



APEC Energy Demand and Supply Outlook, 6th Edition

Cecilia Tam
Special Advisor, APERC

Please do not cite prior to release on 11 May

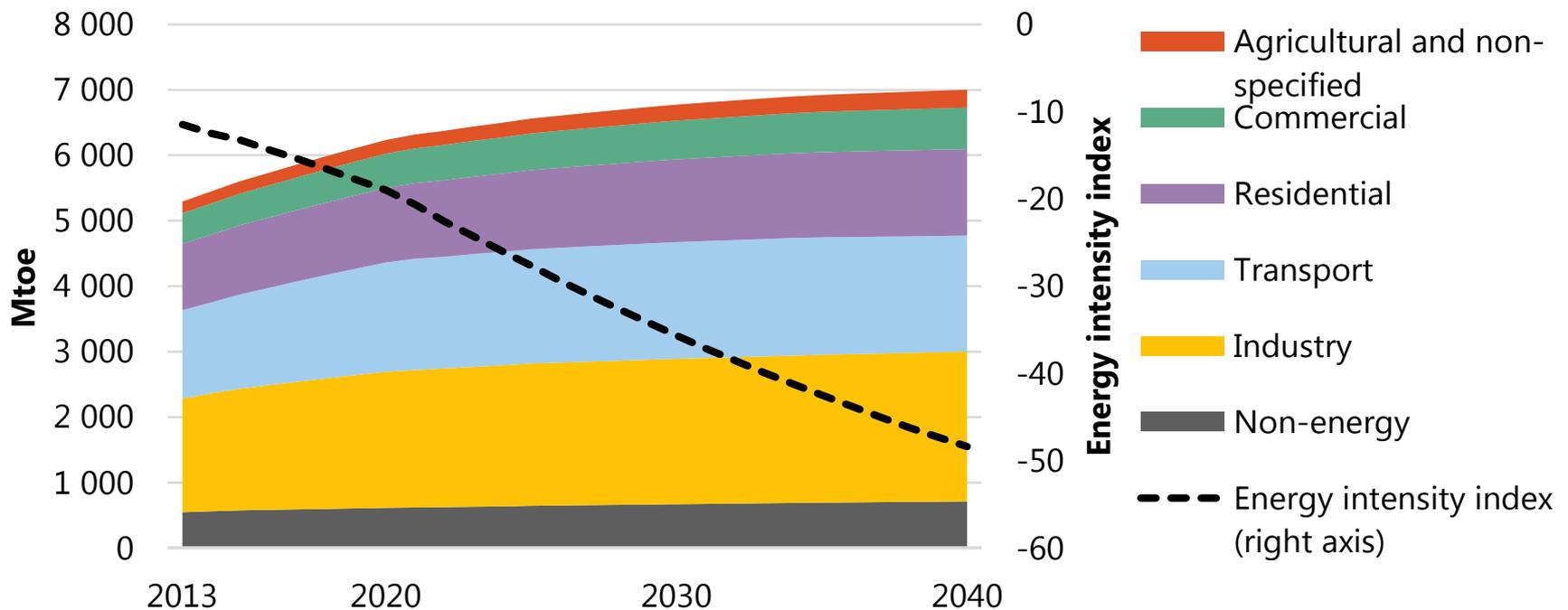




APEC Energy Outlook: Business-as-Usual (BAU) Scenario

Outlook for APEC Energy Demand

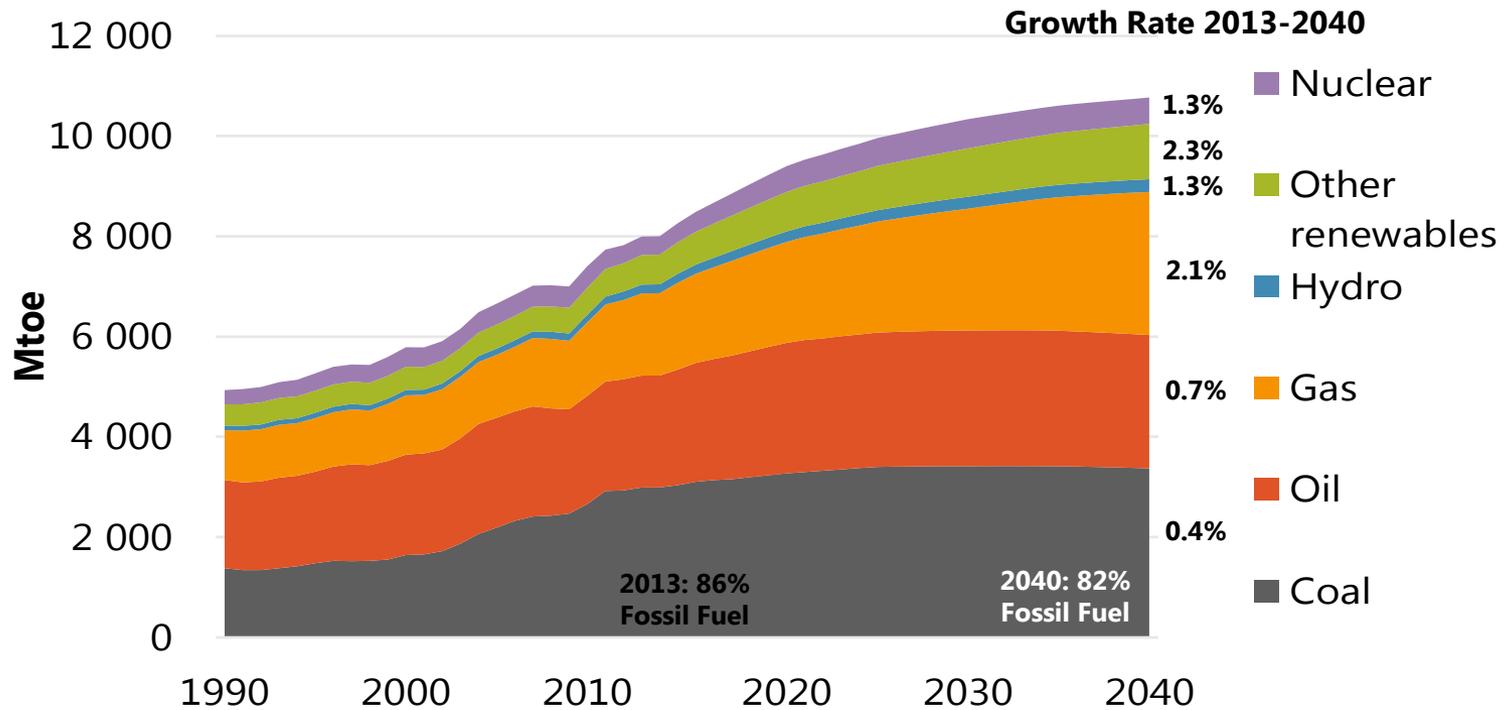
Final energy demand in APEC region



Final energy demand rises 32% from 2013 level by 2040. APEC's energy intensity reduction target of 45% cannot be met by 2035 in the BAU scenario.

