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AFFORDABLE AND CLEAN ENERGY

Ensure access to affordable, reliable, sustainable and modern energy for all

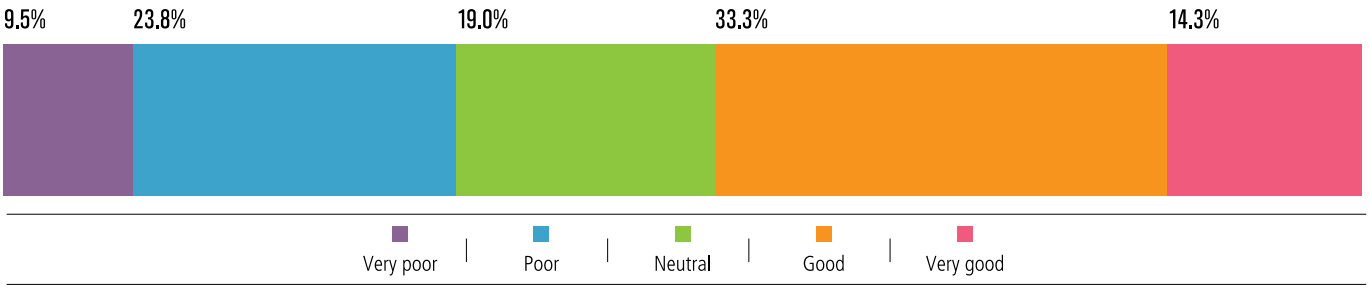
I. SUMMARY

Asia-Pacific countries are progressing across the three main pillars of sustainable energy – access, efficiency, and deployment of renewable energy. Bringing electricity to growing populations of Asia-Pacific is among governments' priorities and most countries have established clear policy targets that are increasingly backed by supportive programmes and economic measures. However, many challenges remain, especially with regards to bridging the gap between urban and rural areas. Other challenges include low quantity, quality, and reliability of the power supply, implementation of and compliance with regulations, as well as affordability of energy. Further, almost half of the population is lacking access to clean fuels and technologies for cooking. The region has demonstrated notable progress in improving its energy efficiency indicators, however large and sustained improvements, in both supply- and demand-side energy efficiency are still needed to meet the Sustainable Development Goal (SDG) 7 energy intensity targets. More attention is needed for final energy consumption across end-use sectors to be covered by standards supporting the uptake of latest technologies, with improved enforcement. Asia-Pacific has emerged as the global leader in renewable energy investments, installed capacity, and consumption. Modern renewables are rapidly gaining traction and promising upward trends in production are being observed, underpinned by with large increases in hydropower production. Wind and solar power production are also increasing at exponential rates, though have yet to compete with more conventional energy sources. As a result of rapid demand growth, the share of renewable energy in the energy mix is declining rather than increasing in the region.

UNITED NATIONS ASIA-PACIFIC REGIONAL COORDINATION MECHANISM
UNITED NATIONS ESCAP Economic and Social Commission for Asia and the Pacific
ADB
UNDP
UN environment
SUSTAINABLE DEVELOPMENT GOALS

II. CURRENT STATUS

Perception on progress made on **SDG7**, based on a multi-stakeholder ESCAP survey



- In 2014, the average total electrification rate reached 92 per cent in the region, up from 75 per cent in 1990. Since 2000, the proportion of the region's population with primary reliance on clean fuels and technology for cooking has remained steady, at a 0.8 per cent annual growth rate.[1] However, in 2014, the regional rate of primary use of clean cooking fuels and technology was just 51.2 percent, with only a few countries demonstrating significant efforts or improvement.[2]

- Notwithstanding the growth of renewable energy utilization in the region in absolute terms, its share in the total final energy supply is in a steady downward trajectory, with a decrease from 23 per cent in 1990 to 18,3 per cent in 2014 of the region's total final energy consumption.[3] Fossil fuel-based economies in Asia have a relatively low rate of renewable energy uptake, and have tended to further decrease the renewable energy share in the energy mix due to rapid growth in energy consumption. Even though renewable energy installation is making significant gains in power production, data on renewable energy may be slightly distorted by limited data on off-grid renewable energy as well as the fact that reductions in using fuel wood for cooking (aimed for by SDG 7.1) will have a negative effect on the share of renewable energy in the final energy use.

