APERC Workshop at EWG 54

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3-1. Progress Report on the APEC Outlook 7th Edition

James Kendell

Vice President, APERC

APERC Asia Pacific Energy Research Centre

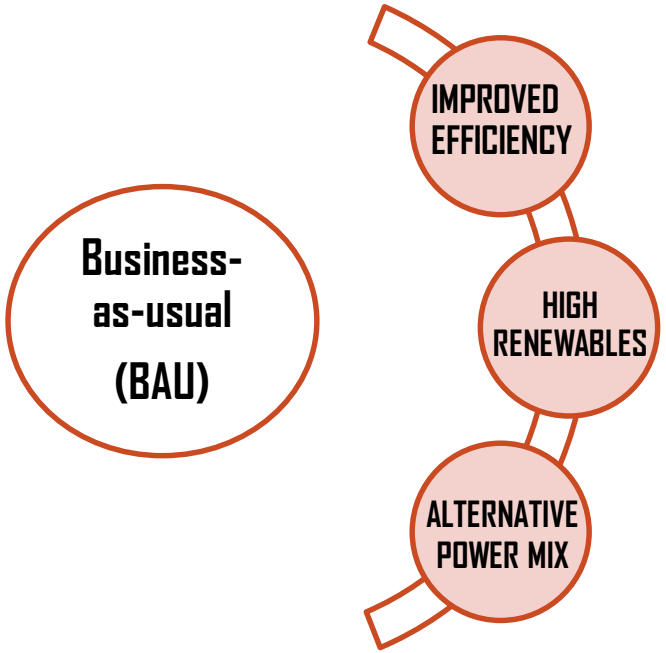
APEC Asia-Pacific Economic Cooperation

Modelling changes for the 7th edition

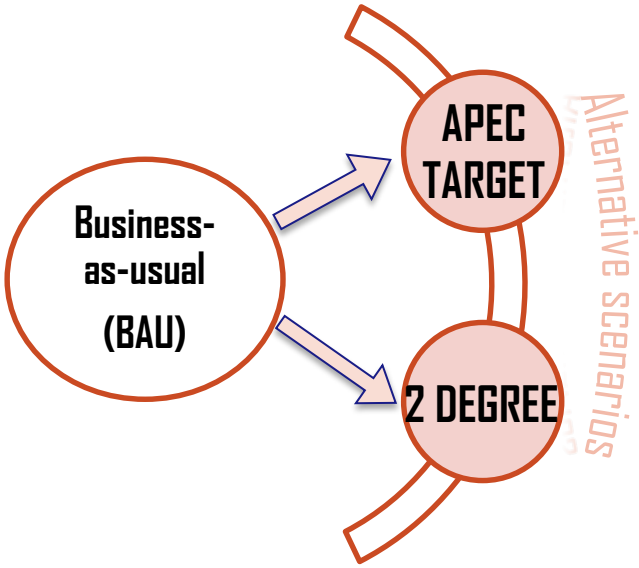
- Extend forecast to 2050
- Use OECD GDP forecasts
- Make buildings model activity driven
- Start to change industrial model from top-down to bottom up
- Add buses and light trucks to the transportation model
- Distribute renewables to demand and electricity models
- Add a supply model
- Add an integrating module