Fossil-Fuels Continue to Dominate Energy Mix

Total primary energy supply by fuel, 1990 - 2040



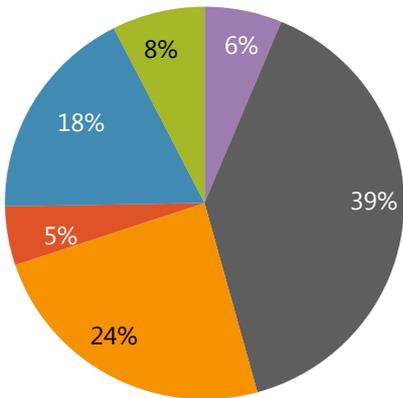
Source: IEA statistics 2015 and APERC analysis

Energy supply in APEC region will more than double by 2040 from 1990 level.

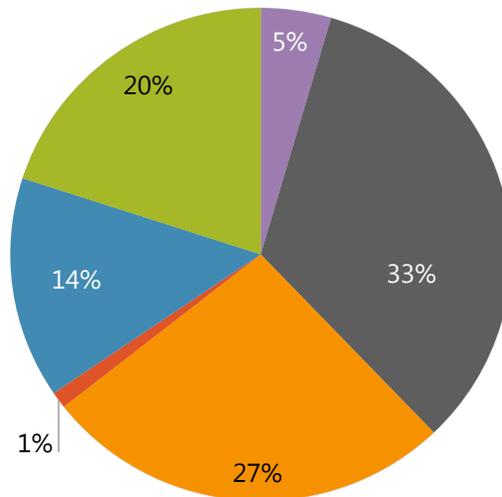
Outlook for Power Sector

APEC installed capacity

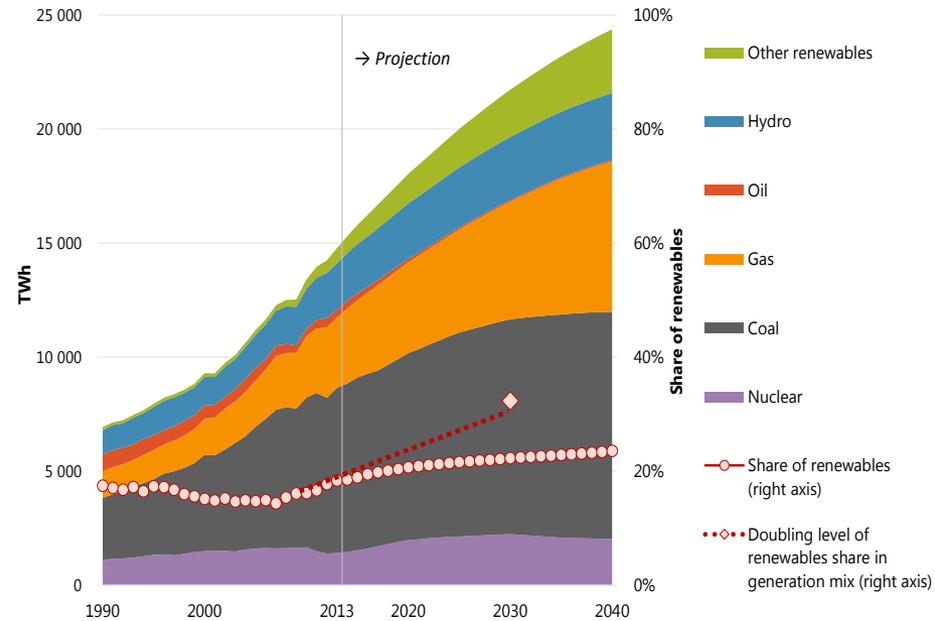
2013 Capacity:
3 564GW



2040 Capacity:
6 415GW



APEC electricity generation



RE capacity expand to 34% by 2040, but fossil fuels dominate generation due to relatively lower RE capacity factors. Doubling not achieved by 2030 nor 2040 in BAU

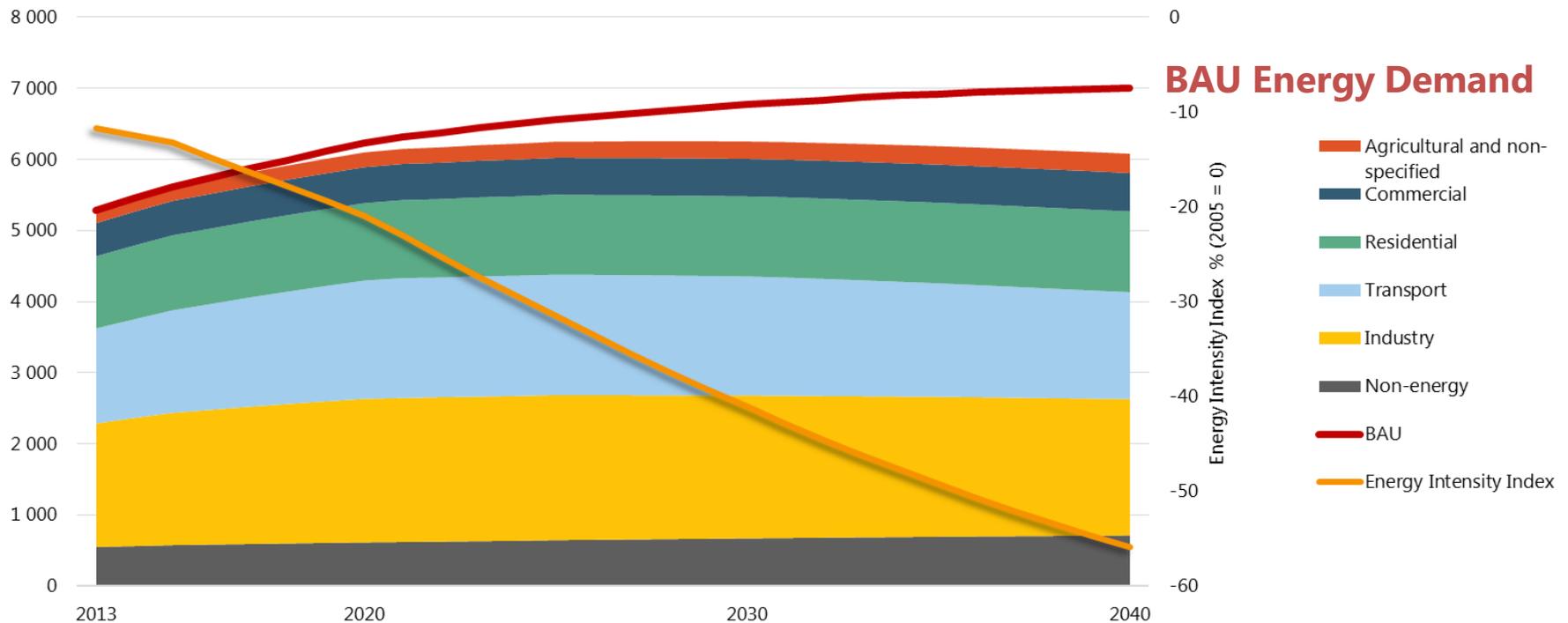
Note: **Other renewables** include solar PV, CSP, onshore wind, offshore wind, biomass, geothermal and marine.



