



ACCELERATING SDG 7 ACHIEVEMENT

# POLICY BRIEF 19

ACHIEVING SDG 7 IN ASIA  
AND THE PACIFIC

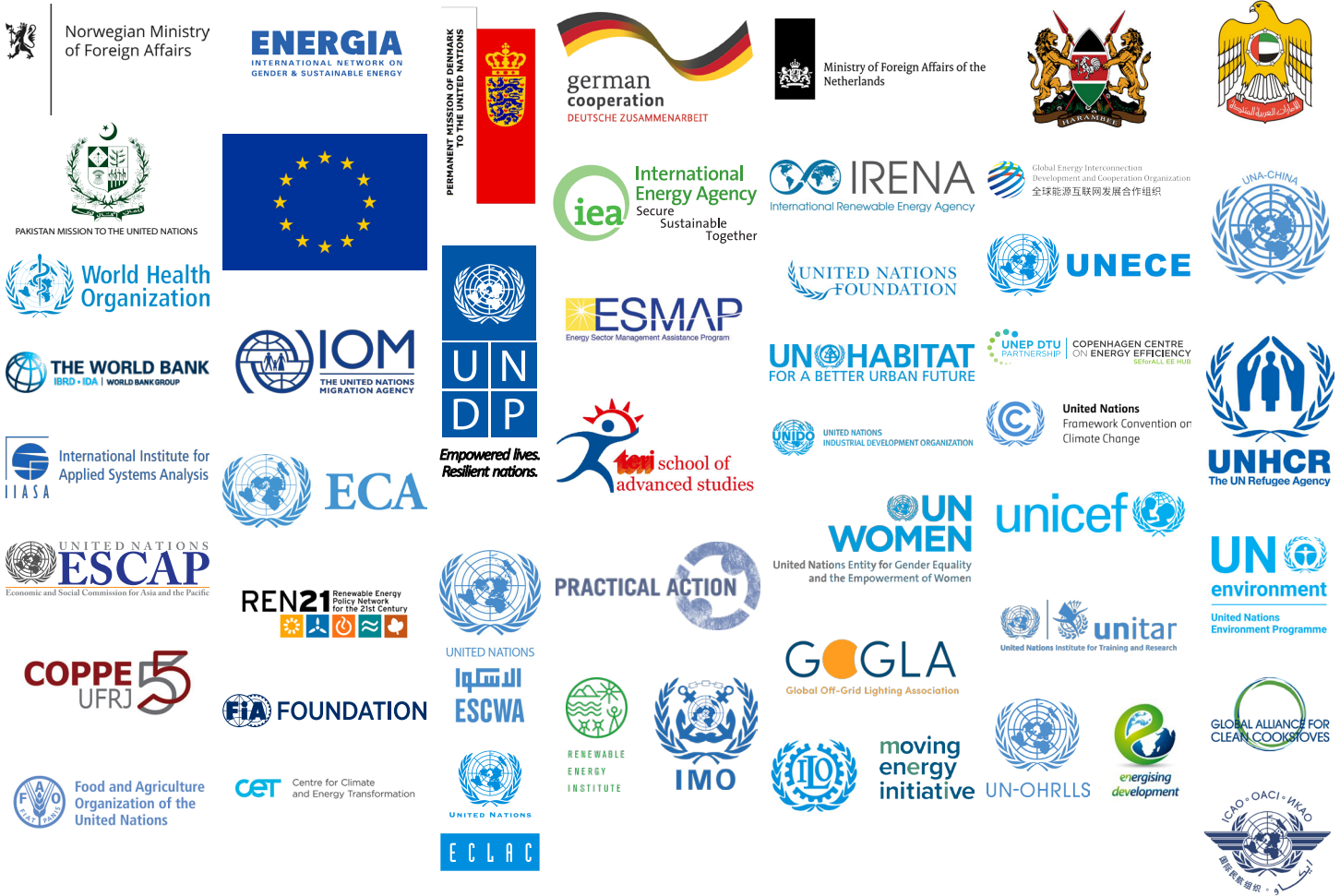
7 AFFORDABLE AND  
CLEAN ENERGY



# ACCELERATING SDG 7 ACHIEVEMENT

## POLICY BRIEFS IN SUPPORT OF THE FIRST SDG 7 REVIEW AT THE UN HIGH-LEVEL POLITICAL FORUM 2018

### Lead Organizations



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# **POLICY BRIEF #19**

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

### **Developed by**

United Nations Economic and Social Commission for Asia and the Pacific (UNESCAP)

