POLICY BRIEFS IN SUPPORT OF THE HIGH-LEVEL POLITICAL FORUM 2020

ACCELERATING SDG7 ACHIEVEMENT IN THE TIME OF COVID-19
POLICY BRIEF

ADVANCING SDG 7 IN ASIA AND THE PACIFIC

Contributing organisations:
UN Economic and Social Commission for Asia and the Pacific (ESCAP) in collaboration with the Asian Development Bank, the World Bank, and the International Energy Agency (IEA)
KEY MESSAGES

The availability of modern and affordable energy has transformed the Asia-Pacific region, helping countries to develop their economies, and lifting millions out of poverty. However, there is continued reliance on polluting and carbon-intensive sources of energy. The Asia-Pacific region accounts for almost 60% of global total CO2 emissions, nearly two-thirds of which are from energy sector. The Asia-Pacific region accounted for 80% of the world’s coal consumption in 2018, with demand mainly concentrated in China (50%), followed by India (12%), Japan (3%), and South Korea (2.5%).

Governments in Asia will need to reverse their current trend of expanding coal-fired generation capacity and instead urgently implement policies to enable a fast decarbonisation of the electricity mix. Strengthening governments’ commitments to climate policy with plans that include a clear commitment to coal phase-out, removing subsidies for fossil fuels, and building support for renewables and energy efficiency will offer new opportunities for both developed and developing countries in the region to build low-carbon economies, with significant benefits for sustainable development.

Impacts of COVID-19
In response to the pandemic, the focus of many governments has been diverted away from clean energy. Demand for energy is down, which has boosted the renewable energy share in many countries. However, some renewable energy projects are stalled due to supply chain disruptions for components. As poor air quality appears to be a major risk for mortality from the virus, provision of clean cooking for rural populations takes on extra importance.

Access to electricity
Based on existing and planned policies, the Asia-Pacific region is set to achieve universal electricity access by 2030. However, in 2018 over 200 million people still had no access to electricity, around 5% of the region’s population. Urban populations approached universal access (99.7%) in 2018, but people in rural areas lagged behind (92.2%). Off-grid renewable energy technologies represent a viable electrification solution in rural areas, with an emphasis on support for modern lifestyles and productive uses.

Access to clean cooking
The region has demonstrated slow progress in access to clean cooking. In 2018 around 1.8 billion people, or nearly 40% of the population, relied on polluting and unhealthy cooking fuels and technologies. The region is far from being on track to achieve universal access to clean cooking by 2030. Clean cooking targets must be integrated into national energy plans. New investments and additional resources are also needed to support the development of options that meet consumer needs and overcome barriers, such as costs and cultural preferences, while limiting government spending on subsidies.

Renewables
The share of modern renewables in total final energy consumption has been growing since the early 2000s, reaching more than 8% in 2017. This marked the first year that modern renewable energy exceeded traditional biomass in the energy mix, accounting for 52% of renewable energy in the total final energy consumption in Asia-Pacific. Use of modern renewables has been highly concentrated in the power sector, with hydropower accounting for three-quarters of the region’s renewable electricity output. More attention is needed to increase the use of renewables in transportation and heating.

Energy intensity
The region has demonstrated a steep decline in energy intensity, registering an annual average decline of 2.6% from 2010 to 2017. This is on track with global annual reduction required in the lead up to 2030. If the region could sustain reduction rates at this level, the Asia-Pacific would be on track to meet the SDG 7.3 target. However, this would require continued government commitment to enhancing energy efficiency.
The Asia-Pacific region had a population of 4.55 billion in 2018, about 60% of the world total. The 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 the world’s top energy producers and consumers. In 2017, Asia and the Pacific accounted for 55% of global emissions from fuel combustion, nearly two-thirds of which were from coal.

Despite 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 has turned the world’s focus toward decarbonisation, 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**

**Electricity access**

Policymakers across Asia and the Pacific have acknowledged that electricity is fundamental to socioeconomic development. Their policies and programmes have demonstrated significant progress in bringing electricity to all populations. In 2018, the electrification rate for the total regional population reached 95.6%, up from 87.3% in 2010. Recent accelerated progress resulted in an average annual growth in electrification of 1.2% between 2010 and 2018, as compared to 0.8% between 2000 and 2010.

