

BUSINESS AS USUAL SCENARIO OF APEC ENERGY DEMAND AND SUPPLY OUTLOOK, 6TH EDITION

Cecilia Tam, Asia Pacific Energy Research Centre (APERC), Phone +81 3 5144 8550,
E-mail: cecilia.tam@aperc.ieej.or.jp

Overview

The Asia Pacific Energy Research Centre (APERC) is compiling APEC Energy Demand and Supply Outlook 6th Edition for energy policy cooperation within the framework of the Asia Pacific Economic Cooperation (APEC) (APERC, 2016, forthcoming). Four scenarios have been developed for the 6th Edition, the Business-As-Usual Scenario and three (3) Alternative Scenarios which include the Improved Efficiency Scenario, the High Renewables Scenario and the Alternative Power Mix Scenario. This paper focuses on the reference Business as Usual (BAU) scenario which represents the outlook for energy demand and supply forecasts based on existing policies and current trends.

APEC member economies together account for more than half of world real GDP¹ and about 60% of the world's energy demand; highlighting the importance of actions in the APEC region in determining the future of the global energy sector. The APEC Energy Demand and Supply Outlook aims to foster understanding among APEC economies of global, regional and domestic energy demand and supply trends, energy infrastructure development, and related policy issues.

Methods

APERC scenarios are developed using 5 models comprised of a macroeconomic model, three econometric demand models and an optimised electricity supply model. The demand models include industry, transport and the residential, commercial and agriculture sectors. Forecasts are made on energy demand and supply to 2040 and developed based on 2012 historical energy data from the International Energy Agency.

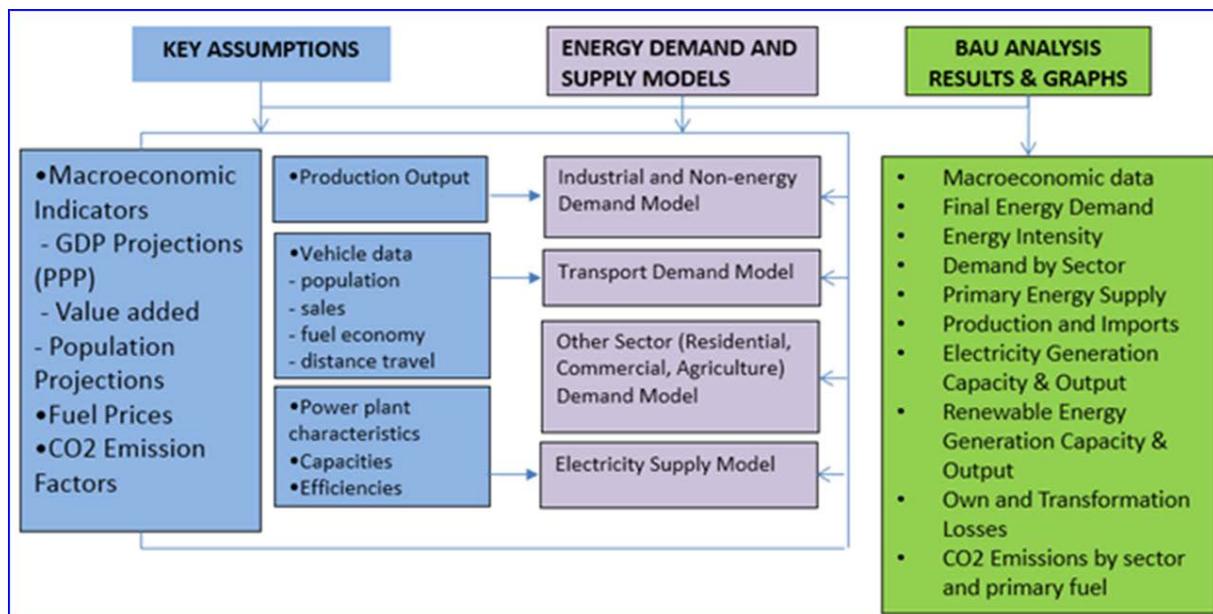


Figure 1: APERC energy demand and supply model structure

Results

Overall energy demand in APEC under the BAU scenario is projected to reach 7 000 Mtoe by 2040, an increase of 33% compared to 2013. Rapid economic development, particularly in China and South East Asia will be the key drivers of energy demand growth in APEC. Efforts to enhance energy efficiency and conservation will help to slow down historical growth rates, but all sectors will still see significant increases from current levels. Industry, including non-energy use, remains the largest demand sector accounting for more than 40% of total energy

¹ In purchasing power parity (PPP) terms.

consumption in 2040, reaching more than 3 000 Mtoe. With rising income levels, APEC is projected to add over 630 million new cars by 2040, leading transport energy demand to rise 35% over the outlook period.

