world in rising energy demand, and some of its countries have the largest deficits in energy access, the decisions and actions taken by Asia-Pacific countries will have an enormous impact on progress towards achieving global sustainable energy objectives, including SDG 7. In 2016, Asia and the Pacific produced 54.8 per cent of global emissions from fuel combustion, nearly two thirds of which were from coal. Though facing many challenges, Asia-Pacific countries are demonstrating global leadership across the three main pillars of sustainable energy—access, efficiency and renewables—offering strong commitments and innovation in those areas. New technologies and approaches have emerged, and as the Paris Agreement turned the world's focus toward decarbonization, countries across the region have offered up new and increasingly ambitious targets to improve energy efficiency and to increase their renewable energy share.

### Current status

#### Energy access

In developing Asia, the number of people who lack access to electricity more than halved in a decade, from 642 million in 2007 to 231.5 million in 2017, with significant progress recorded in Bangladesh, China, India, and Indonesia. Despite this progress, large numbers of people remain without access to modern energy. India is home to the highest number of people worldwide without access to electricity (101.7 million, or 7.6 per cent of the population). The number of people without electricity access in Bangladesh is approximately 19.8 million (12 per cent of the population), and in Myanmar, 16.1 million (30 per cent). Significant energy access disparities exist between rural and urban populations, and between countries in the region. Rural populations, in particular women and children, bear the largest burden of energy poverty. Around 2 billion people, nearly half the population, rely on polluting and unhealthy cooking fuels and technologies, and the region is far from being on track to achieve universal access to clean cooking by 2030.

#### Electricity

- More than 231 million people (around 5 per cent) of the population in Asia-Pacific remained without access to electricity in 2017, with about 212 million of those people located in rural areas.
- Between 2015 and 2017, an estimated 103 million people in Asia and the Pacific gained access to electricity as the population grew by about 78.8 million.
- The regional rate of electrification rose to 94.8 per cent, up from 92.4 per cent in 2015, though national rates vary widely.
- Urban areas are gradually approaching universal access, reaching 9.2 per cent in 2017, while rural areas have reached 90.7 per cent, up from 86.7 per cent since 2015.
- In the period 2015 to 2017, Bangladesh and India each provided between 23.6 and 55.4 million additional people with access to electricity. Afghanistan connected an additional 8.8 million, while Indonesia and the Philippines extended electricity service to 1.5 million and 3.8 million of their citizens, respectively.

#### Clean cooking

- In the Asia-Pacific region, around 2 billion people—nearly half of the region's population and more than a quarter of the global population—remain without access to clean cooking.
- The World Health Organization (WHO) estimates 92 deaths per 100,000 people are attributable to household air pollution in developing Asia.
- In 2017, the regional rate of access to clean cooking reached 54.1 per cent, up from 38.3 per cent in 2000.

- In 2017, only 13 Asia-Pacific economies had clean cooking access rates of at least 95 per cent or above.
- The average annual share increase in access to clean cooking has hovered around 0.02 percentage points over the period 2000 to 2017, well below the pace required to achieve universal access by 2030.

## Renewable energy

Asia-Pacific region leads the world in the renewable energy sector with more installed capacity and consumption than any other region. The region accounted for 75 per cent of global solar PV additions and for 48 per cent of global wind power additions in 2017. New solar PV capacity in both China and India surpassed new coal installations for the first time. China remained the world leader in installed capacities of hydropower, onshore wind power, and solar PV, and became the world's largest producer of bioelectricity in 2017, with a 23 per cent increase over 2016. India nearly doubled its solar PV capacity from 2016 to 2017, which exceeded the country's annual wind power installations for the first time. Indonesia led the world with new geothermal power generation capacity, and Turkey was among the top countries for capacity additions in solar PV, wind power, geothermal (second, after Indonesia) and hydropower.

- The share of renewable energy consumption, including both traditional (mostly traditional biomass) and modern forms, such as solar, wind, hydro, modern biofuels, and geothermal, reached 16 per cent of the region's total final energy consumption in 2016, down from 44.5 per cent in 1990, though up from a low of 15.8 per cent in 2011.
- In absolute terms, total renewable energy consumption amounted to 27.4 EJ in 2016, up from 26 EJ in 2013, continuing a long-term steady increase. Upper-middle-income countries in Asia have seen their renewable energy share in TFEC decline, as the region undergoes economic development and shifts away from traditional uses of biomass. Low-income countries in Asia have a large share of renewables because of both a high level of traditional biomass and a significant amount of hydroelectricity production.
- The estimated yearly investment needed in Asia and the Pacific to meet the renewable energy goal by 2030 is US\$ 298 billion, but current investment levels fall short.
- Asia-Pacific was the largest regional market for renewable power generation capacity for the 9th consecutive year, representing nearly 48 per cent of added capacity (with a total exceeding 235 GW by the end of 2017).

