



APERC Workshop
The 49th APEC Energy Working Group and Associated Meetings
Gyeongju, Republic of Korea, 22 June, 2015

6th APEC Energy Demand and Supply Outlook

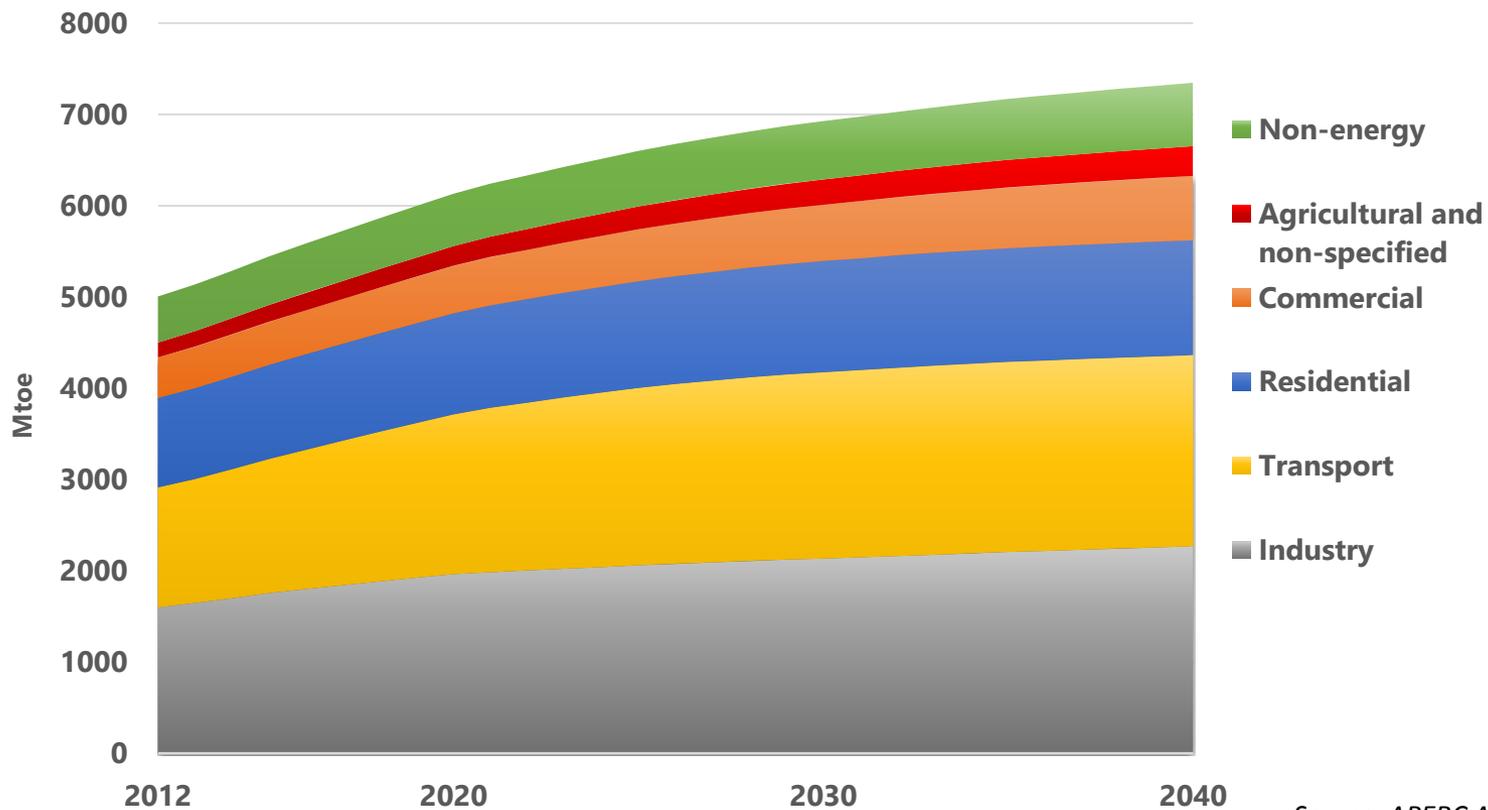
Cecilia Tam
Deputy Vice President, APERC