Between 2010 and 2018, an additional 665 million people were provided access to electricity, raising the region’s total electrified population to 4.35 billion. This has closed the electricity access gap to its narrowest point in history. However, more than 200 million people lacked access to electricity in the Asia-Pacific region in 2018. Although large, the size of this unserved population represents a decrease of around 80% compared to 1990 levels, despite sustained population growth (Figure 1).

There is still a disparity between electricity access rates in urban and rural areas, but the gap is closing with advances in off-grid and mini-grid technologies. The overall urban electrification rate in Asia and the Pacific reached 99.7% in 2018, edging up from about 98% in 2010. At the same time, urban populations have grown rapidly. In rural areas, electrification efforts coupled with falling population sizes have increased access rates from 79.1% in 2010 to 92.2% in 2018.

**Clean cooking**

The Asia-Pacific region has made modest progress in expanding access to clean fuels and technologies for cooking. In 2010, 2.13 billion people, more than 50% of the region’s population, were reliant on highly polluting and harmful cooking solutions. By 2018, access had expanded even as the population grew, and that figure had dropped to 1.8 billion people, or 41.2% of the population.

The pace of improvement at the regional level is
not rapid enough to reach universal access to clean cooking by 2030. To achieve that target, the average annual increase in the percentage of the region’s households with access to clean cooking would need to increase more than threefold, from the 0.9% observed between 2010 and 2018 to approximately 3.4%.

**Renewable energy**

The renewable share of total final energy consumption in Asia and the Pacific showed a steady decline from 2000 to 2011, after which additional renewable energy supply generally began to keep pace with rising energy consumption. At the national level, the largest renewable shares of total final energy consumption are found among nations where populations remain dependent on traditional biomass for cooking and heating or where hydropower resources are abundant.

The share of modern renewables (i.e. the renewable component excluding traditional biomass) in total final energy consumption has been growing since the early 2000s, reaching more than 8% in 2017. This is the first year that modern renewable energy overtook traditional biomass, accounting for 52% in the total final renewable energy consumption (Figure 2).

![Figure 2. Renewable energy share of total final energy consumption in Asia and the Pacific, 2000–2017](image)

The largest gains for renewables are found in the region’s power sector. In 2017, the renewable share of total electricity output in Asia and the Pacific amounted to 21.6%, up from 16.1% in 2010. Since then, there has been a steady increase in the share of renewable energy in the power mix. The region is keeping pace with a rising global trend, though Europe, Latin America and the Caribbean, and North America continue to have higher shares of renewable electricity, suggesting that there is potential for the Asia-Pacific region to make further gains.

Hydropower accounts for three-quarters of the region’s renewable electricity output and is increasing rapidly. China is driving the regional trend, though India, Pakistan, Turkey and Viet Nam have also increased hydropower production.

Variable renewable energy, in the form of solar photovoltaics and wind, is becoming mainstream in the power sector. In some locations, technology costs have fallen below the costs of new fossil fuel supply while technological advances, including battery storage, have supported wider integration. In 2017, variable renewable energy amounted to 4.9% of the region’s total electricity output. This level has more than quadrupled from 2010 when the share was 1.1%. According to data from the International Energy Agency, Australia achieved the region’s highest share of combined solar and wind energy in its national power mix at 8% in 2017, followed by Japan and Turkey at 7.7% and 7.3%, respectively. China has shown a dramatic increase of the share of solar and wind in total electricity output, growing from 1% in 2010 to more than 7% in 2018.

The Asia-Pacific region is at the global centre of renewable energy development and deployment, with a number of countries demonstrating leadership in investment, net capacity additions and production. The largest capacity additions in 2018 occurred in China, which added 45 GW of new renewable capacity, while India, Japan and the Republic of Korea added 10.8 GW, 6.5 GW and 2.0 GW, respectively. China led wind power installations, with 21.1 GW of new capacity, while India added 2.2 GW. Global hydropower commissions were dominated by China,
with 7.0 GW of new capacity in 2018, while Pakistan increased its total capacity by approximately one-third, with nearly 2.5 GW of new additions. Turkey and Indonesia led new geothermal capacity, adding 219 MW and 140 MW of new capacity, respectively. In 2018, solar photovoltaics dominated renewable energy capacity additions across the region.