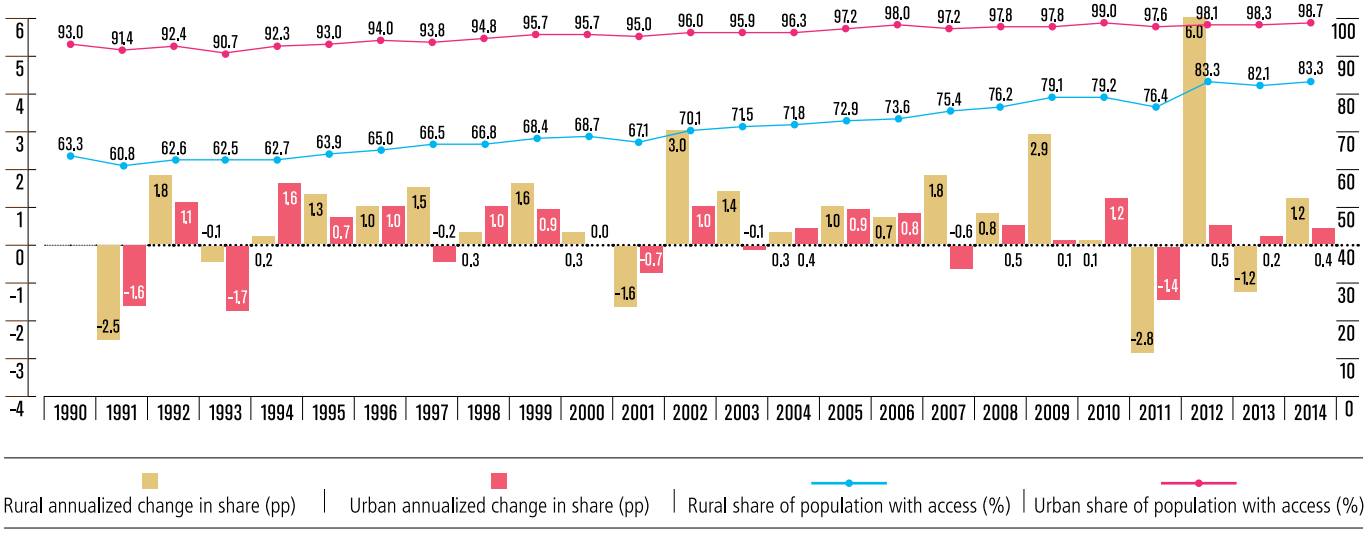
- The region has demonstrated a long-term, steady decline in energy intensity, resulting in a decoupling of energy use from gross domestic product.[4] This could however be the result from structural changes of economies, e.g. moving from industry to more service oriented economies, as it should be noted that primary energy intensity is only an imperfect proxy to measure energy efficiency. Region-wide, rapidly growing energy consumption is observed in residential areas and in the transport sector, as income levels rise and people adopt more energy-intensive lifestyles. On the other hand, supply-side energy efficiency is showing improvement through the use of advanced power plant technology, as well as transmission and distribution upgrades. However, losses as a percent of output remain high in many countries. The lack of incentives to invest in energy efficient measures was highlighted by the respondents of the ESCAP multi-stakeholder survey[5] as a major challenge. The increased use of technologies such as advanced forecasting and demand response, has the potential to further bolster efficiency in power production.

A. AREAS WHERE GOOD PROGRESS IS MADE

Access to energy services (target 7.1)

Universal access to electricity has been achieved in many countries within the region, resulting in significant gains in the average electrification rate regionally, notwithstanding very diverse rate of electrification from country to country. Between 2012 and 2014, an estimated 93.1 million people in Asia and the Pacific gained access to electricity as the population grew by 83.8 million.[6] 31 out of 53 ESCAP member States, have reached 100 per cent electrification, while some other States need time to finalize the electrification process under self-sustainment.