Business as Usual (BAU) Scenario

APEC Total Final Energy Demand

Preliminary results

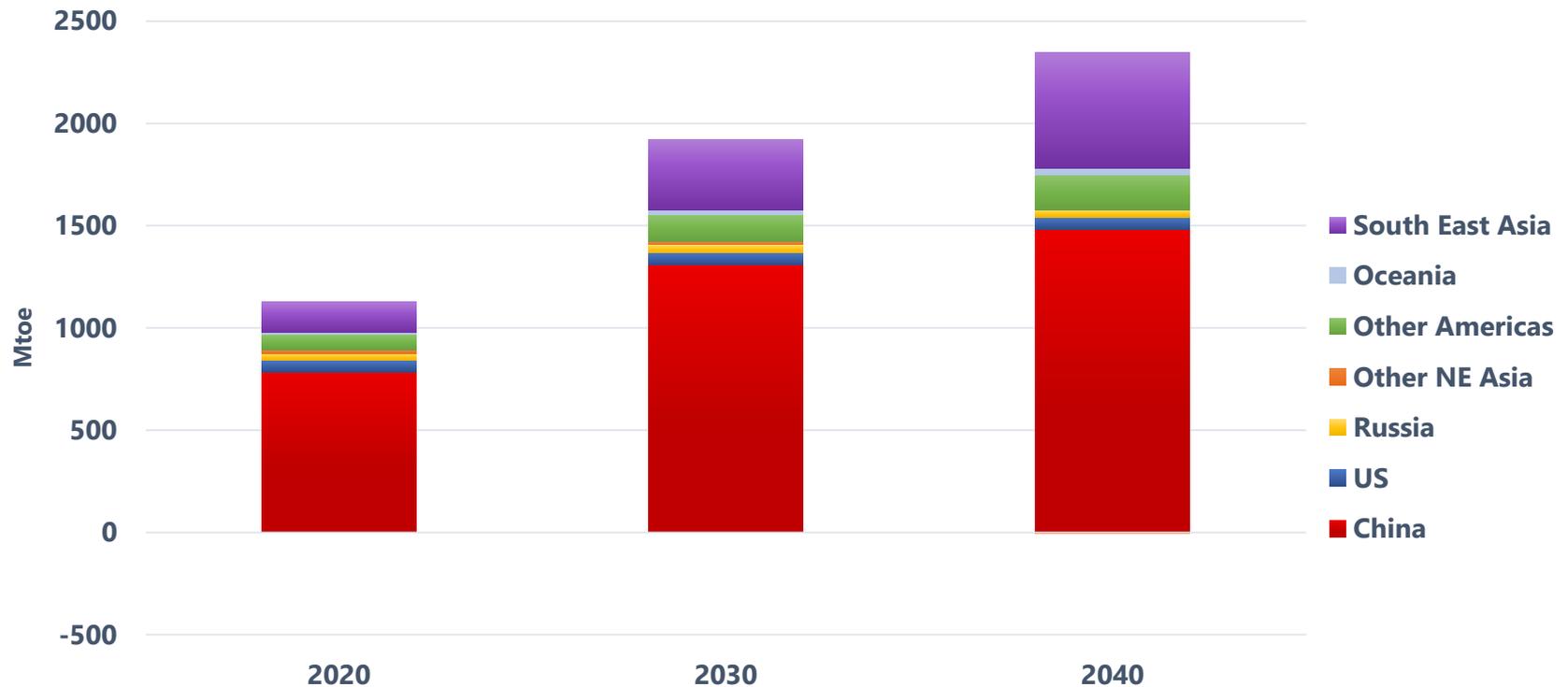


Source: APERC Analysis

Energy demand rises 50% by 2040, led by higher demand in transport

Growth in Final Energy Demand compared to 2012

Preliminary results