Scenario changes for the 7th edition

Outlook 6th edition scenarios

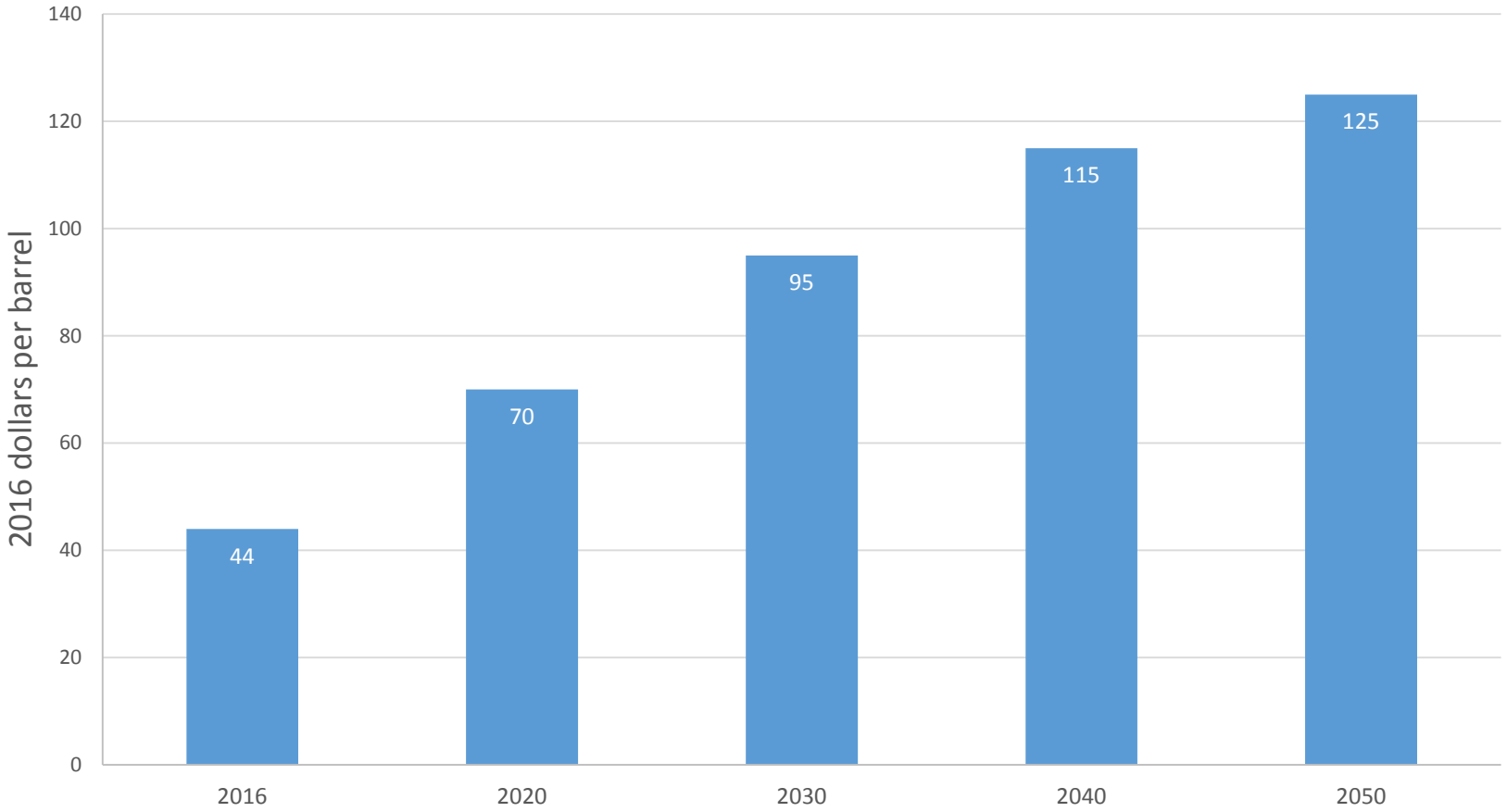


Outlook 7th edition scenarios



World oil prices are assumed to rise in the 7th edition

World oil prices, 2016-2050

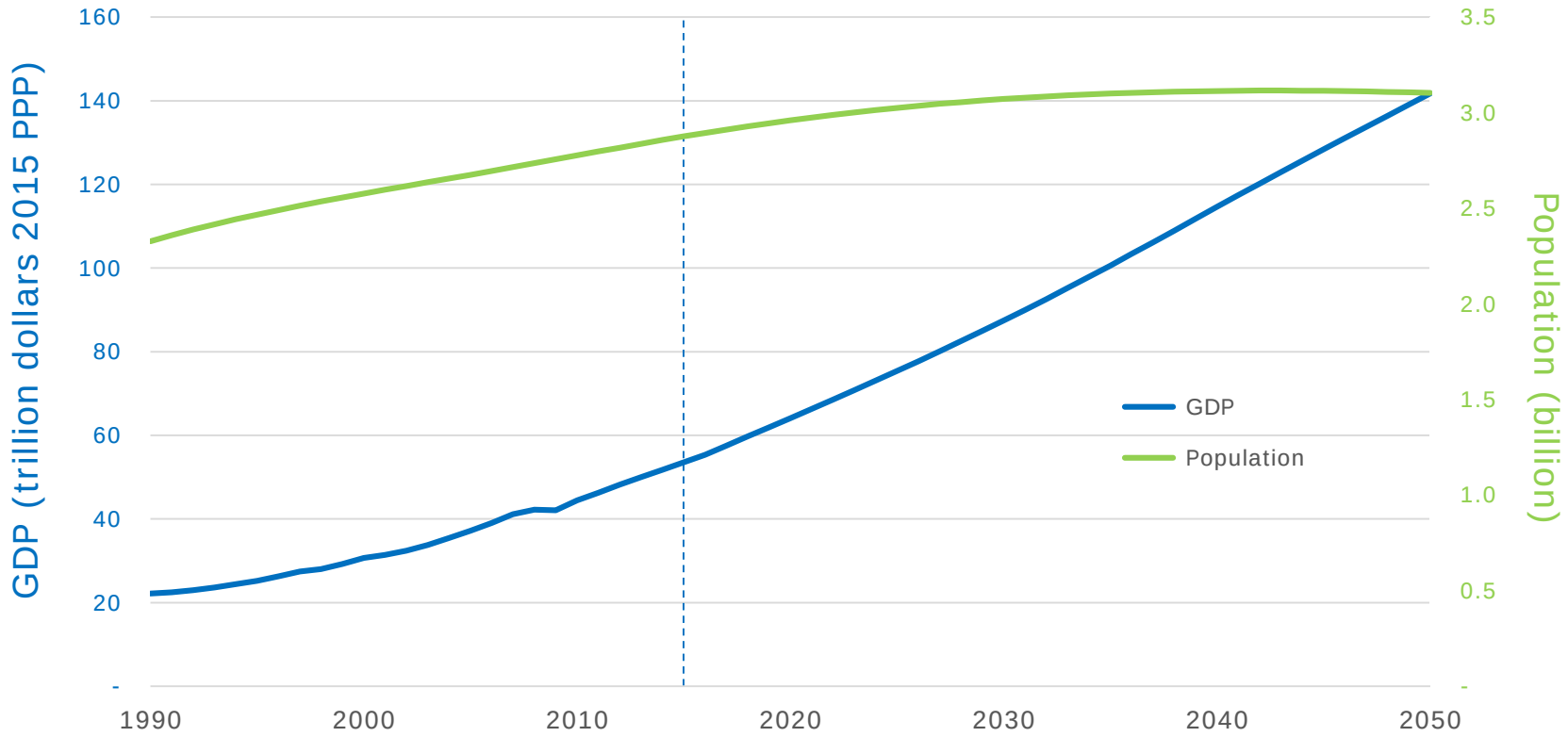


Source: IEEJ (2017).

Oil prices are expected to more than double by 2050.

APEC GDP and population continue to grow

APEC GDP and population, 1990-2050



Sources: UN, World Bank, CEPII and APERC Analysis.