Figure 1: Access to electricity in Asia and the Pacific increased over the past 25 years, with the gap between urban and rural access gradually narrowing[7]



Note: pp, percentage point.

Renewable energy (target 7.2)

In the last decade, the Asia-Pacific region has emerged as the global leader in renewable energy with more investment, installed capacity, and consumption than any other region of the world. Renewable energy has been progressively mainstreamed with growing support from regional policymakers. Most member states have adopted ambitious targets backed up by decreasing technology prices that make renewables an increasingly viable option. In 2014, modern renewables, which exclude traditional biomass, composed 6.8 percent of total final energy consumption, compared to 6.2 percent in 2012. Once dominated entirely by hydropower, renewables are experiencing growth accompanied by increased diversification as wind, solar, biomass, and, to a lesser extent, geothermal power gain shares. Regional investments in renewable energy (excluding hydropower over 50 MW) rose from $115.2 billion in 2013, reached an all-time high of $171.1 billion in 2015 and installed capacity continued its upward trend.[8] Market liberalization and growing maturity and acceptance of renewable energy and energy efficiency technologies have led to the expansion of investment sources. Green bonds have emerged as a new asset class in Asia-Pacific. Foreign direct investment (FDI) flows to the energy sector are on the rise for both conventional and renewable energy, with interest moving towards advanced industries.

Energy efficiency (target 7.3)

The region's energy intensity decreased by an average of 3.1 per cent per year between 2000 and 2014, compared with 1.3 per cent per year globally. During the years 2012-2014, the region demonstrated accelerated progress in terms of energy efficiency. It has achieved a short-term annual average energy intensity drop that outpaced other global regions. However, Asia and the Pacific continues to rank the highest of regions in terms of energy intensity, with sharp increases in energy consumption from residential areas and the transport sector, as people adopt more energy-intensive lifestyles.

Improved regulatory frameworks

Nearly all ESCAP member States have adopted and implemented policy incentives that will support attainment of the SDG 7 targets, such as those regarding energy access, energy efficiency and renewable energy. Most top performing countries with regards to SDG 7 have introduced specific measures and programmes that facilitate further improvements in national energy systems while intensifying actions towards achievement of the targets. Favorable economic measures that have been adopted include the creation of lower-risk investment environments and an increase in the availability of financing for energy. Incentives for clean energy project developers and consumers include capital grants, tax reductions, rebates, risk guarantees, and low-interest loans. Fuel and carbon taxes are also being used to increase

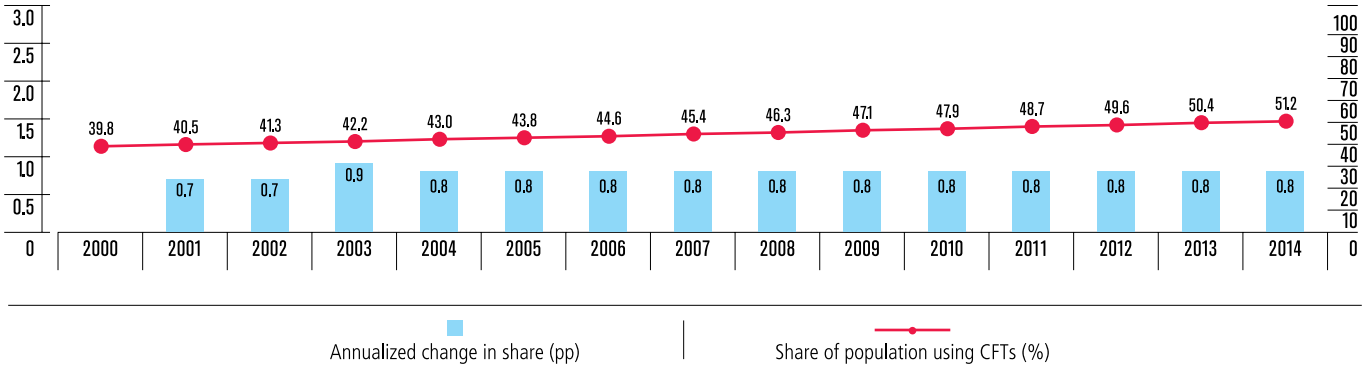
the market competitiveness of renewable energies. However, many member states still face barriers to development of renewable energies related with restrictive permit procedures, monopolistic utility positions and restrictions in energy prices.