### **In collaboration with**

ADB, AIIB, FIA Foundation, IEA, IRENA and UNDP

## 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 Global Tracking Framework, over 420 million people still have no access to electricity, almost 10 per cent of the region's population. The region is on track to reach nearly universal access to electricity by 2030, however there are some countries with acutely low access rates, mainly Pacific islands.
- Almost 2.1 billion people rely on polluting and unhealthy cooking fuels and technology, nearly half the population, and the region is far from being on track to achieve universal access by 2030.
- The share of renewable energy, including both traditional and modern forms, reached 18.3 per cent of the region's total final energy consumption in 2014, down from 23 per cent in 1990, though up from a low of 17.9 per cent in 2011. Modern renewables comprised 6.8 per cent of total final energy consumption in 2014, up from 6.2 per cent in 2012. In absolute terms, renewable energy consumption increased from 29.3EJ in 2012 to 31.1 EJ in 2014.
- The region has demonstrated a long-term steep decline in energy intensity, falling from 9.1 MJ/2011 PPP\$ in 1990 to 6.0 MJ/2011 PPP\$ in 2014, and progressing towards convergence with the 2014 global average of 5.4 MJ/2011 PPP\$.

### Priority actions

- Governments need to maintain their commitments in order to sustain the current increases in electricity access rates. Reaching the last mile puts a spotlight on off-grid solutions, which require the respective authorities to put in place 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.
- National and regional 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 meet consumer needs and cultural preferences. New employment opportunities for women are also important—with greater economic value attributed to women's time, households are more likely to choose more efficient technologies with reduced fuel gathering requirements.
- The dramatic cost reduction of renewable energy technologies presents an opportunity to meet growing 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 as well as other stakeholders, including carbon emissions pricing, 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.

## SDG 7 in Asia and the Pacific

The Asia-Pacific region comprises 58 economies, ranging from developed to least-developed, with a population of 4.3 billion, about 60 per cent of the world total. Economies in the region produce approximately one-third of the world's gross domestic product (GDP), consume more than half of the global energy supply and include important oil and gas producers. As the region is leading the world in terms of 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 2014, Asia and the Pacific produced 55.2 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<sup>4</sup>

#### Energy Access

A substantial portion of the Asia-Pacific population still experiences the negative effects of energy poverty on sustainable development: over 420 million people lack access to electricity, and nearly half the region's population still relies on polluting and unhealthy cooking fuels and technology. 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.

#### *Electricity*

- More than 420 million people (9.7 per cent) of the population in Asia-Pacific remained without access to electricity in 2014, with about 389 million of those people located in rural areas.
- Between 2012 and 2014, an estimated 93.1 million people in Asia and the Pacific gained access to electricity as the population grew by about 83.8 million.
- The regional rate of electrification rose to 90.3 per cent, up from 89.8 per cent in 2012, though national rates vary widely.

<sup>4</sup> The data in this section is based on ESCAP (2017a), *Asia-Pacific Progress in Sustainable Energy*, Bangkok.

- Urban areas are gradually approaching universal access, reaching 98.7 per cent in 2014, while rural areas have stayed at 83.3 per cent since 2012.

In the period 2012-2014, China, India and Pakistan each provided between 13 and 16 million additional people with access to electricity. Afghanistan, Bangladesh, Indonesia, and the Philippines extended electricity service to between five and nine million people.

#### *Clean Cooking*

- In the Asia-Pacific region, almost 2.1 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 2014, the regional rate of access to clean cooking reached 51.2 per cent, up from 39.8 per cent in 2000.
- In 2014, only 12 Asia-Pacific economies had clean cooking access rates of at least 99 per cent.
- The average annual share increase in access to clean cooking has hovered around 0.8 per cent over the period 2000-2014, well below the pace required to achieve universal access by 2030.

#### Renewable Energy

The Asia-Pacific region has achieved remarkable economic growth over the past decades, resulting in new levels of prosperity, as well as new and expanded economic sectors. Historically, this growth has been largely powered by the consumption of fossil fuels. However, today, the region is facing the consequences of local pollution and climate change, as well as exposure to the volatile energy commodity prices, which is primarily the result of an over-reliance on carbon-based energy sources. Although the Asia-Pacific region leads the world in the renewable energy sector with more installed capacity and consumption than any other region, further efforts are needed to enable clean energy to play a greater role within national and regional energy systems.