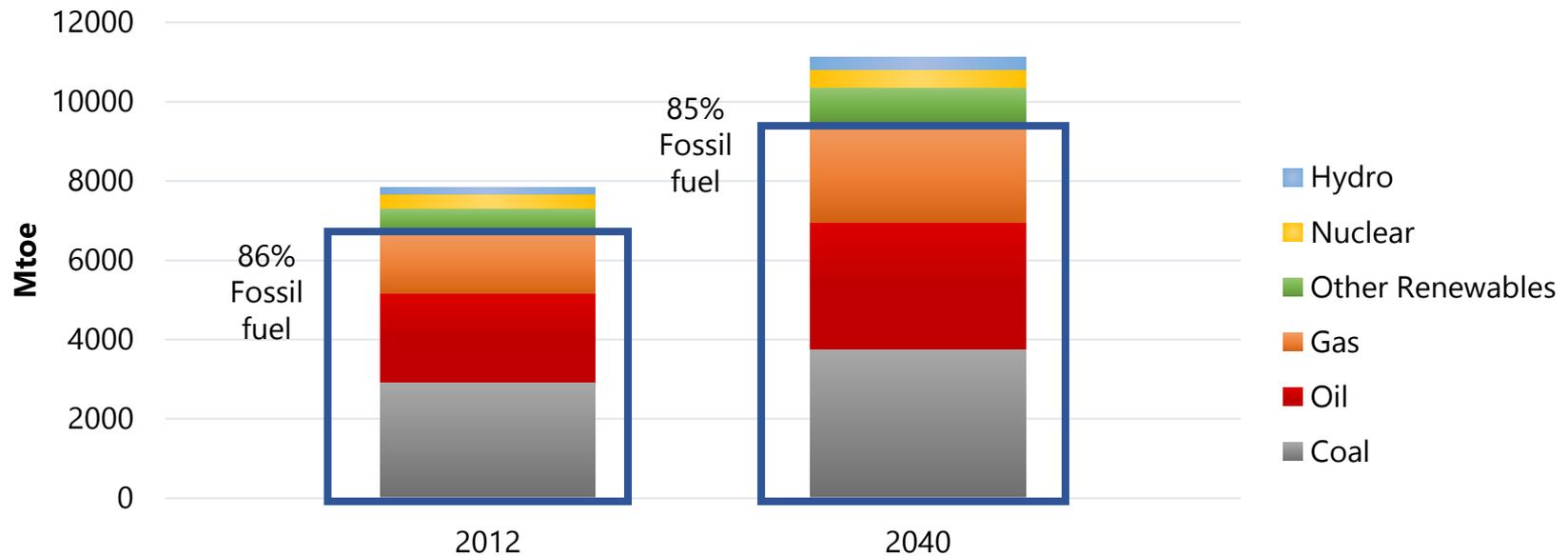
Source: APERC Analysis

China and South East Asia account for nearly 90% of all additional demand

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

Fossil Fuels Continue to Dominate

Preliminary results



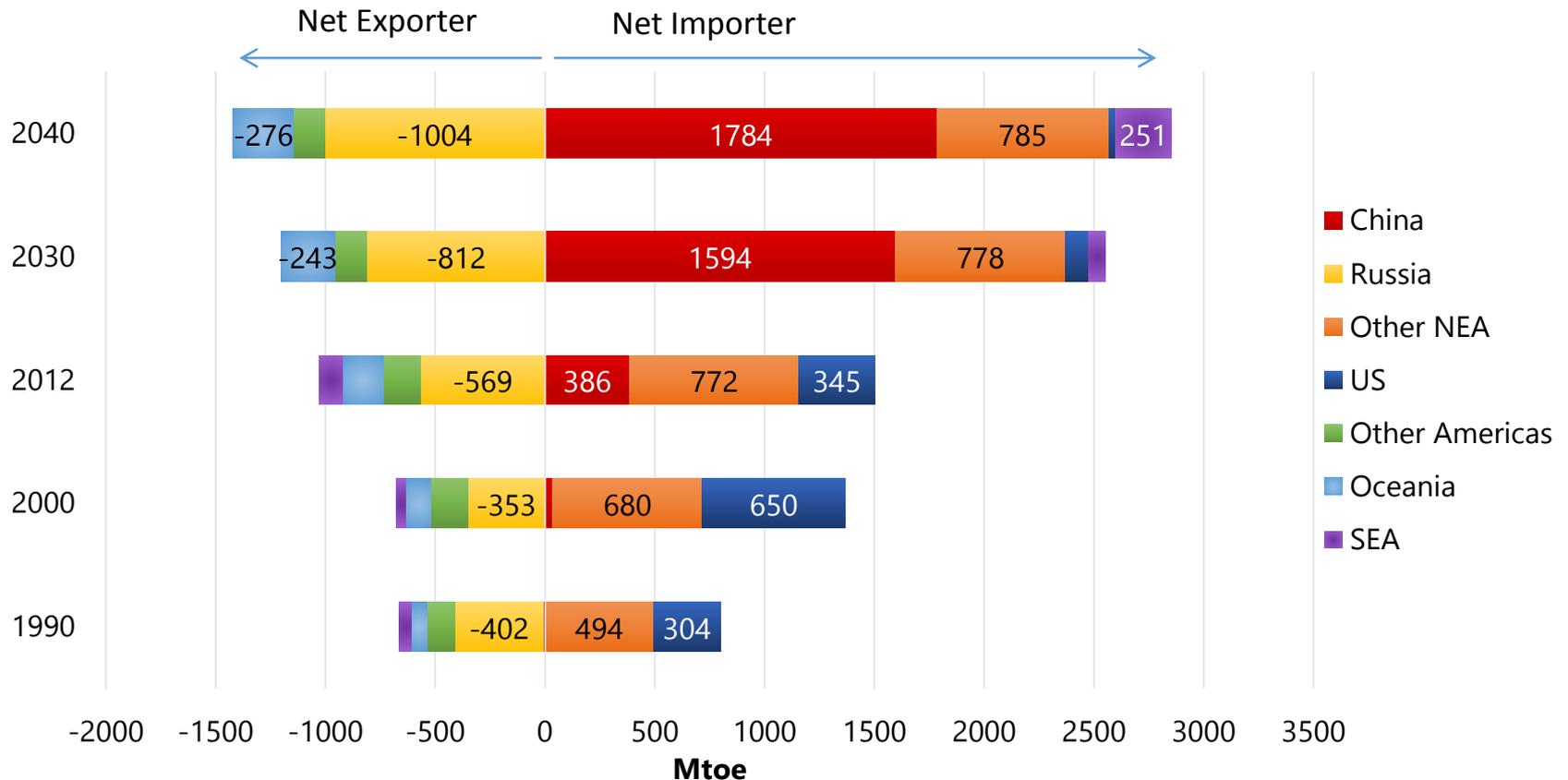
Source: APERC Analysis

Fuel Shares			
	1990	2012	2040
Coal	27.9%	37.5%	34.3%
Oil	35.7%	28.3%	28.6%
Gas	20.2%	20.2%	22.2%
Hydro	1.9%	2.2%	2.7%
Other Renewables	8.6%	7.2%	7.9%
Nuclear	5.8%	4.6%	4.2%

Natural gas demand will increase by 57% in 2040 from 2012 level while hydro and other renewables will increase by 63% within the same period.