Real GDP in 2050 would be about 2.6 times that of 2015. Population would exceed 3 billion by 2023 and flatten out.

Business as Usual

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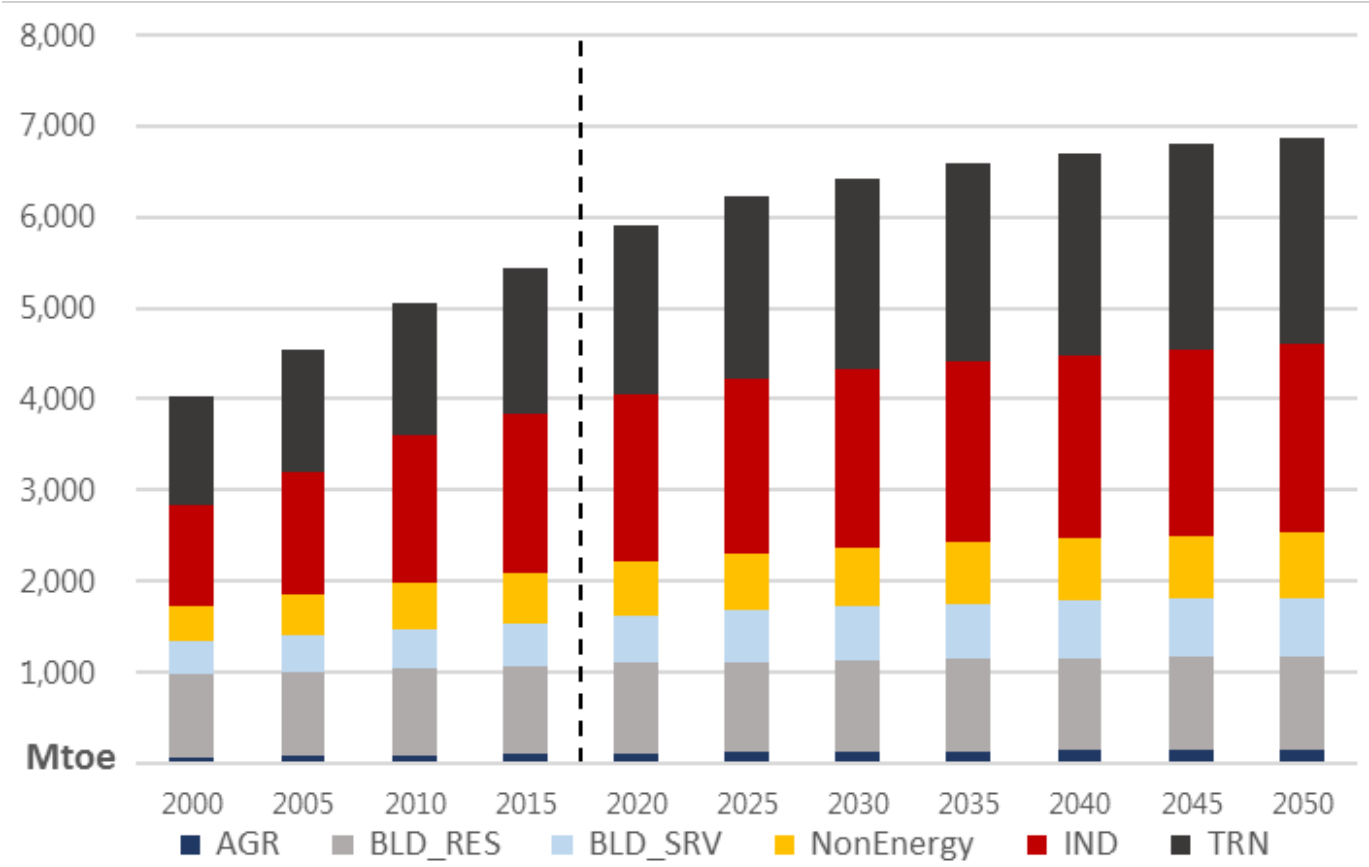
APEC energy demand growth slows to 2050