B. AREAS REQUIRING SPECIFIC ATTENTION AND ASSOCIATED KEY CHALLENGES

Access to energy services (target 7.1)

According to the latest data, more than 421 million people, or 9.7 per cent of the population of Asia and the Pacific, remained without access to electricity in 2014, and 389 million of those are located in rural areas.[9] The greatest electrification challenges are faced by countries with lower income levels and large or highly-dispersed rural populations. Challenges remain in mobilizing funds and technical capacity for the long-term management and maintenance costs of distributed systems. End-user affordability remains a barrier to the realization of positive socioeconomic development outcomes. Obtaining reliable data on energy access that would capture such aspects as quantity, reliability and affordability also remains a challenge. Progress on the second aspect of energy access, clean cooking, is made at a much slower pace. Almost 2.1 billion people – nearly half of the Asia-Pacific population – continue to rely on traditional cooking fuels and technologies, which have harmful health effects[10], particularly for women and children.[11]

Figure 2: Clean cooking access is advancing slowly in the Asia-Pacific region[12]



Note: pp, percentage point

Greening the energy mix (target 7.2)

Even though the amount of renewable energy in Asia and the Pacific has increased in absolute terms and costs have fallen, the relative share of renewable energy in the region has decreased from 23 to 18.3 per cent[13], as a result of the high demand for energy in the region as a whole, which has often been met with domestic fossil fuel resources. According to the results of the ESCAP multi-stakeholder survey on SDG 7[14] implementation progress, the lack of enabling policies for deployment of renewables, high cost of power generation and lack of sufficient financing of the renewables sector are among the factors that hinder the progress in greening the energy mix. Financial challenges result from a range of technical, regulatory, financial and informational barriers and their associated investment risks. Appropriate policy measures to reduce investment and transferring risks can provide solutions to these challenges.

Improved energy connectivity (target 7.a)

Energy connectivity in Asia and the Pacific requires more work and effort from the member States. Except for a few regional cross-border energy infrastructure initiatives, progress in the region has been moderate. Cross-border energy infrastructure investments remain low, despite the growing demand for energy and existing opportunities for sustainable development waiting to be seized from the regional energy trade. A lack of political trust and energy security issues are among the obstacles for policy makers to reach consensus on multilateral energy projects. Moreover, financial challenges such as lack of investment for

cross-border electricity projects, different technical standards for transmission grids and difference in legal and regulatory frameworks of member states, as well as lack of intergovernmental mechanism are hindrances to moving the connectivity agenda forward.

III. PROMISING INNOVATIONS AND BEST PRACTICES

Cost-competitiveness of renewable energy

Supported by the increasing cost-competitiveness of renewable technologies, progress is observed in the power sector[15]. Natural gas, electricity and renewable energy trade prospects are increasing with plans for new pipelines, terminals and transmission lines. Energy trade is dominated by bilateral trade agreements, however new and existing multilateral initiatives (including China's ambitious Belt and Road Initiative) supporting diversified energy trade and integrated energy markets are gaining momentum across the region.

Incentivizing clean energy

Market liberalization and growing maturity and acceptance of renewable energy and energy efficiency technologies have led to the expansion of investment sources. A number of member States have made strong efforts to incentivize clean energy and have committed to phasing out fossil fuel subsidies, yet more efforts are needed.

Centralizing and disseminating energy-related data and policy information

A number of regional efforts have been made to centralize and disseminate energy-related data and policy information, including the ASEAN Centre for Energy, the SAARC Energy Centre, the Pacific Regional Data Repository, the APEC Energy Database, the APEC Energy Standards Information System, as well as the ESCAP Asia Pacific Energy Portal.

IV. PRIORITIES FOR ACTION

- **Reaching universal access to energy:** While overall, the region is on track to reach near universal access to energy, there are several countries with continuously low access rates. These countries require particular attention and additional efforts from the side of their respective Governments, as well as from international development partners. Issues of quality and reliability of energy access, as well as availability of reliable data for monitoring of this indicator need to be promptly tackled by the policy makers.