APEC Energy Supply Gap

Preliminary results



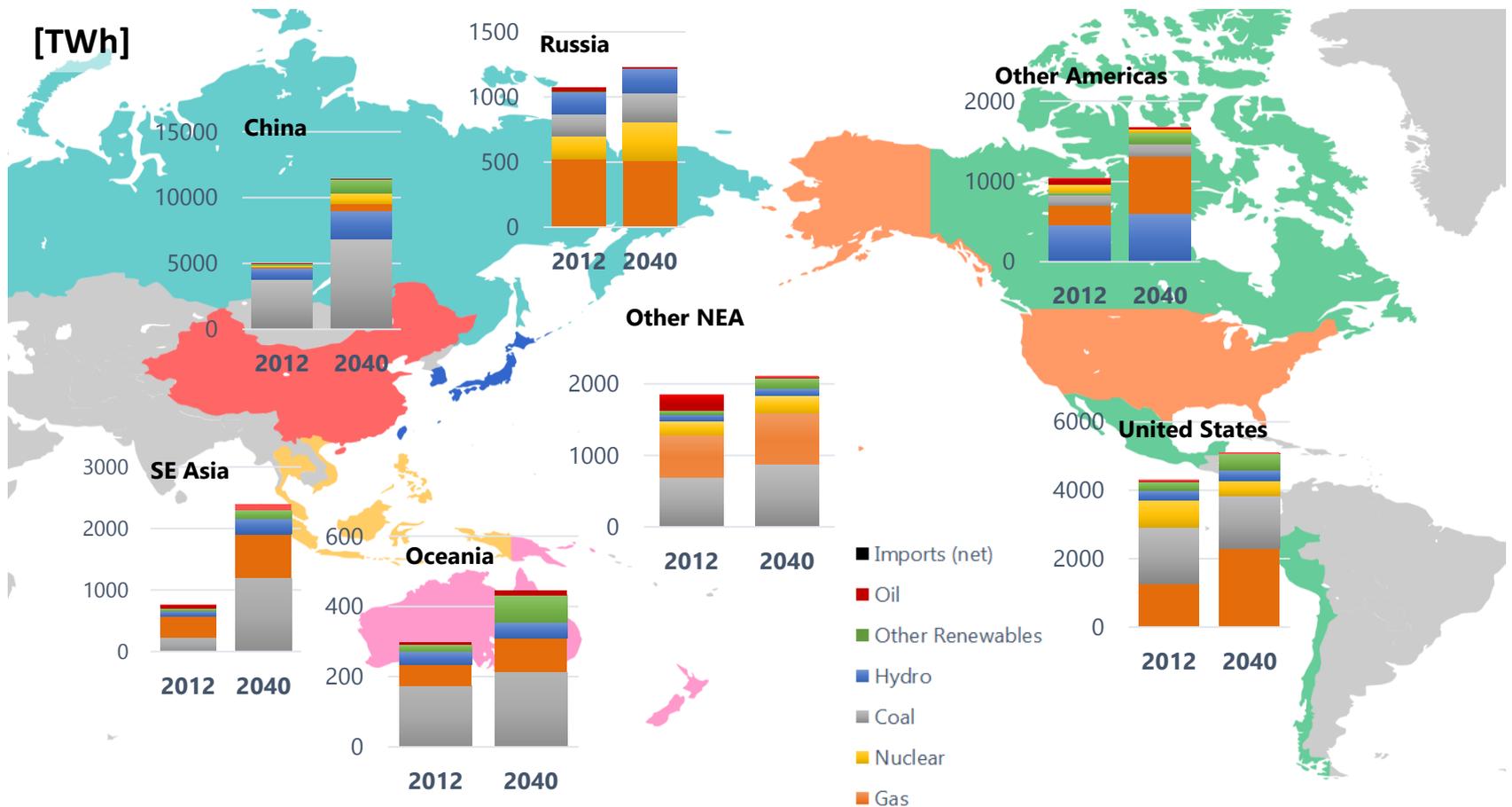
Source: APERC Analysis

Supply gap is define as demand minus production.

Electricity Generation By Region

Generation, 2012 and 2040 [TWh]

Preliminary results



Note: This map is for illustrative purposes and is without prejudice to the status of or sovereignty over any territory covered by this map.

Source: APERC Analysis

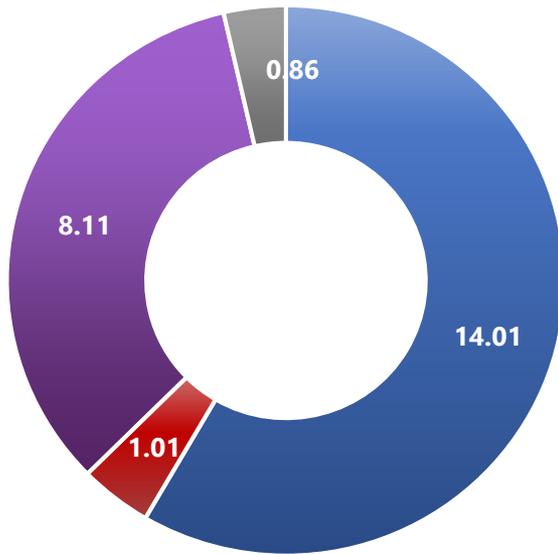
China and South East Asia drive future electricity demand in APEC

APEC Energy Investment in Energy Supply

Preliminary results

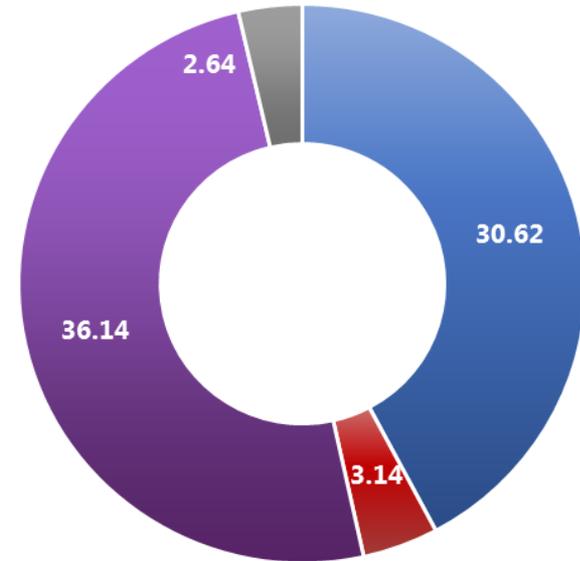
(In USD Trillion)