APEC Energy Outlook: Improved Efficiency Scenario

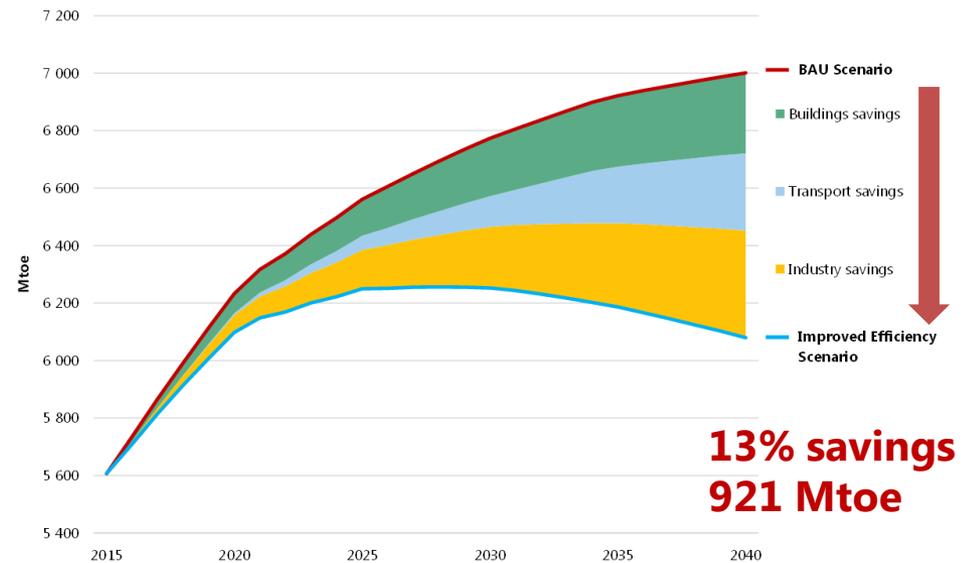
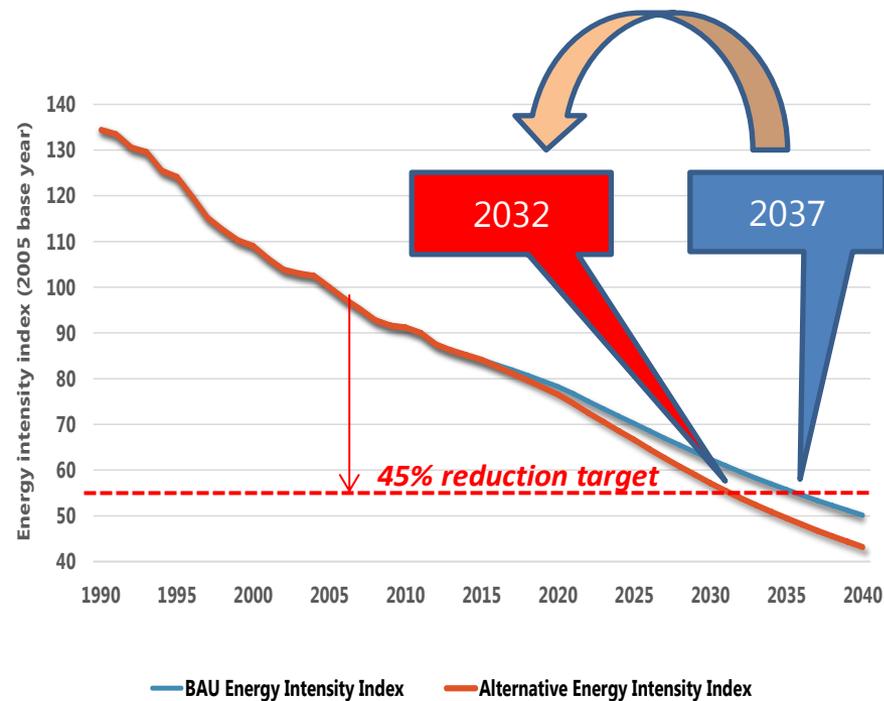
Improved Efficiency Scenario