- **Clean cooking:** National targets for clean cooking fuels and technologies should be established and clean cooking must be better integrated into energy policy frameworks.

- **Increasing the share of renewables in the energy mix:** Considering the quasi stagnation of the share of renewables in the energy mix of the region, efforts at promoting renewables are especially urgent in Asia and the Pacific. This imperative is catalyzed by rapid demand growth and the detrimental effects the continued use of fossil fuels has on the region's environment, especially regarding air pollution.

- **Energy efficiency:** Energy efficiency measures are urgent in the transport, industry, and building sectors.

- **Enhanced intergovernmental cooperation:** Member states with the support of ESCAP and other relevant regional institutions need to develop an intergovernmental mechanism that would promote cross-border electricity power trade and connectivity as one of the building blocks to attain sustainable development.

- **Adequate economic incentives, technological foresight, and integrated and strategic policy planning:** To facilitate renewable energy and energy efficiency expansion, member States need to address existing policy barriers such as restrictive permit procedures, monopolistic utility positions and restrictions in energy prices. After successful implementation of these measures, the introduction of financial incentives for clean energy projects will bring positive results. While a number of member States have made strong efforts to incentivize clean energy and have committed to phasing out fossil fuel subsidies, more improvements need to be made to reach the respective targets. Despite significant technological innovation in many industries, international energy cooperation efforts to deploy innovative technologies are limited due to lack of a coherent approach among the member states. Progress could be facilitated by maximizing links with implementation of SDG 9 (on industry, innovation and infrastructure) and SDG 13 (on climate finance, capacity building and climate policy implementation). Further, the inextricable linkages between water, food and energy (relating to SDG 6, 2 and 7) require a suitably integrated approach to ensuring water and food security, as well as sustainable agriculture and energy production worldwide.

TARGETS

7.1 By 2030, ensure universal access to affordable, reliable and modern energy services

7.2 By 2030, increase substantially the share of renewable energy in the global energy mix

7.3 By 2030, double the global rate of improvement in energy efficiency

7.a By 2030, enhance international cooperation to facilitate access to clean energy research and technology, including renewable energy, energy efficiency and advanced and cleaner fossil-fuel technology, and promote investment in energy infrastructure and clean energy technology

7.b By 2030, expand infrastructure and upgrade technology for supplying modern and sustainable energy services for all in developing countries, in particular least developed countries, small island developing States and landlocked developing countries, in accordance with their respective programmes of support

END NOTES

1. ESCAP (2017a), *Global Tracking Framework 2017: Asia-Pacific Progress in Sustainable Energy*, available from http://www.unescap.org/sites/default/files/publications/publication_GTF2017_CS5_160118.pdf.

2. Ibid.

3. Bloomberg New Energy Finance data (2018), available from https://about.bnef.com/.

4. International Energy Agency (IEA) data (2018), available from https://www.iea.org/.

5. ESCAP online multi-stakeholder survey (2017).

6. World Bank (2018), *Sustainable Energy for All (SE4ALL) Databank*, available from http://databank.worldbank.org/data/reports.aspx?source=Sustainable-Energy-for-All.

7. World Bank, available from http://www.worldbank.org/.

8. International Renewable Energy Agency (2018), *Resource: Your Source for Renewable Information*, available from http://resourceirena.irena.org/gateway/.

9. World Bank data (2018), available from http://www.worldbank.org/.

10. The World Health Organization (WHO) estimates 92 deaths occur per 100,000 people to household air pollution in developing Asia.

11. WHO data (2018), available from http://www.who.int/en/.

12. WHO, available from http://www.who.int/en/.

13. ESCAP (2017b), *Global Tracking Framework 2017: Asia-Pacific Progress in Sustainable Energy*, available from http://www.unescap.org/sites/default/files/publications/publication_GTF2017_CS5_160118.pdf.

14. ESCAP online multi-stakeholder survey (2017).

15. From ESCAP and based on IEA data.