Total Energy Investment by Sub-Sector



Low Cost Investment Case – USD 24 Trillion

- Upstream (Oil, Gas and Coal Production)
- Downstream (Refinery and LNG Import and Export Terminals)
- Power (Generating Capacity, Transmission and Distribution Lines)
- Transport (Oil, Gas and Coal Transport)

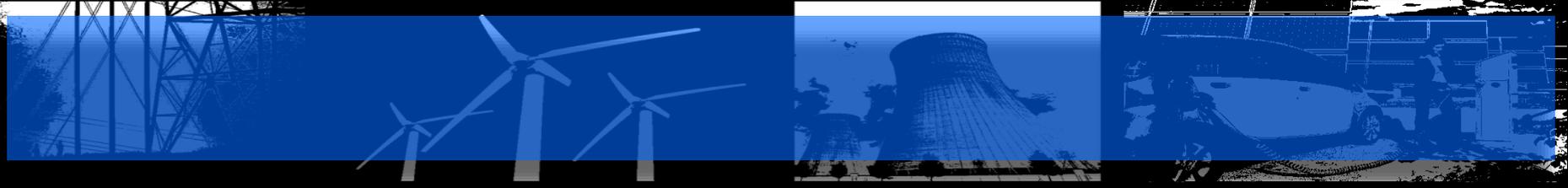


High Cost Investment Case – USD 73 Trillion

(Source: APERC Analysis)

Note: Upstream (oil, gas and coal production), Downstream (refinery, LNG import and export terminals), Transport (oil, gas and coal) and Power (generation, transmission and distribution)

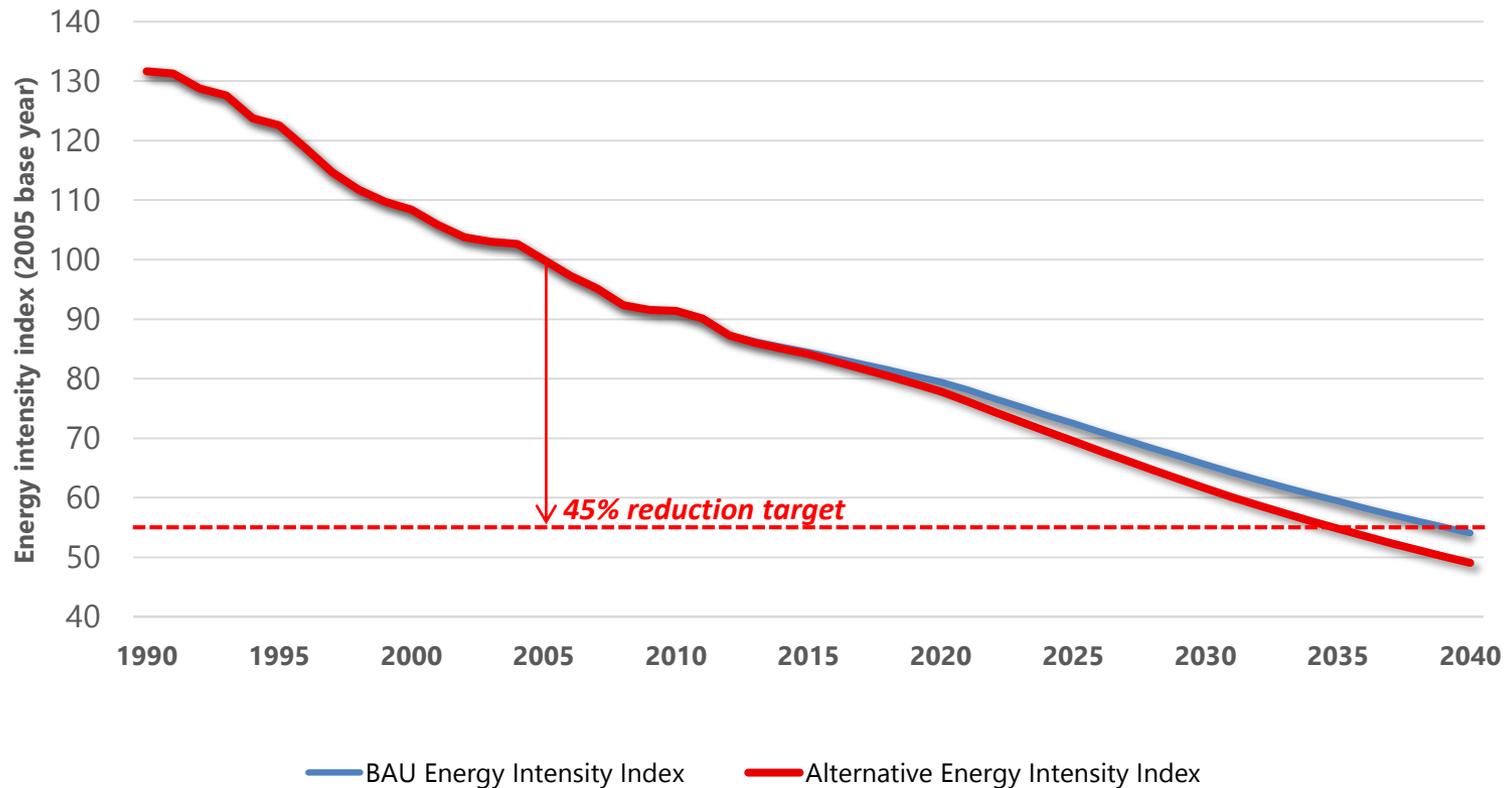
Investments in power and upstream dominate the energy sector. Power sector investments are estimated to range from US\$ 8 trillion to US\$ 36 trillion, while those for upstream production range from US\$ 14 trillion to US\$ 30.5 trillion