In absolute terms, China leads both the region and the world in renewable energy investment and deployment. It produces more renewable electricity than the rest of the region combined and more than Europe, North America or Latin American and the Caribbean. China’s total installed renewable energy capacity approached 728 GW by the end of 2018.

However, in 2018 investment in clean energy was down among the region’s top investor countries. China led investment worldwide for the seventh successive year although it was down 37% from 2017’s record level, largely in response to a mid-year change in the government’s feed-in tariff policy for new solar power projects. Investment levels in Japan and India decreased by 16% and 21%, respectively. China was still the top regional and global investor at about US$ 100 billion, followed by Japan at about US$ 27 billion and India at about US$ 11 billion. India was the fastest-growing investor in the power sector, with investments in renewable sources outpacing fossil fuel investment for the third year in a row. Spending on new solar capacity in India exceeded expenditure on coal-fired generation for the first time in 2018.

Renewable energy targets have been established by nearly all Asia-Pacific countries, as well as at the regional and subnational levels. Some of the most ambitious targets are found among the Pacific Island States, several of which are targeting 100% renewable electricity generation. In South-East Asia, the members of the Association of Southeast Asian Nations (ASEAN) have set the aspirational target at the subregional level of increasing the share of renewable energy in the energy mix to 23% by 2025, under the ASEAN Plan of Action for Energy Cooperation 2016–2025.

Energy Efficiency

The Asia-Pacific region has demonstrated a long-term decline in the level of energy intensity of primary energy supply. The energy intensity level of primary energy dropped from 7.4 MJ/US$2011 PPP GDP in 2000 to 5.2 MJ in 2017 and is now approaching the global average of 4.9 MJ. The pace of energy intensity reduction has picked up in the recent period, with an annual reduction rate of 2.6% from 2010 to 2017 which is in line with the global annual reduction required until 2030 (Figure 3).

In 2010, Asia and the Pacific had the highest regional energy intensity in the world. By 2017, the region had dropped to just below the level of North America to become the third most energy intense region in the world. While the region’s GDP continues to grow, the primary energy supply has shown signs of levelling off in the recent period.

Energy consumption in Asia and the Pacific has increased rapidly since the early 2000s, in line with the region’s economic development. Energy use in the industrial sector has grown, particularly in China, driving the sector’s regional share of energy consumption above 40% in 2011. The subsequent fall in the sector’s share can largely be attributed to energy ef-
Efficiency measures implemented in China. Meanwhile, energy consumption in the region’s residential sector remained relatively flat in the most recent period, whereas energy demand growth in transport is evident.

Electric and hydrogen vehicles have the potential to reduce energy consumption, local pollution and life cycle emissions for transport. In 2018, 1.1 million electric vehicles were sold in China, together with 26 million two- and three-wheelers. In Japan, there is a focus on expanding the production and use of hydrogen fuel cell vehicle technology.

Energy intensity declined in 36 countries, yielding negative compound annual growth rates for the period 2010–2017. However, during that same period, 13 countries had rising levels of intensity.

Regional cooperation plays an important role in improving energy efficiency in Asia and the Pacific. For example, in 2016, ASEAN members agreed to reduce their energy intensity by 20% in 2020 and by 30% in 2025, relative to 2005 levels. The subregion is set to exceed these targets. Backing this is the ASEAN Economic Community 2025 Consolidated Strategic Action Plan, a common framework for addressing matters such as regional and national policies and road maps for minimum energy performance standards, regional energy labels and standards, shared green building codes and data. These plans are supported by the ASEAN Energy Efficiency and Conservation Subsector Network.