- 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 18.3 per cent of the region's total final energy consumption in 2014, down from 23 per cent in 1990, though up from a low of 17.9 per cent in 2011.
- In 2014, modern renewables comprised 6.8 per cent of total final energy consumption, up from 6.2 per cent in 2012, indicating a promising accelerating upward trend.

- In absolute terms, total renewable energy consumption amounted to 31.1 EJ in 2014, up from 29.3 EJ in 2012, continuing a long-term steady increase.
- Investments in renewable energy (excluding hydropower plants of over 50 MW) rose from US\$ 97.2 billion in 2012 to reach an all-time high of US\$ 171.1 billion in 2015, but fell dramatically to US\$ 114.8 billion in 2016.
- 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 is still the most energy intensive region and will reach Europe's levels only in 2030, should the current progress rate be maintained.

#### Are we on track to achieving SDG 7 in Asia and 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 a supply of cleaner energy sources. 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.<sup>8</sup> Policies announced to date (including Nationally Determined Contributions, NDC) 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 are part of all forecasts. In the business-as-usual scenario the share of fossil fuels remains between 70-80 per cent. To be on track for sustainable development, this share must drop below 70 per cent. In the business-as-usual predictions, on average coal retains 40-50 per cent, oil remains at 25 per cent and there is a slight increase in gas, from 10 per cent to 15 per cent. This leaves renewable energy (including bioenergy, hydro and other renewables) at around 15 per cent, which would represent a decrease instead of a substantial increase in the share of renewables.

Although the Asia and the Pacific region has experienced significant improvement in energy intensity, meeting the SDG 7 target will require scaled up action. By maintaining its average rate of the last two years up to 2014, Asia and the Pacific would double its annual average achievement rate between 1990 and 2010. 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 55 per cent of Asia-Pacific's industrial energy consumption in 2014, 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, resulting in a 4.5 per cent reduction in industrial energy intensity. 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)

<sup>5</sup> The data in this section is based on these two scenarios: ADB (2013), Energy Outlook for Asia and the Pacific, Manila; and IEA (2017a), World Energy Outlook 2017, Paris.

#### 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. Nonetheless, Asia and the Pacific remains one of the most energy-intensive among the global regions, and the uptake of energy efficiency is unequal among member States and between sectors.

- The region has demonstrated a long-term steep decline in energy intensity, falling from 9.1 MJ/2011 PPP\$ in 1990 to 6.0 MJ/2011 PPP\$ in 2014, and progressing towards convergence with the 2014 global average of 5.4 MJ/2011 PPP\$.
- The region's energy savings between 2012 and 2014 were equivalent to the 2014 total final energy consumption of the Republic of Korea and Thailand combined.
- Supply-side efficiency in power generation showed a long-term upward trend, with regional thermal power generation efficiency increasing from 33.4 per cent in 1990 to 38.8 per cent in 2014.
- The industrial sector is responsible for the largest drop in energy intensity during the period 2012-2014, with a 3.2 per cent average annualized change in energy intensity, though the service and, to a lesser extent, agricultural sectors were also reported to have made progress in that regard, at 2.5 per cent and 0.8 per cent, respectively.
- Energy efficiency gains in China between 2006 and 2014 eliminated the need for more than US\$ 230 billion in investment for new power generation in the country, nearly half of the region's total installed capacity.
- 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.

With existing and planned policies, 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, Papua New Guinea, Solomon Islands, Timor-Leste, Vanuatu, and American Samoa) face current access levels of less than 50 per cent, and may struggle with providing electricity to large shares of their populations. The Pacific SIDS 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 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 even 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 10-15 per cent is the most expensive and time-consuming part of the challenge. In the cases of China and Thailand, increasing electrification from 30-40 per cent to 85-90 per cent took the same amount of time as reaching the last 10-15 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 low current 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, and have conducted research on 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 2.4 per cent in 2000 to 56.6 per cent in 2014, while the Marshall Islands distributed efficient smokeless stoves to each household in the outer islands from 2014-2016, giving rural dwellers access to clean-cooking solutions. If these positive examples inspire emulation in the region, there may be some reason for optimism. But without a doubt, higher priority needs to be afforded 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 spotlight on off-grid solutions which require the respective 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 recently put forward clean cooking targets, and conducted research on and expanded markets for 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, 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. Law

makers 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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