Alternative Scenarios

APEC's Energy Intensity BAU vs Alternative

Preliminary results

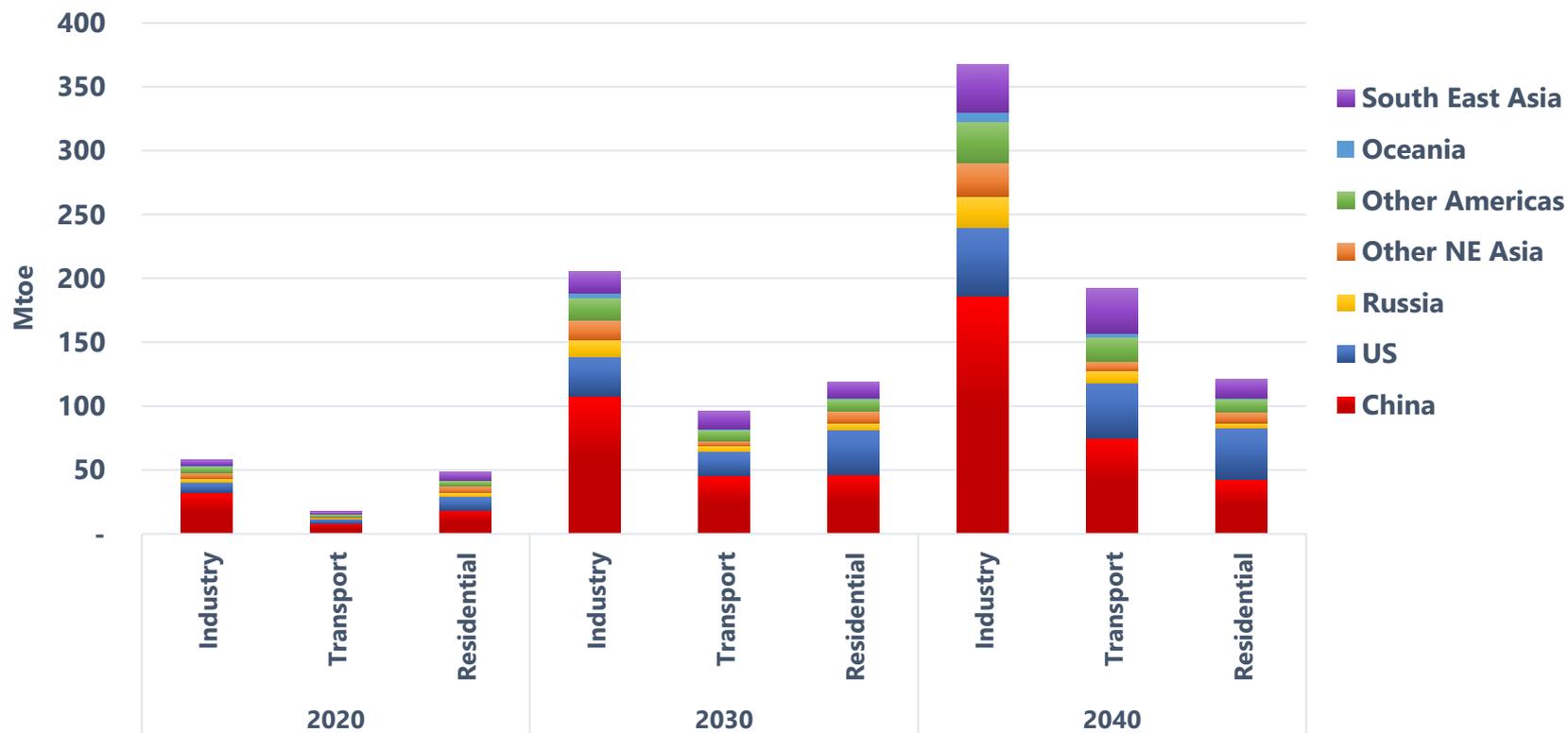


Source: APERC Analysis

APEC's target in 2035 can be met under the alternative scenario

Energy Savings Compared to BAU