On average, APEC total primary energy supply increases nearly 100 Mtoe per year from 2013 to 2040, well below the 130 Mtoe added annually from 1990 to 2013. Fossil fuels are expected to continue dominating primary energy supply with a projected increase of about 1 820 Mtoe between 2013 and 2040. This constitutes 69% of APEC’s total primary energy supply growth in the future. However, the share of fossil fuels will decline from 86% in 2013 to below 82% in 2040. Coal remains the largest fuel as rapid electricity demand growth particularly in South East Asia and to a lesser degree in China, sees the addition of more than 640 GW of additional coal fired capacity in APEC. The development of unconventional gas in the United States and other parts of APEC will help to reduce some of the growth in coal consumption and together with non-hydro renewables represent the fastest growing fuel sources in APEC.

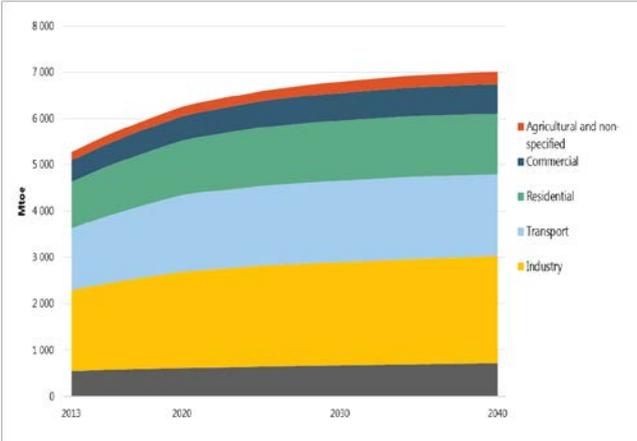


Figure 2: Energy demand by sector in APEC

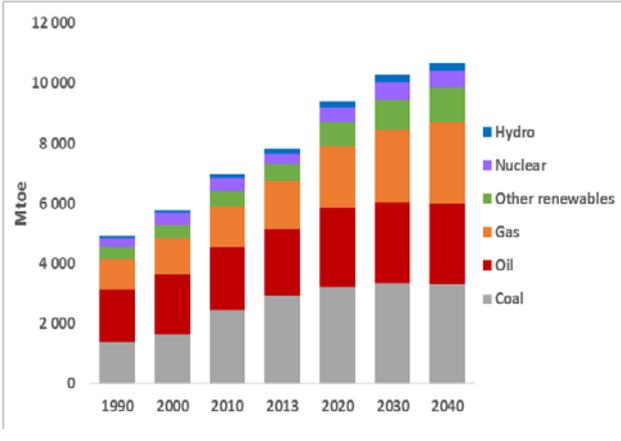


Figure 3: Energy supply trends in APEC

Conclusions

Despite recent improvements in energy efficiency and efforts to decarbonise the energy sector, the outlook for APEC’s energy sector remains unsustainable. In the BAU scenario, APEC’s primary energy supply remains dependent on fossil fuels. Rapid economic development in many APEC economies will lead to every growing energy demand and rising carbon emissions from fuel combustion. To address the region’s energy challenges, APEC will need to develop and deploy a wide range of low carbon and energy efficient technologies and should work together to collectively pursue these common goals. Three alternative scenarios have also been developed as part of the 6th edition of the outlook to support APEC economies as they address these challenges.

References

APERC (Asia Pacific Energy Reserch Centre) (forthcoming, Spring 2016): “APEC Energy Demand and Supply Outlook 6th Edition”

IEA (International Energy Agency) (2015). “World Energy Statistics 2013”