Final energy demand by consuming sector, 2000-2050

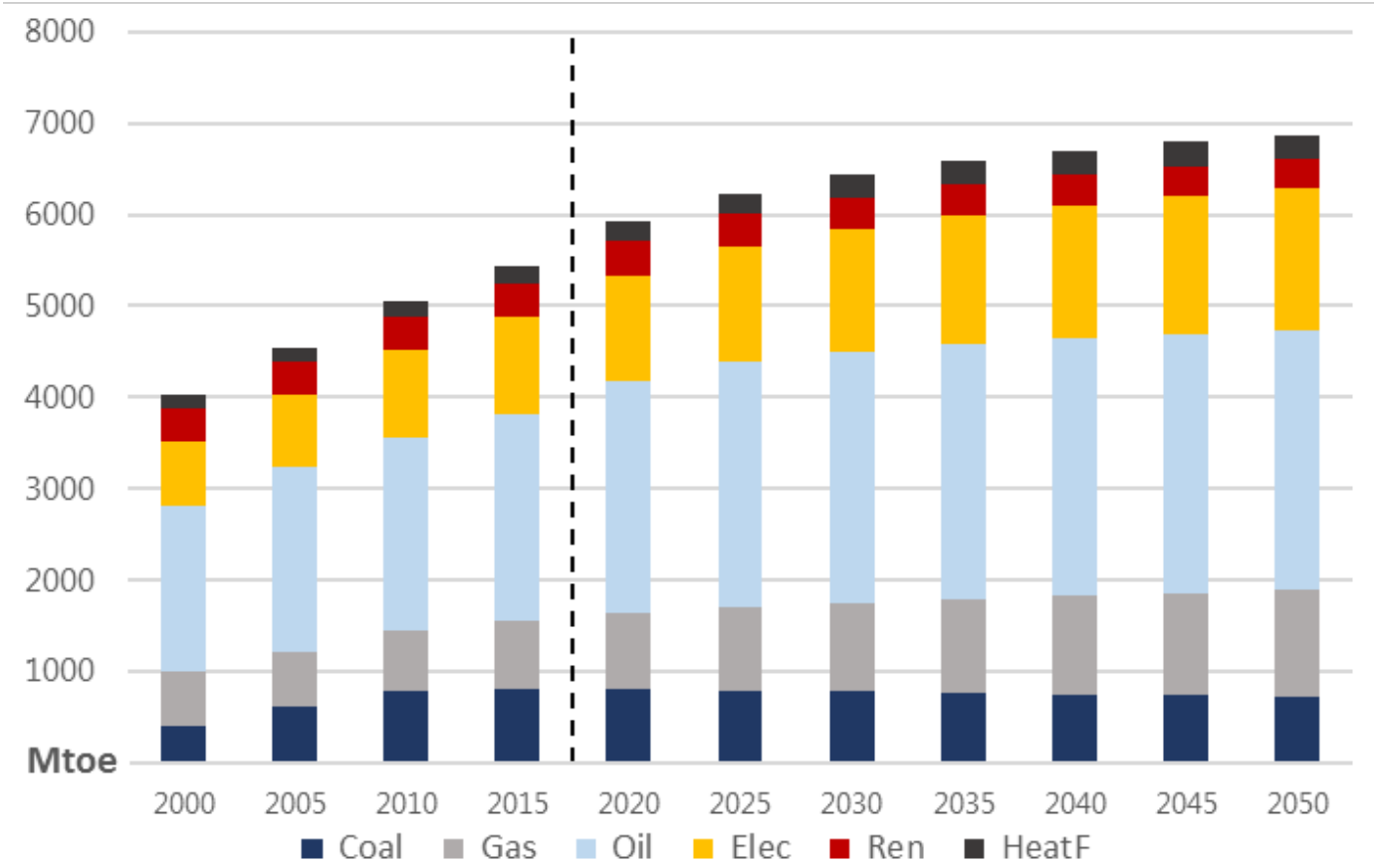


Source: IEA statistics 2015 and APERC analysis.

Final energy demand would rise 26% from 2015 to 2050. Transportation overtakes industry to become the largest consuming sector.

Oil remains the dominant end-use fuel in APEC

Final energy demand by fuel, 2000-2050

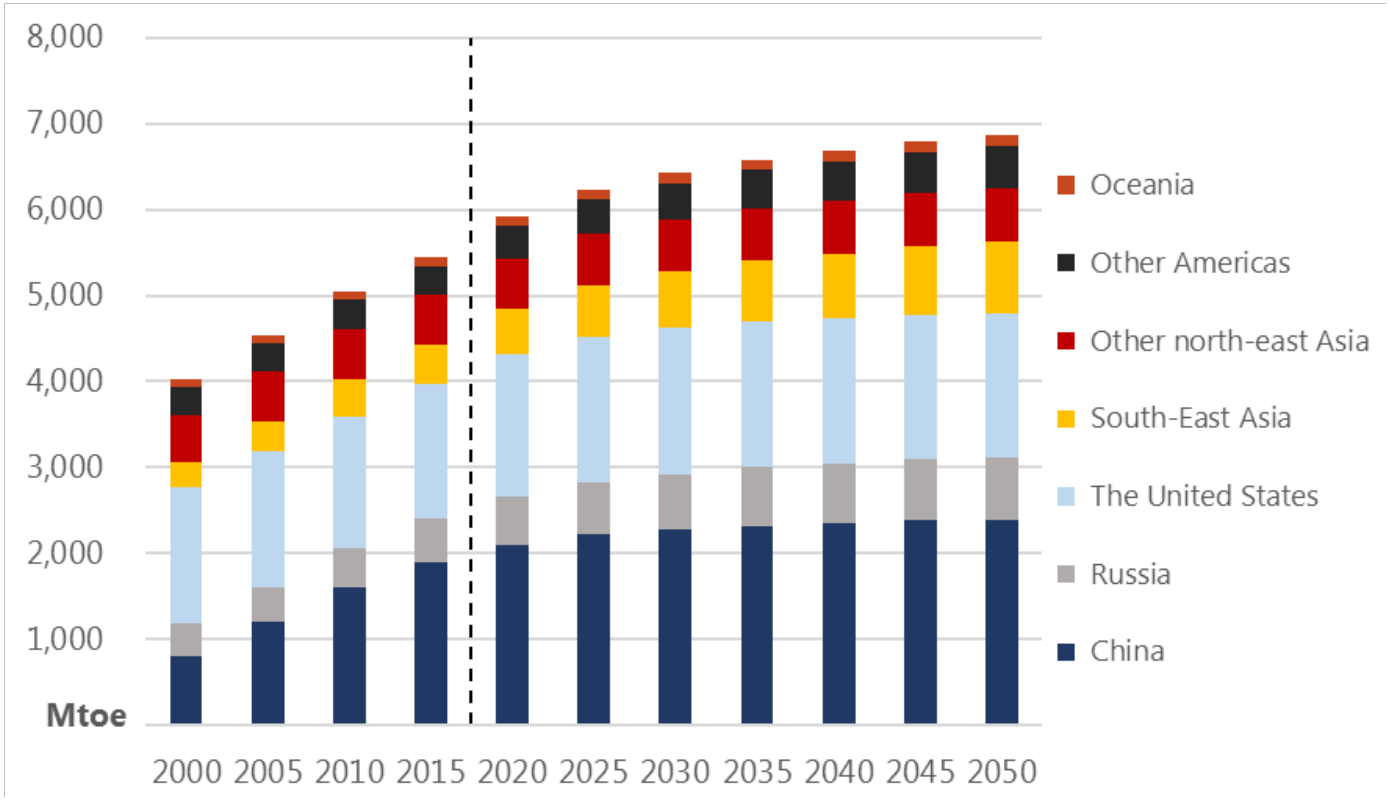


Source: IEA statistics 2015 and APERC analysis.