**Challenging coal dominance in the power sector in Asia-Pacific**

The availability of modern and affordable energy has transformed the Asia-Pacific region, helping countries to develop their economies, and lifting millions out of poverty. However, the reliance on polluting and carbon intensive sources of energy such as coal has come at a great cost. The Asia-Pacific region accounts for almost 60% of global total CO2 emissions, nearly two-thirds of which are from energy sector, which is heavily reliant on fossil fuels. The Asia-Pacific region made up 80% of the world’s coal consumption in 2018, with demand mainly concentrated in China (50%), followed by India (12%), Japan (3%), and South Korea (2.5%). South-East Asian countries jointly account for 4% of world’s coal consumption. Almost two-thirds of the region’s energy sector emissions come from coal-fired electricity generation.

The extent to which the region has ramped up the use of coal to meet its power needs is reflected by the average age of its coal-fired power stations, which is only 12 years. Given the typical economic lifetime of around 40 years, this infrastructure will lock high emissions into an energy system that needs urgent decarbonisation.

The UN Secretary-General António Guterres has recently declared that countries need to end their reliance on coal. He has called for taxes on carbon emissions, an end to the trillions of dollars worth of estimated subsidies for fossil fuels, and a stop to construction of coal-fired power stations by 2020, if we are to stand a chance of ending the climate crisis. Despite the United Nations calling urgently for an end to coal-fired generation, hundreds of new coal-fired power plants in the Asia-Pacific are still being built, and hundreds more are in the pipeline. China and India have the largest number of coal-fired power plants in the planning pipeline followed by the South-East Asian subregion. Among these countries, Indonesia, Viet Nam and the Philippines have the largest coal plant pipeline, with Malaysia and Thailand not far behind. The wealthier Asian countries are also bankrolling coal beyond their borders. Government-owned financial agencies in China, Japan, and South Korea are now the largest sources of funding for coal plants in other countries.

Nevertheless, the region is slowly moving in the right direction, and the number of coal-fired power plants currently being planned is falling. New permits for coal-fired power plants have dropped to record lows, and over a thousand have been cancelled, a reflection of a tougher economic climate for coal plant developers, and the growing consensus for the need to limit global warming, and to protect human health.

**COVID-19 Crisis: challenges and opportunities for achieving SDG 7**

The policy focus of many governments around the world has been diverted away from clean energy in response to COVID-19 crisis. Clean energy legislation, renewable energy reverse auctions and policy developments for clean energy have been sidelined in many countries due to the current crisis.
Demand for energy is down, boosting the renewable energy share in many countries. But a rebound eventually will happen and this temporary phenomenon will likely revert to the status quo.

Many large-scale renewable energy projects are being stalled by supply chain disruptions for components such as solar photovoltaic modules and wind turbines. While China is getting back to pre-crisis production, manufacturers in other parts of the world are now affected by lockdowns. This is expected to result in a reduction of installed capacity in renewables in many countries for 2020 compared to the previous year.

Low oil and gas prices may persist in the medium term, even as the pandemic recedes. The extent to which depressed prices will see oil and gas compete with renewable energy and remove incentives to pursue energy efficiency measures is less clear. Oil is not a significant part of power generation portfolios - it dropped from 8.3% in 2000 to 1.8% in 2017. The low prices are unlikely to impact long-term investments in utility scale generation but in the off-grid market could swing the balance away from solar to diesel-powered generation.

Renewable energy penetrations are becoming higher as electricity demand is reduced, while renewable energy output continues unabated. This is offering a glimpse of how power grids can manage higher renewable energy percentages in the future. This also provides a stress test of systems in real time to help grid managers prepare for integrating higher levels of renewable energy in the future.

While detailed scientific data on COVID-19 is only now emerging, it appears that exposure to poor air quality is a major risk factor for mortality from the virus. In this context, provision of clean cooking for rural populations takes on an extra importance to shield these populations from the worst effects of the virus.

When a vaccine is developed, energy, particularly for cooling, will be critical for the effective distribution of the vaccine to billions of people. WHO’s requirement for vaccines is for storage at a temperature between 2 and 8 degrees Celsius. Up to 80% of a vaccine’s delivered cost is related to keeping it cold. Therefore, sustainable energy best practices for vaccine storage and transportation are essential to ensure that COVID-19 and other vaccines do not become prohibitively costly for vulnerable communities.