## Energy efficiency

Over the past decade, the region has made significant progress in decoupling the growth of energy demand and economic output, with significant recent advancements occurring in the industrial sector. Innovative technology has been developed and deployed, with countries such as China and Japan acting as global leaders in the introduction of energy efficiency into various sectors. A number of significant energy efficiency policies currently under development are expected to boost further the reduction in energy intensity. These include the strengthening of mandatory energy performance regulations in several countries in the region. In absolute terms, the largest savings come from avoided coal use in industry in China, which can in large part be attributed to policies to phase out older, more inefficient coal-based capacity and reduce air pollution.

- Asia-Pacific experienced the largest reductions in energy intensity between 2011 and 2016, with average annual declines of 3.2 per cent.
- The region has demonstrated a long-term steep decline in energy intensity, falling from 9.03 MJ/2011 PPP\$ in 1990 to 5.4 MJ/2011 PPP\$ in 2016, and showing convergence with the 2016 global average of 5 MJ/2011 PPP\$.
- The Asia-Pacific region needs an average of US\$ 211 billion in annual investment to reach the 2030 efficiency target, but current levels fall short.

## Are we on track to achieving SDG 7 in Asia and the Pacific?

The energy transition needed to achieve SDG 7 and its targets is only going to be successful if efforts are made to curb demand growth, and if remaining growth is met by an increasing proportion of renewable

energy. A comparison of different outlooks for Asia and the Pacific demonstrates that aggressive measures must be taken to control energy demand towards 2030. According to the business-as-usual scenarios developed by the ADB and the IEA, energy demand may grow by more than 2,000 Mtoe by 2030. Policies announced to date (including Nationally Determined Contributions or NDCs) could result in a slight demand reduction. More progressive policies and technologies on energy efficiency could decrease this even further. However, the achievement of SDG 7 and more ambitious targets beyond 2030 require a demand reduction of 25 per cent compared to the business-as-usual case.

Fossil fuels cannot be phased out overnight and remain part of all energy forecasts. In the business-as-usual scenario the share of fossil fuels remains between 70 to 80 per cent. To be on track for sustainable development, this share must drop below 70 per cent. In the business-as-usual predictions, coal retains 40 to 50 per cent on average, oil remains at 25 per cent, and there is a slight increase in gas, from 10 to 15 per cent. This leaves renewable energy (including bioenergy, hydro, and other renewables) at around 15 per cent, which would represent an overall decrease instead of a substantial increase in the share of renewables.

Although the Asia-Pacific region has experienced significant improvement in energy intensity, meeting the SDG 7 targets will require scaled up action. However, historic primary energy intensity and the 1990–2010 average improvement rate indicate that this will be challenging for the region and would require a significant effort. The progress made in China provides reason for optimism. The region's largest economy, accounting for 57 per cent of Asia-Pacific's industrial energy consumption in 2016, helped drive improvements by continuing to adopt aggressive energy efficiency measures in the industrial sector. This included the elimination of outdated technologies and establishment of standards. If the rest of the region could attain reduction rates of this magnitude, Asia-Pacific would be well on track to meeting the SDG 7 target. However, this would require sustained government commitment (IEA, 2017b).

With existing and planned policies, the Asia-Pacific is set to achieve the most basic level of near universal electricity access (99 per cent) by 2030. Much of the region's total progress is projected to be driven by populous countries such as India. However, some countries (such as the Democratic People's Republic of Korea and Papua New Guinea) show current access levels of less than 60 per cent, and may struggle with providing electricity to large shares of their populations. The Pacific Small Island Developing States are generally heavily reliant on imported fossil fuels for both transport and electricity generation, which makes them highly vulnerable to fluctuations in global oil prices and increases in the cost of doing business. Targeted efforts and assistance are needed in order to ensure that no one will be left behind. All governments with access deficits would need to make efforts to ensure that the last mile is reached, enabling everyone to take full advantage of the multiple benefits of energy services. This comes at a cost, as experience has shown that reaching the last 10 to 15 per cent is the most expensive and time-consuming part of the challenge. In the cases of China and Thailand, increasing electrification from the 30 to 40 per cent range up to 85 to 90 per cent took the same amount of time as reaching the last 10 to 15 per cent. When assessing current levels of energy access, factors such as reliability and affordability should also be considered, rather than applying the traditional binary distinction between access and lack of access (ESCAP, 2017).

Providing universal access to clean cooking by 2030 is an immense challenge. Given the current low achievement rates, the region is far from being on track to achieve universal access to clean cooking fuels and technology by 2030. On a more positive note, several Asia-Pacific countries have recently put forward clean cooking targets, have conducted research, and expanded markets for clean cooking fuels and technologies. Indonesia led the world in its pace of increasing access through the expansion and promotion of LPG fuel and technology markets, resulting in a dramatic increase from a mere 5.4 per cent in 2000 to 60.5 per cent in 2017, while the Marshall Islands distributed efficient smokeless stoves to each household in the outer islands from 2014 to 2016, giving rural dwellers access to clean-cooking solutions. If these positive examples inspire replication in the region, there may be some reason for optimism. But higher priority needs to be accorded to clean-cooking solutions.