Demand for electricity, heat and natural gas are all expected to grow faster than oil.

China and the US dominate APEC demand

Final energy demand by region, 2000-2050



Source: IEA statistics 2015 and APERC analysis.

Energy demand for South East Asia is expected to increase 84%. Demand in China, Russia, Oceania and other Americas increases more than 25%.

Note: **Oceania** (Australia, New Zealand and PNG), **Other Americas** (Canada, Chile, Mexico and Peru), **Other Northeast Asia** (Hong Kong, Japan, Korea and Chinese Taipei), **Southeast Asia** (Brunei Darussalam, Indonesia, Malaysia, Philippines, Singapore, Thailand and Viet Nam)

Alternative Scenarios

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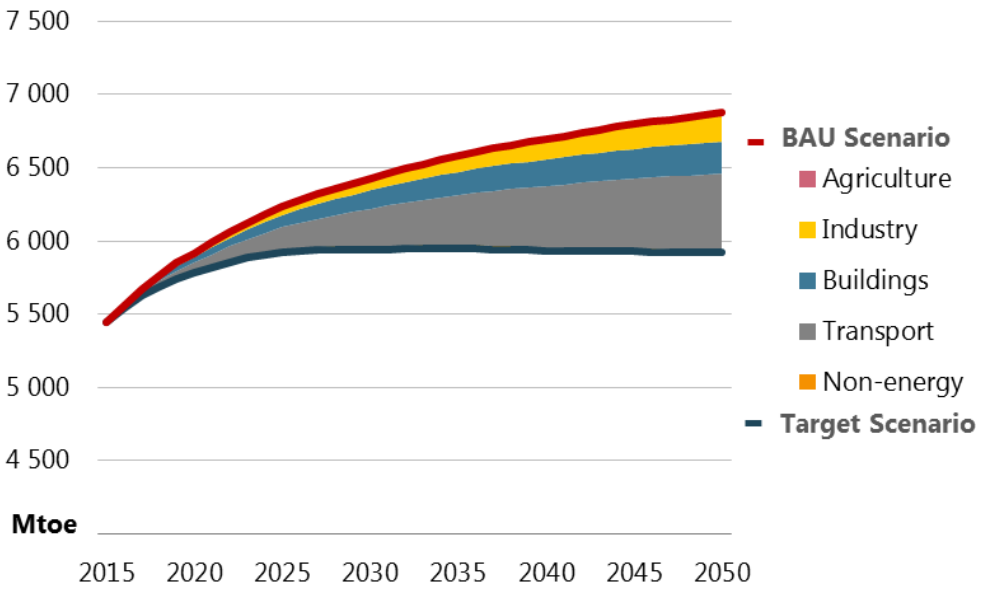
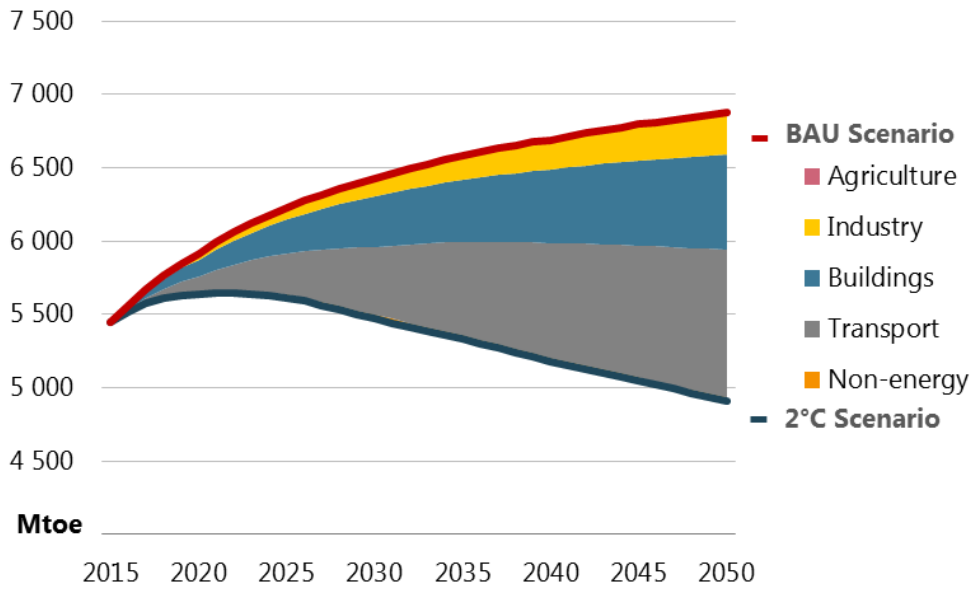
APEC Target and 2DS scenarios cut demand