After the pandemic there may be a return to business as usual. There are positive lessons from COVID-19 that can contribute to SDG 7, such as making more use of technologies for remote working and learning to reduce congestion, energy demand and air pollution. These need to be considered by policymakers in managing the transition back after the COVID-19 crisis. Government stimulus packages should aim to accelerate decarbonisation and greening of the economy, including the use of renewable energy, energy storage and electric vehicles.

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**PRIORITY AREAS FOR ACCELERATED ACTION: POLICY IMPLICATIONS AND RECOMMENDATIONS**

Achieving universal access to electricity in the Asia-Pacific region will require governments to maintain their commitments to sustain the current increase rates.

The disparity between access to electricity in urban versus rural areas remains, but the gap is being closed with advances in off-grid and mini-grid technologies. A continued focus on access for rural populations is needed, with emphasis on providing off-grid areas with energy services that go beyond subsistence levels of energy consumption and strive towards greater quality and quantity of supply to support modern lifestyles and productive activities.

Off-grid renewable energy technologies represent a viable electrification solution, although in some cases insufficient or inappropriate regulation of the off-grid energy sector creates challenges. Within a single country, various technological solutions, ownership
frameworks and business models may create barriers to assuring that modern energy services are reliable. Efforts are needed to develop dedicated policies and regulations designed for various off-grid solutions. Financing gaps should be addressed to encourage more private sector participation. Global and regional financial institutions can play a significant role in developing public and private financial and insurance mechanisms and complementing national efforts.

Tracking electrification progress has a number of data-related challenges. No single internationally accepted and internationally adopted definition of modern energy access exists. What constitutes ‘access to electricity’ in one jurisdiction may not be accepted in another. In addition, the current indicator used for tracking electrification is binary: a household either has or does not have electricity. That measure does not account for other aspects of energy access, such as quantity, reliability or affordability, which are important in helping to understand electricity’s usability and potential with regard to socioeconomic impact. Furthermore, the quantity and quality of data in many national contexts are insufficient, for off-grid areas in particular, due to such issues as methodological inconsistencies and irregular or infrequent data collection.

Clean cooking targets must be integrated into national energy plans. In general, investments in the area of clean cooking are minuscule in comparison to what is needed to achieve universal access to clean cooking. Additional resources are 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 also help to raise awareness about the negative impact of traditional cooking technologies and fuels on human health.

Affordability remains a barrier. Clean cooking solutions are often more expensive than conventional options. Even if the costs over time may be lower, lump-sum payment requirements for options such as liquefied petroleum gas can present a hurdle for consumers with variable cash flows. Efforts to lower the cost of clean cooking solutions through subsidies have encountered challenges in a number of cases. Subsidised products do not always reach the intended beneficiaries, and in some examples, subsidies have provided greater advantages to the wealthy than to the poor. Smart policy solutions are needed to lower the economic threshold for new clean cooking consumers, while also limiting government spending on subsidies.

Liquefied petroleum gas is emerging as the preferred clean cooking option, due to its proven utility, portability and health advantages. Electric cooking options also eliminate smoke, but may be expensive, and have high power demand; they are also often used as a supplement to other cooking methods in ‘fuel stacking’ (for example, an electric rice cooker may be used in combination with fuelwood to cook main dishes). Improved cookstoves remain an important option in many contexts, though their performance and health benefits can be difficult to verify and certify. The adoption of modern technologies supports more efficient clean cooking markets. For example, in a number of locations across the region, liquefied petroleum gas can be ordered for home delivery by using a mobile application or a text message.

Data for tracking progress in clean cooking are primarily sourced from household surveys that are not completed at regular or frequent intervals. Better data collection is needed to identify high impact measures and market opportunities while also supporting the tracking of progress towards universal access.

Renewable energy development represents only approximately one-fifth of the region’s energy consumption and it has been highly concentrated in the power sector. More attention is needed to increase the use of renewables in other sectors, in particular transport and heating. In the Asia-Pacific region, 70% of renewable energy is consumed for the purpose of heating, the bulk of which is done with traditional biomass. Efforts should also be made to support the shift from traditional biomass to more advanced and efficient renewable energy technologies. In addition, while 19% of the energy consumed in the region is used for transport, only 2% of overall renewable energy use is in this sector.