## Interlinkages with other SDGs

Energy is intrinsically interconnected with the majority of the other SDGs. It is an essential enabler for poverty reduction, food security, health, education, water, and more. Indeed, 125 of 169 targets included in the SDGs are linked to energy. That is more than two-thirds of all targets. One such interlinkage of particular importance to the Asia-Pacific region is that of energy and air pollution. The increased consumption of energy, especially fossil fuels, has significant local and regional social and environmental consequences and costs. Air pollution is disrupting not just the health of people, but it is also adversely affecting the growth potential of entire cities and economies. Of the 1,622 global cities listed in the 2014 World Health Organization (WHO) Ambient (Outdoor) Air Pollution Database, Asia-Pacific cities represented 85 of the top 100 polluted cities. In 2015, more than half of the 4.2 million early deaths worldwide attributed to air pollution occurred in India and China. India and Bangladesh have suffered the steepest increases in air pollution since 2010 and have the highest concentration of particulates in the world. The interlinkage between energy and air pollution makes a shift to cleaner sources of energy and increased energy efficiency especially urgent in the Asia-Pacific region.

## Policy implications

Achieving universal access to electricity in the Asia-Pacific region will require governments to maintain their commitments to sustain the current increase rates. The challenge of reaching the last mile puts a focus on off-grid solutions which require the relevant authorities to put in place adequate regulation. Given the parallel continuous expansion of the main grid, provisions need to be put in place to ensure the potential integration of on-grid and off-grid infrastructure. In the case of the countries with continuously low access rates, most of which are located in the Pacific, additional efforts are required by both their respective governments and international development partners.

Several Asia-Pacific countries have placed policy emphasis on clean cooking fuels and technologies. However, current efforts remain small in comparison to the scope of the problem, and the challenges are great. For the switch from traditional to clean cooking to take place, greater expansion and reliability of technology and fuel distribution networks is necessary, along with greater efforts to improve utility and affordability. Clean cooking must be better integrated into energy policy frameworks, and greater investment is needed to support the development of options that meet consumer needs and overcome barriers, such as cost and cultural preferences. Furthermore, increasing employment opportunities for women in rural areas raises the opportunity cost of gathering fuel for cooking. With value attributed to women's time, households are more likely to choose more efficient technologies with shorter cooking times and reduced fuel gathering requirements. Policies in support of clean cooking fuels and technologies would also help to reduce air pollution.

The targets of SDG 7 require more financial resources and ODA will remain relevant, especially for access to energy in the more remote areas where expensive storage technology will have to be part of the solution. For renewable energy and energy efficiency, the private and public sectors remain the most important source of finance. Energy demand-related finance would need to grow significantly while energy supply-related finance would need to be geared towards cleaner sources. Governments have a central role in achieving SDG 7 and could affect investment flows by facilitating additional revenue streams from investments, reducing risks, extending fiscal and non-fiscal incentives to investors, and providing more conducive legal frameworks for the business and technology choices of investors. Thus, public financing needs to be focused on creating the appropriate conditions for attracting private capital through de-risking transactions. To achieve true scale-up, which necessarily has to come from private sources, an adequate enabling policy framework needs to be put in place to facilitate access to commercial debt and equity.

Achieving SDG 7 also requires a mix of interventions for clean energy—energy market reform, carbon emissions pricing, and fossil fuel subsidy reform—as well as effective methods for addressing the social

aspects arising from diverging energy tariffs between urban and rural areas, and from fossil fuel subsidy reform. While governments will play key roles in the energy transition, greater coordination would be needed to plan and implement the transition. Governments would need to strengthen coordination among ministries and establish an enabling environment for the private sector. To promote investment, this enabling environment must be stable and based on consistent policy. In addition, policies and strategies based on evidence-based research would need to be developed, together with research institutions and innovative national and international organizations.

To embark on the most promising pathway for increasing energy efficiency for the region, a good strategy is to first analyze the most impactful sector. The examples of the top performers in the region show that no single sector drives success alone. In all cases, countries acted on considerations of the size and impact of the sector in their particular context. With a regional sectoral fuel consumption in industry of more than 35 per cent, continued efforts to reduce the amount of energy used per unit of output is essential for Asia and the Pacific. The examples of the top performers indicate that this may be an area for quick wins, but this will imply also targeting the harder to reach small and medium sized enterprises, which often make up a large share of industrial energy consumption. As the building sector is the second most consuming sector (a bit less than 25 per cent of TFC), energy efficiency regulation for buildings should be another priority. Given the lifespan of buildings, strong building performance standards and building codes will lock in performance for decades. Notably space heating and cooling will be an important challenge across the region. The third priority is the transport sector due to its fast growth in the recent past, which will likely only increase with the demands of a growing middle class. Moreover, tightening energy efficiency regulations regularly is important to provide incentives for continual improvement. Lawmakers should look not only at regulatory breadth (covering as many sectors as possible) but also at regulatory depth (strengthening requirements to drive performance further). This requires a common measurement framework, including monitoring and enforcement of existing standards.

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7 AFFORDABLE AND  
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