Final energy demand in APEC region



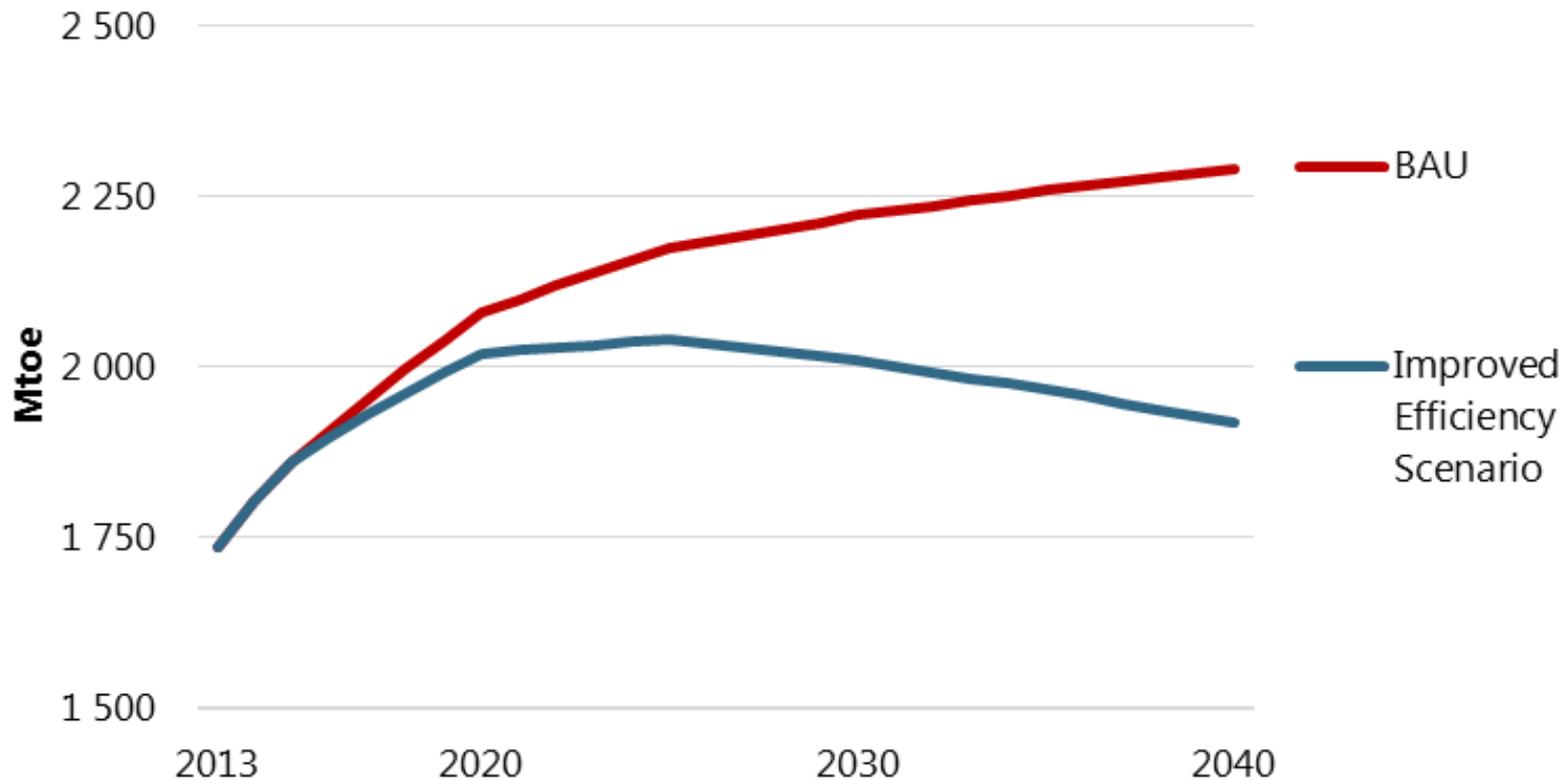
Energy demand peaks post 2020, declining gradually as enhanced energy efficiency policies help to lower demand

Improved Efficiency Scenario



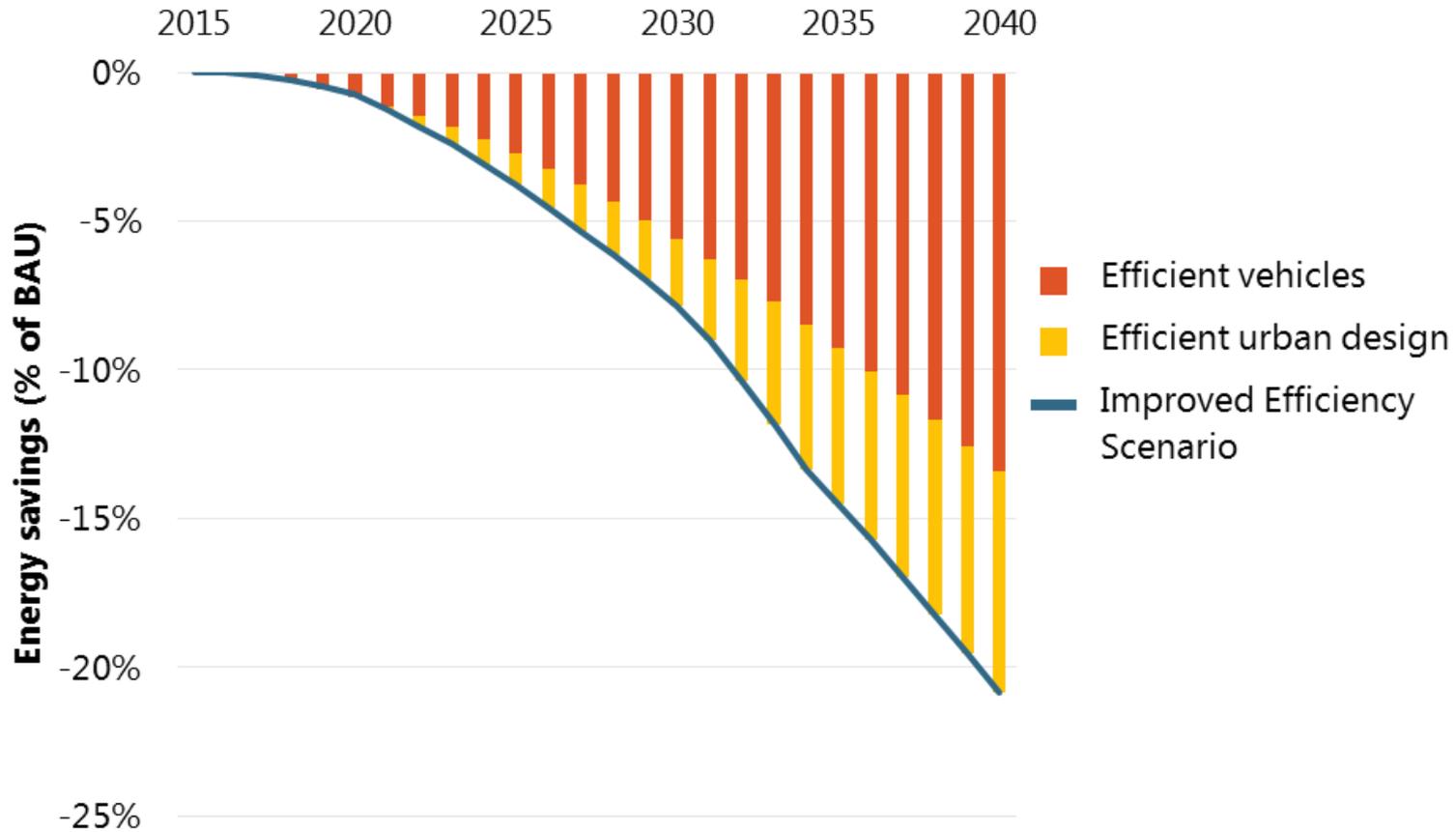
APEC's target in 2035 can be met earlier under the Improved Efficiency Scenario, with energy savings equal to current demand of Russia, Japan and Korea