Target Scenario results



2°C Scenario results

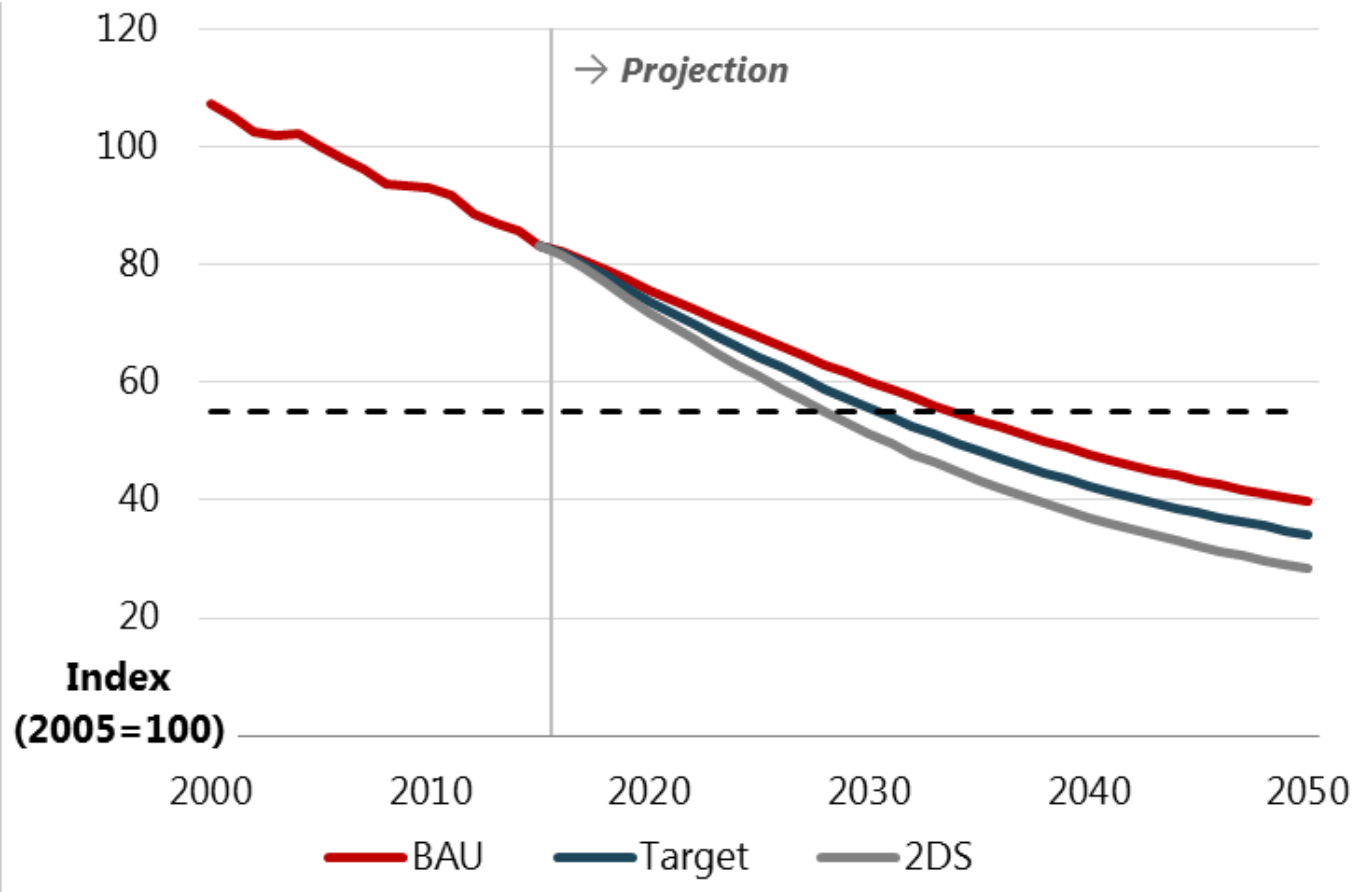


Source: IEA statistics 2015 and APERC analysis.

Transport and Building sectors drive drop in final energy demand under both the APEC Target and 2°C Scenarios.

