PROSPECT OF APEC ENERGY GOALS FOR ENERGY INTENSITY AND RENEWABLE ENERGY

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Overview

The 21 economies that comprise the Asia Pacific Economic Cooperation (APEC) forum are home to almost three billion people and account for approximately 60% of global GDP and energy consumption. Notwithstanding vast potential energy resources in the APEC economies, most of the economies are energy importers, thus rendering these economies vulnerable to risks associated with security of energy supply. Bolstering energy efficiency as well as increasing renewable energy deployment are key to safeguard regional or economy's energy security, in addition to mitigating the impacts of climate change as per the 2015 Paris Agreement.

APEC made two major declarations in energy efficiency improvement and renewables deployment in 2011 and 2014 respectively. APEC leaders agreed to set an ambitious goal of reducing the aggregated energy intensity by 45% by 2035 (relative to 2005 levels) during the 2011 Honolulu Declaration (APEC, 2021). In 2014, APEC energy ministers jointly reached the consensus of achieving renewable energy doubling goal in 2030 from 2010 levels (APEC, 2014). Achieving these goals has driven APEC economies to adopt a range of energy efficiency policies and measures in key end-use sectors, as well as policies to accelerate the consumption of renewables in these sectors.

Since 2011, the Asia Pacific Energy Research Centre (APERC) has been tracking and reporting on the progress of both APEC's energy intensity and renewable energy share. In terms of energy intensity, it generally has been trending downwards at an annual rate of 1.9%, thus registering a reduction of 22% in 2018 relative to 2005 levels (EGEDA, 2020). It differs widely across the economies, owing to differences in their energy efficiency and economic structures.

Renewable energy share grew from 6.1% in 2010 to 8.7% in 2018, representing an absolute increase of 42%. This is driven by continuing decline in costs as well as enhancement of policies and measures in renewable energy deployment. Renewable electricity and heat consumption accounted for the largest share of modern renewables, followed by direct use of modern renewables in the industry and transport sectors.

Methods

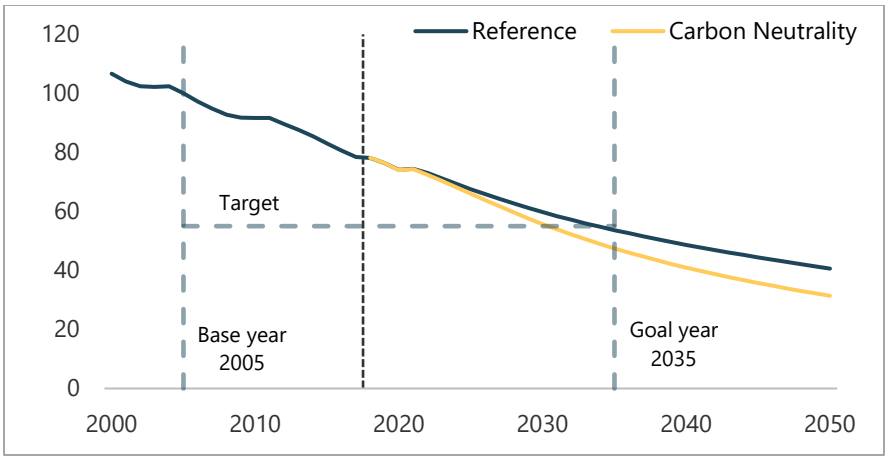
The 8th APEC Energy Demand and Supply Outlook forecasts both the energy intensity and the renewable energy share over the Outlook period (2018 – 2050) under a Reference (REF) and Carbon Neutrality (CN) scenarios using 2018 values as the baseline (APERC, scheduled 2022). The REF scenario entails APEC economies' current policies and measures which, to the certain extent, have been updated to reflect on the recent carbon neutrality/net-zero emissions commitments pledged by some of these economies. On the other hand, the CN scenario is a hypothetical scenario that explores possible pathways towards achieving carbon neutrality through additional and enhanced measures. The energy intensity and share of renewable energy trends in both scenarios are therefore compared against the APEC-wide aspirational targets.

Energy intensity is a proxy measure of the level of efficiency of an economy's energy consumption. Mathematically, it is the ratio of the economy's overall end-use energy consumption in petajoules (PJ) and its GDP at constant 2018 prices (billion USD). Sectoral energy consumption in industry, transport, buildings and agriculture sectors are included, with non-energy consumption excluded. Renewable energy share, on the other hand, does not consider the use of traditional biomass for cooking, heating and drying in end-use sectors. Only modern renewables are considered such as solar, hydro, geothermal, etc.

Results

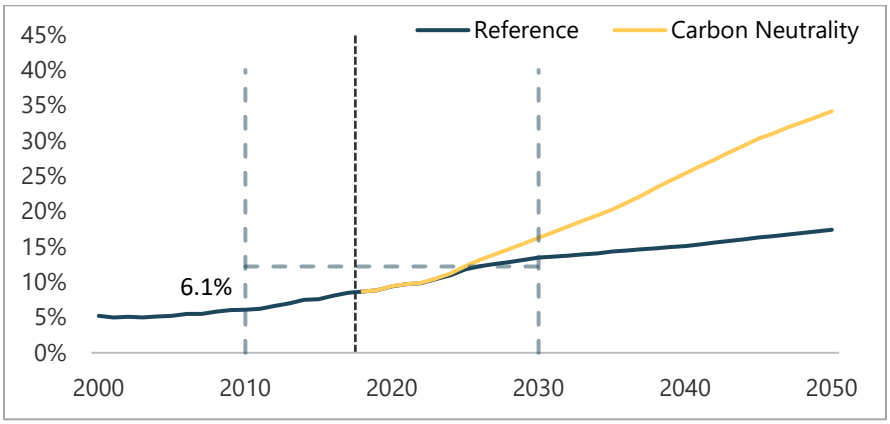
APEC is envisaged to reach its aggregated energy intensity reduction goal in 2034 in REF scenario, while the CN scenario sees its achievement as early as 2031, as shown in figure 1. Energy intensity will continue to improve beyond 2035, projecting to reach a 60% reduction in 2050 relative to 2005 levels in REF. In CN, the level is estimated to be at 70% below 2005 levels in 2050.

Figure 1: APEC Energy Intensity Trend



For modern renewables, as show in figure 2, APEC is expected to meet the aspirational doubling goal by 2026 in REF scenario, four years ahead of the 2030 schedule. The CN scenario sees modern renewables doubling goal achieved in 2025, five years ahead. This implies that APEC economies are well on track to accelerate substantially renewables deployment.

Figure 2: APEC Modern Renewable Energy Share



Conclusions

The 8th APEC Energy Demand and Supply Outlook results highlight that the existing policies and measures adopted by APEC economies are likely to be effective in achieving the energy intensity reduction goal ahead of schedule in the reference scenario. Likewise, in contrast to the previous Outlook versions, APEC economies are likely to achieve their renewables doubling goal in 2030, as economies have now pushed to accelerate the deployment of renewables, particularly solar photovoltaic and wind in the power sector which are expected to post substantial growth over the Outlook period.

References

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