Industry Energy Demand



Energy efficiency measures in industry lead to a peaking in industrial energy demand by 2025

Road Transport Energy Savings



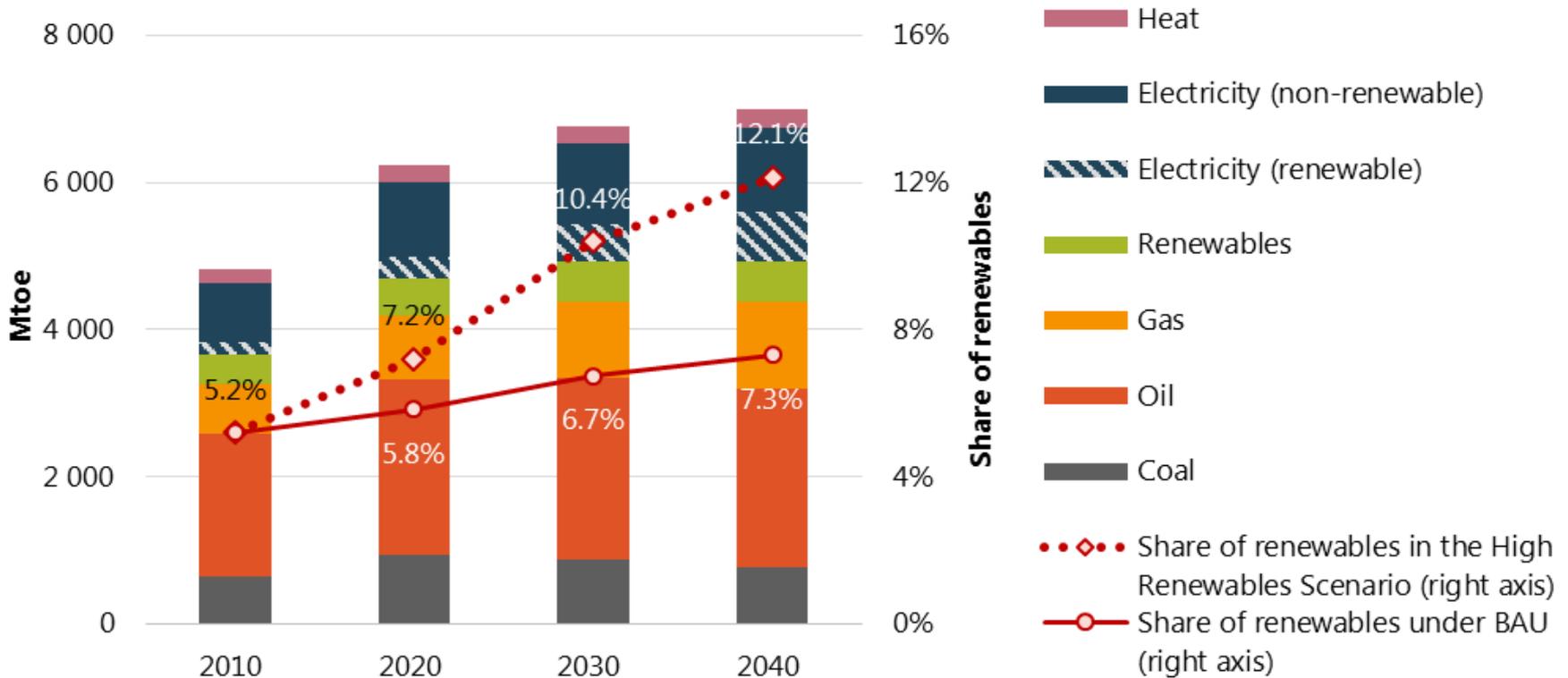
Vehicle fuel economy measures offer largest savings potential in transport