Energy intensity improves under alternate scenarios

APEC Energy Intensity, 2000-2050

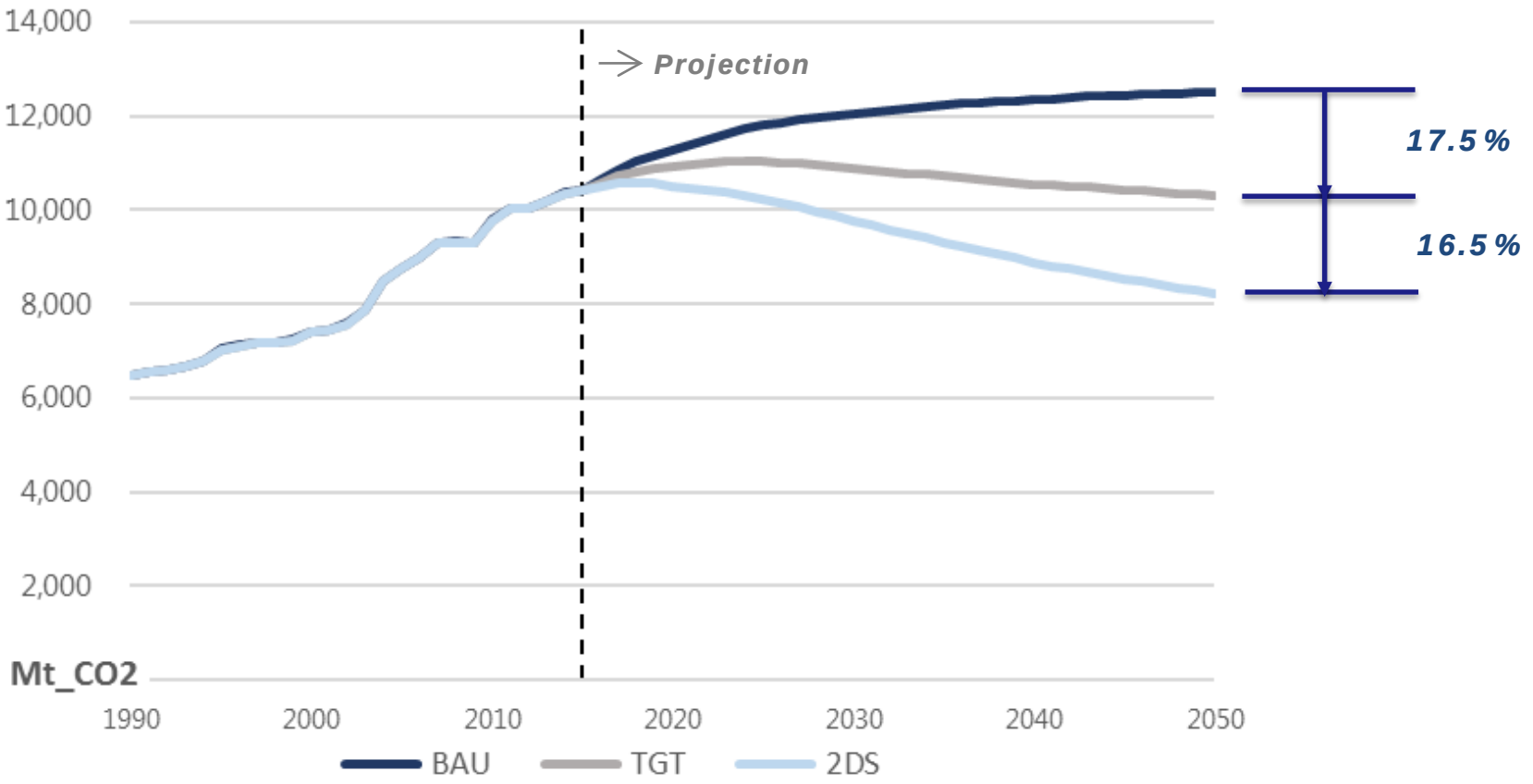


Source: IEA statistics 2015 and APERC analysis.

APEC would meet its energy intensity reduction target of 45% in 2035 as early as 2028 in the alternative scenarios.

Energy demand-related CO_2 emissions rise in BAU

Energy Demand related CO_2 emissions, 1990-2050

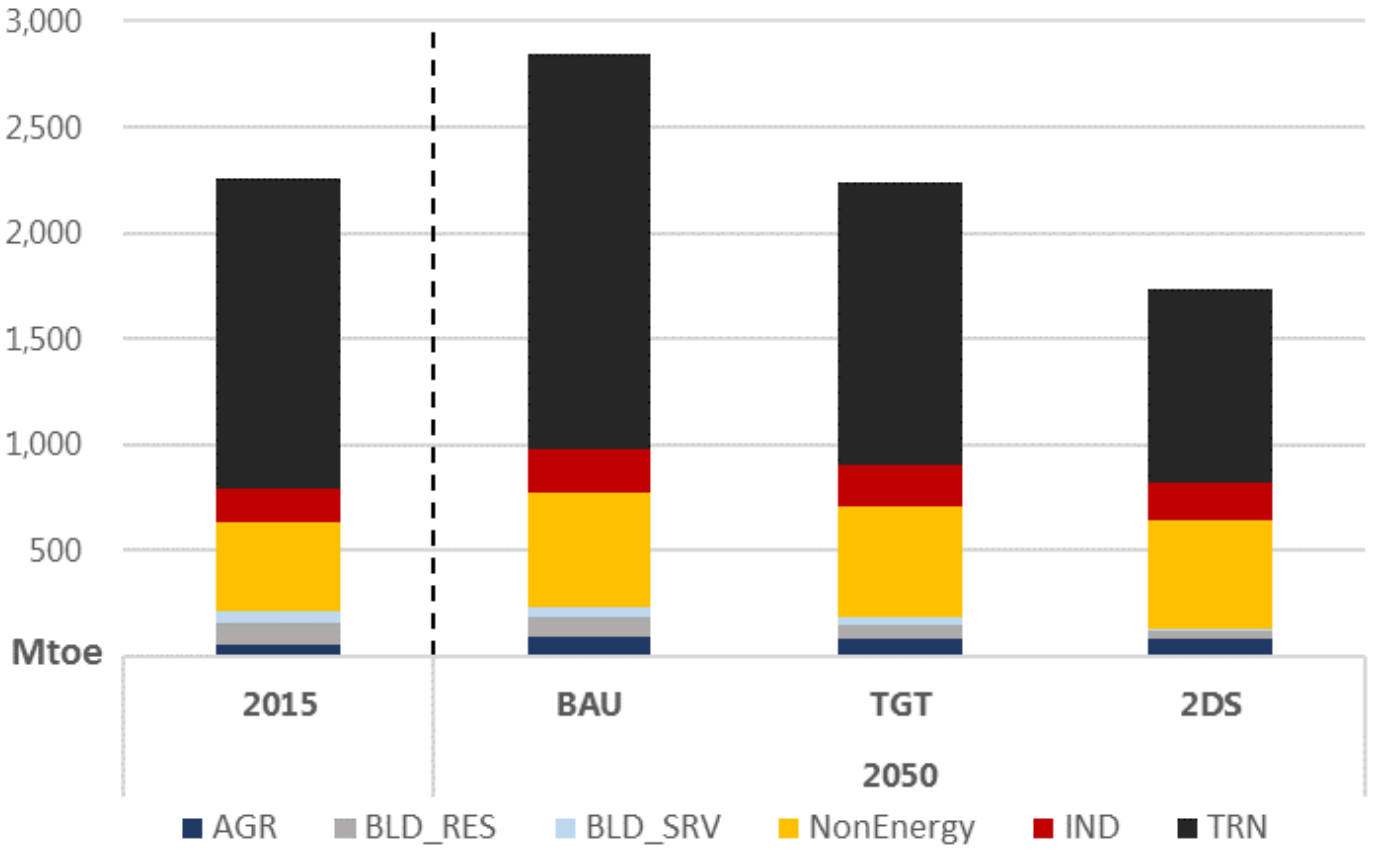


Source: IEA statistics 2015 and APERC analysis.