Cross-border power grid connectivity has the poten-
tial to match unevenly distributed renewable energy supplies with demand centres throughout the region, and to create wider balancing areas capable of handling higher shares of variable renewable energy with enhanced stability. A number of regional initiatives include plans for multilateral market integration, though progress has been slow and multilateral trade has yet to be initiated in most areas of the region. Strengthened cooperation is needed to harmonise technical, legal and regulatory frameworks and to reach consensus on how to calculate the sharing of market integration benefits.

While generation technology has become increasingly affordable and accessible, grid capacity is a main limiting factor in some contexts. Investment levels in power infrastructure are insufficient. The Asian Development Bank estimates that the region requires US$ 11.7 trillion in baseline investment in the power sector for the period 2016–2030, or an average of US$ 779 billion per year. Climate-adjusted estimates are higher, totalling US$ 14.7 trillion, or US$ 982 billion per year. The annual gap in investment is estimated to be between US$ 330 billion and US$ 459 billion.

Better data on renewables are needed. Biomass is the most-consumed renewable energy resource in the region, but information on this resource is scarce and of poor quality. In addition, statistics do not distinguish between sustainable and unsustainable biomass production, which creates challenges for measuring progress on SDG 7. Furthermore, data for off-grid energy are limited and not sufficiently captured in energy statistics. Efforts are needed to develop improved standardised methodologies and more complete national data sets.

Energy efficiency targets have been established in many Asia-Pacific countries, which are increasingly adopting action plans and measures to lower rates of energy consumption across the industrial, commercial, building and transport sectors. Targets are highly variable in their structure and ambition but are generally formulated with a view to lowering energy or electricity intensity or reducing overall energy consumption. Factors driving the adoption of these measures include the need to meet domestic demand for adequate and reliable energy supplies, together with support for economic growth and emission reductions. Upgrades to and replacements of, power generation, transmission and distribution infrastructure are improving the energy sector’s performance, which is important in the face of growing demand for electricity. Efforts such as the conversion of single-cycle power plants to combined-cycle generation, and the upgrade of power grids to reduce losses, which is a priority for many countries, have the potential to increase the power supply and reduce the need for additional generation capacity. Greater support is needed to comprehensively assess existing energy systems with a view to identifying the best options for long-term improvements in energy efficiency.

The adoption of common energy efficiency standards and labelling systems supports the reduction of energy consumption, while also building regional and global energy efficiency markets. National and sub-national emissions trading schemes can play a significant role in encouraging energy efficiency.

To advance energy efficiency, more ambitious and specific targets and plans are required at the economy-wide and sectoral levels. Roadmaps are needed to phase out inefficient technologies and adopt emerging technologies, including smart grids, advanced building systems, efficient transport and the latest industrial and appliance technologies.

Financing for energy efficiency is a significant barrier for many countries. Increased knowledge-sharing and cooperation are needed to address a lack of funds and expertise for developing financing mechanisms.

Despite the evident progress in reducing energy intensity, many factors aside from efficiency measures have led to this outcome, and progress is needed to improve policy structures. In some cases, economy-wide targets do not exist or are set out within broad policy documents without supportive actions backing them. Policy frameworks for energy efficiency are weak in the Asia-Pacific region compared to those for energy access and renewable energy. As countries move towards defining targets in regulatory documents, with explicit measures and instruments to meet them, energy intensity reduction can be expected to accelerate across the region.

Governments in Asia will need to reverse their current trend of expanding coal-fired generation capacity and
instead urgently implement policies to enable a quick decarbonisation of the electricity mix. Strengthening governments’ commitments to climate policy with Nationally Determined Contributions that include a clear commitment to phasing out coal, removing subsidies for fossil fuels, and building support for renewables and energy efficiency will offer new opportunities for both developed and developing countries in the region to build a low-carbon economy, with significant benefits for sustainable development.

REFERENCES


ESCAP, Asia-Pacific Energy Portal, asiapacificenergy.org