APEC Energy Outlook: High Renewables Scenario

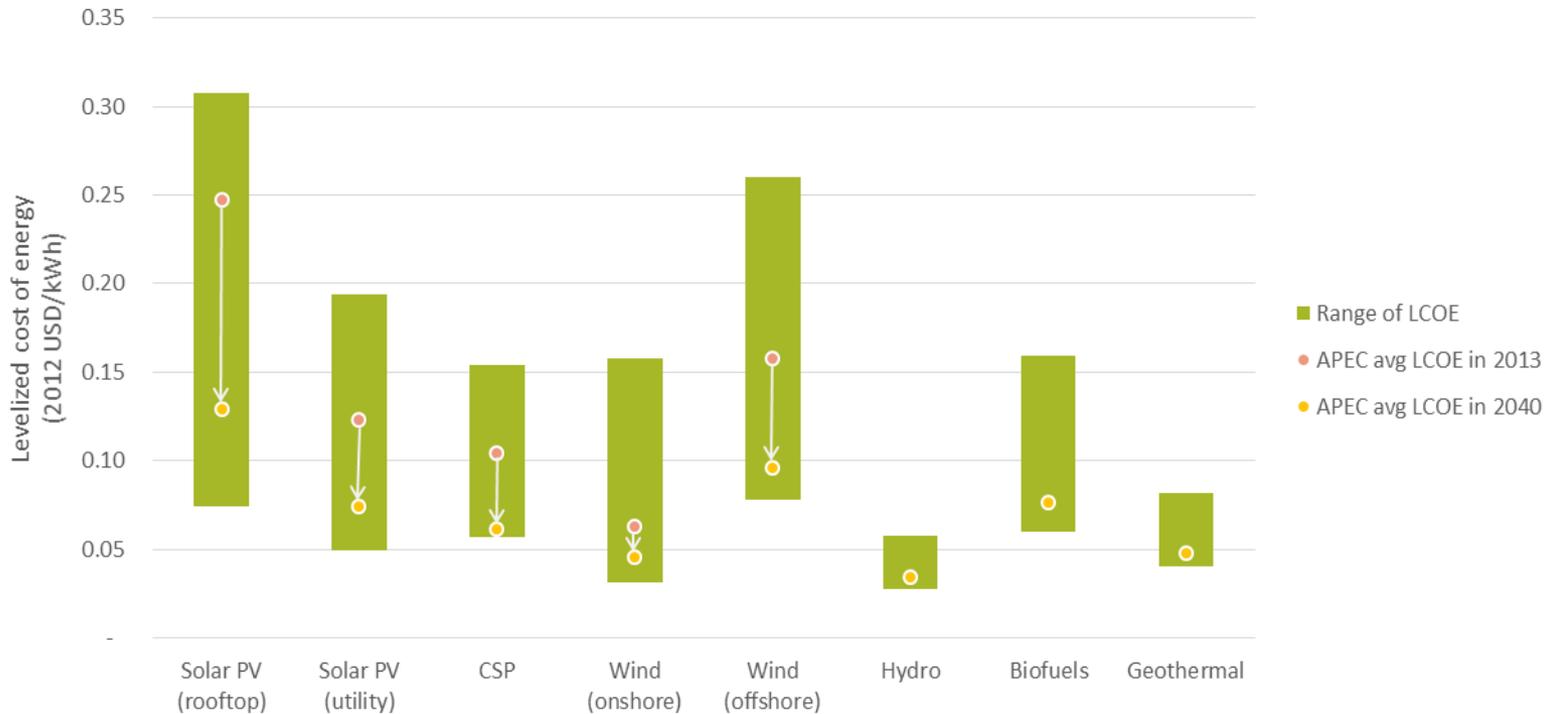
Renewables in BAU and High Renewables Scenario

Final Energy Demand



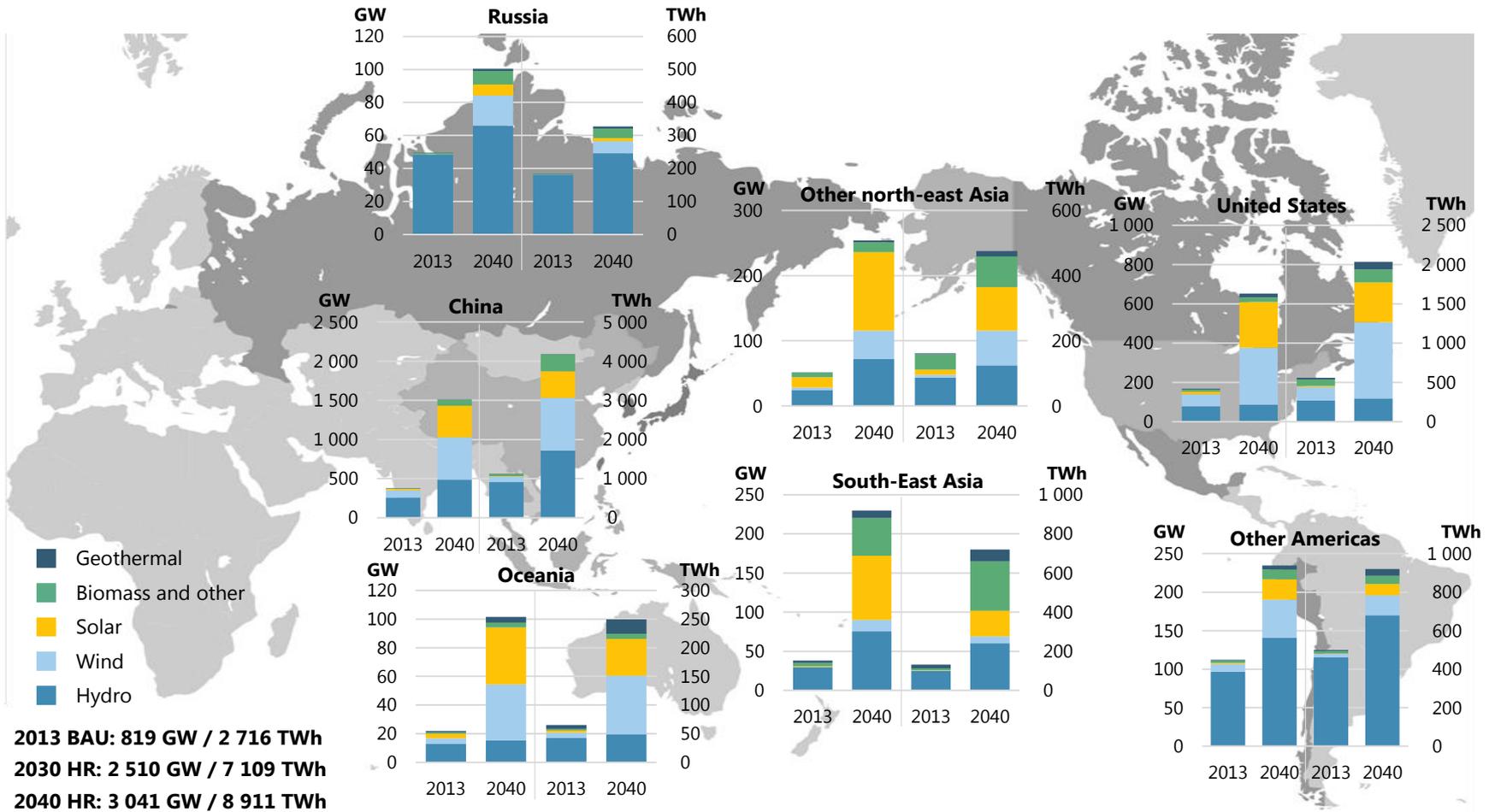
Pathway to reaching the Renewables Doubling Goal