By 2050, demand-related CO_2 emissions in the 2DS are 34% below the BAU case and 21% below 2015 levels.

2DS oil consumption is 23% below 2015 in 2050

Demand-side oil use in three scenarios, 2015-2050

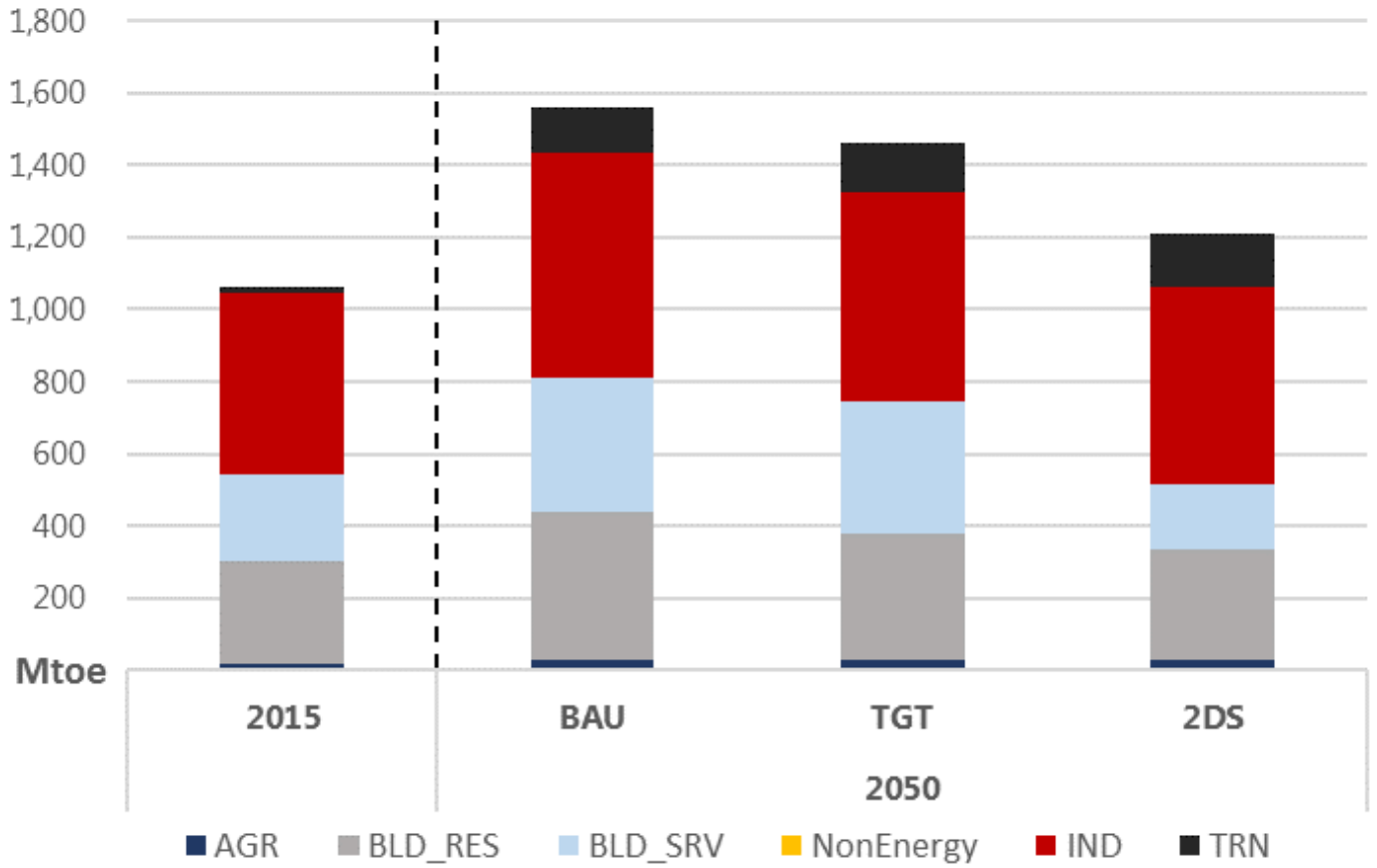


Source: IEA statistics 2015 and APERC analysis.

Transportation consumption in 2050 is 66% of the total in the BAU, but only 53% in the 2DS.

Demand-side electricity use rises in all scenarios

Demand-side electricity use in three scenarios, 2015-2050



Source: IEA statistics 2015 and APERC analysis.

Increased electrification, telecommuting, and net zero buildings reduce commercial electricity consumption in the 2 degree scenario.

Draft results are being sent to economies for their feedback

	Q1 2017	Q2 2017	Q3 2017	Q4 2017	Q1 2018	Q2 2018	Q3 2018	Q4 2018	2019
Economy review of assumptions	✓								
Model development	✓	✓	✓						
Demand model runs			✓						
Power & supply model runs				✓					
Economy reviews of model results				✓					
Model reruns to respond to comments					✓				
Outlines, drafting of chapters					✓	✓			
Editing, printing							✓	✓	
Publication									April

Thank you for your kind attention

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