Declining Electricity Cost from Renewables



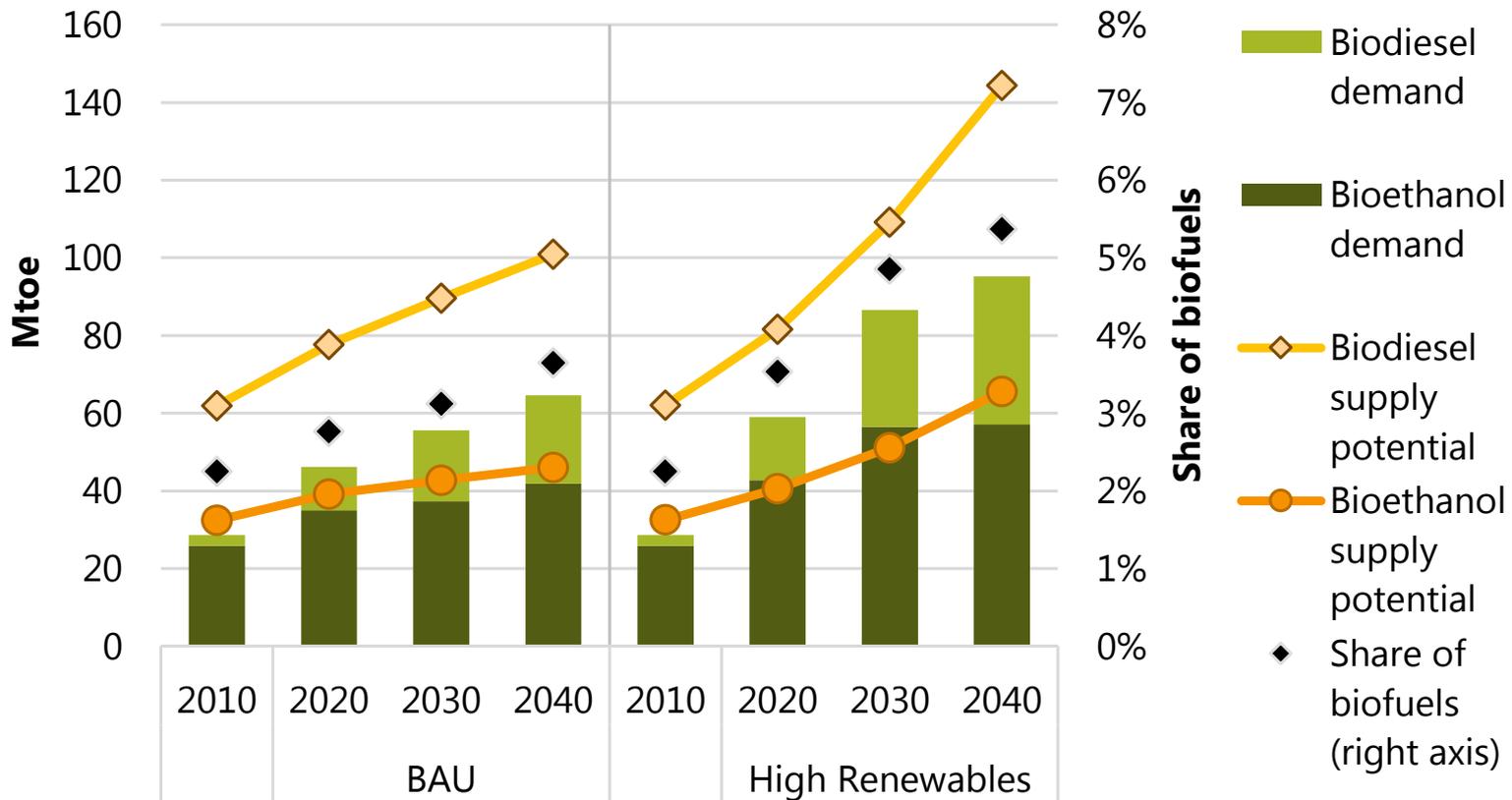
Costs of RE technologies (solar and wind) have been declining from 2013 to 2040 in different economies where the lowest LCOE is hydro in Viet Nam and the highest is offshore wind in Peru.

High Renewables Scenario



Renewables mix varies across APEC, solar and wind see largest growth

Lack of Bioethanol Supply Potential

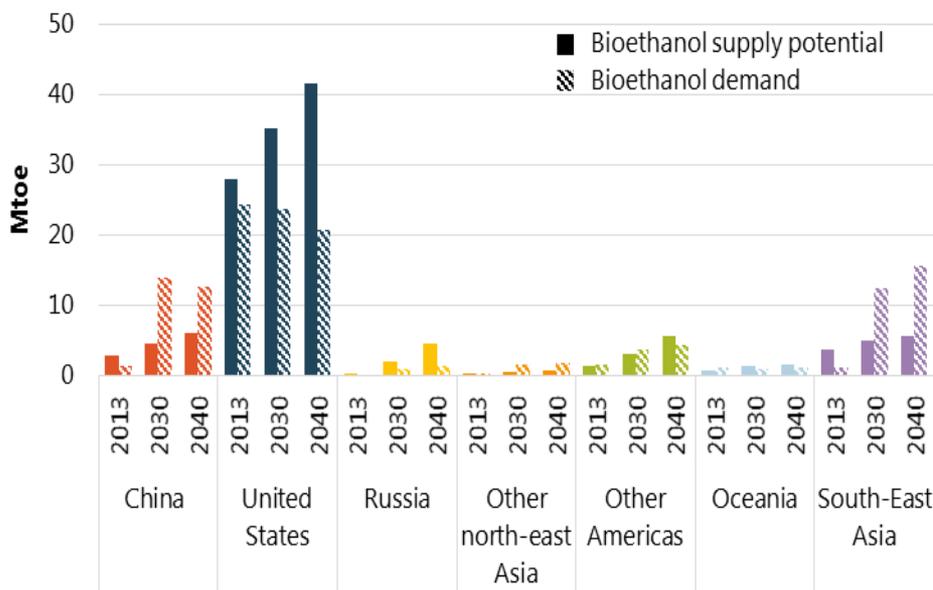


Almost all economies can increase biofuels use in the transport sector.

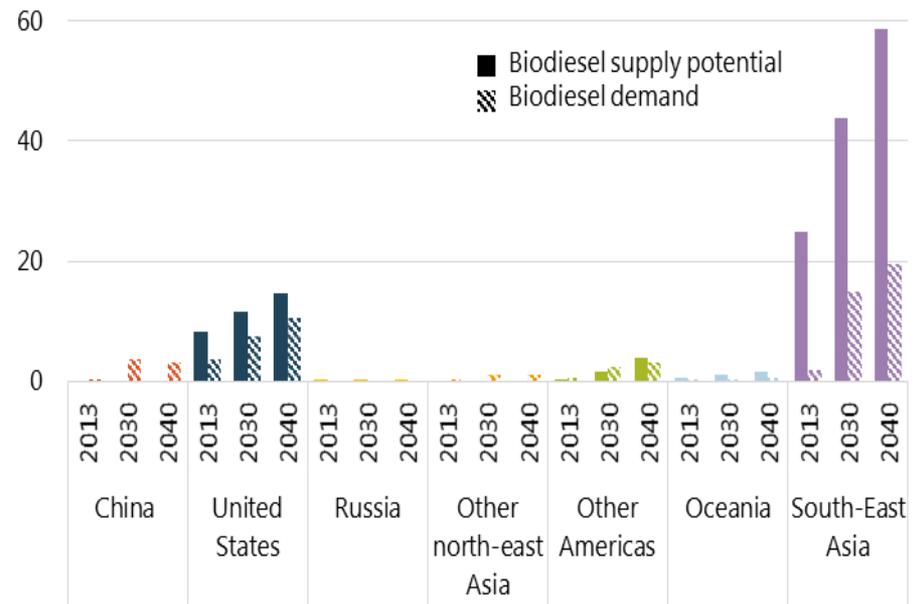
Advanced biofuel technologies needed, as higher supply potential based only on 1st generation biofuels is insufficient to meet growing demand.

Biofuels Demand and Supply Potential

Bioethanol demand and supply potential



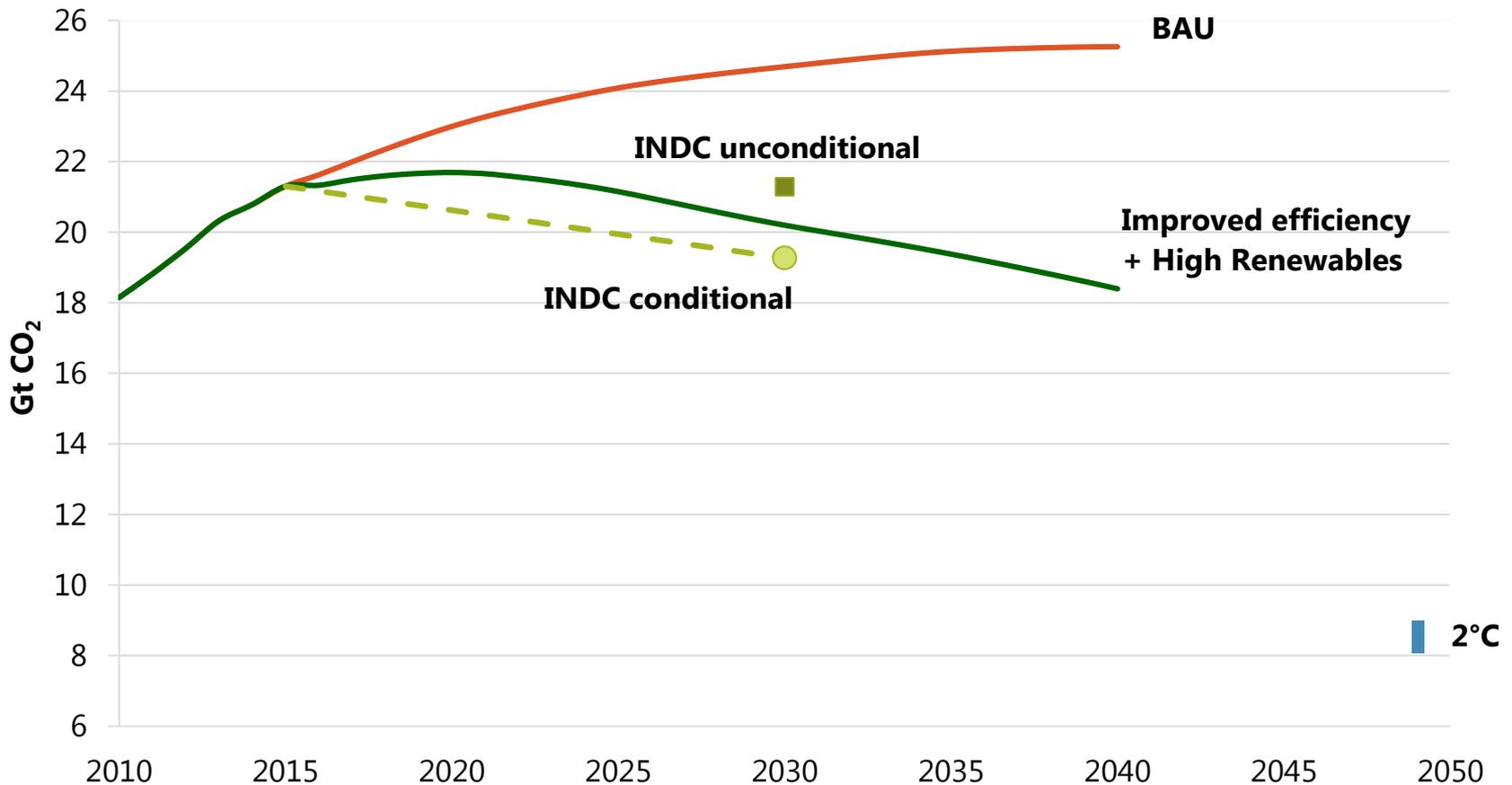
Biodiesel demand and supply potential



US has largest bioethanol supply potential, while South-East Asia has highest biodiesel supply potential.

APEC biofuels trade is a must in short and medium term

APEC Energy Related CO₂ Emissions



APEC economies need to raise INDC ambitions as well as APEC energy targets if the global climate goal is to be achieved

Key Messages

- *Energy efficiency offers the most attractive option to improve energy security and address climate change.*
- *Economies need to enhance renewable promotion policies in order to double renewables in power mix.*
- *Cleaner coal technologies (CCS in particular), higher shares of natural gas and expanded nuclear energy needed in addition to renewables to decarbonise electricity.*
- *Investment (USD 17 to US 35 trillion) in energy supply needed to address energy security concerns.*
- *APEC energy targets need to be enhanced to meet global climate objectives which will require enhanced collaboration, economies should monitor and strengthen INDCs where possible*



Thank you for your attention!

cecilia.tam@aperc.iecej.or.jp

APEC Energy Demand and Supply Outlook Release 11 May 2016

available for download from <http://aperc.iecej.or.jp/>