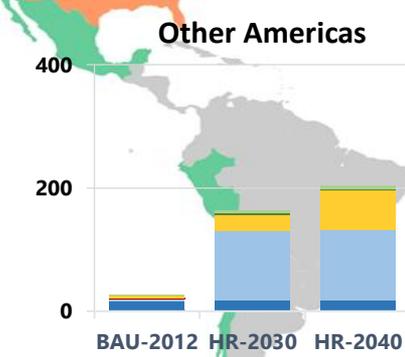
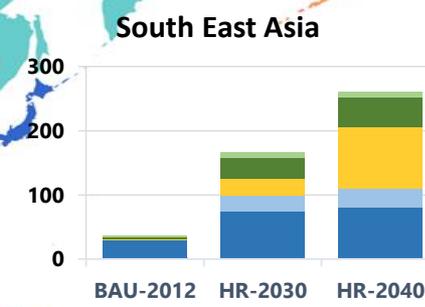
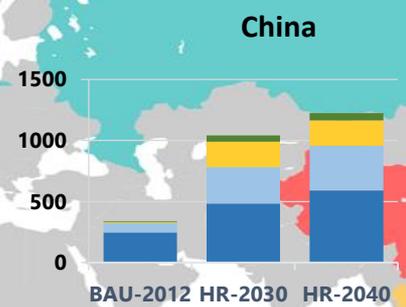
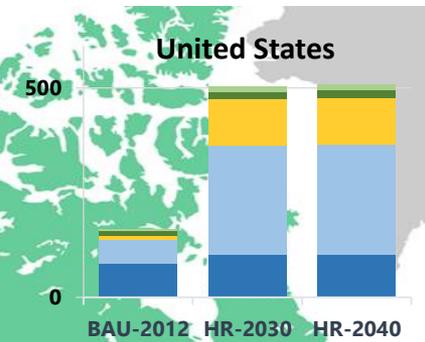
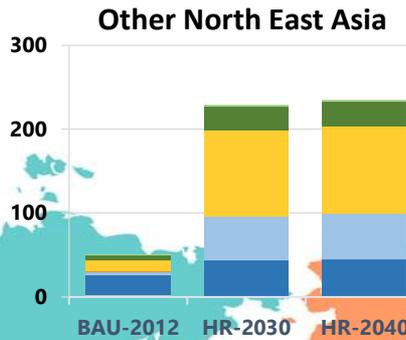
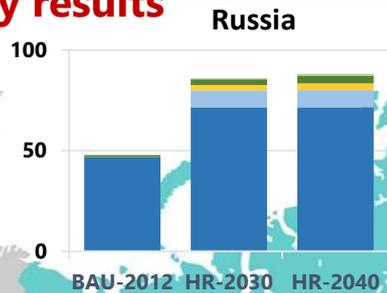
Preliminary results



Source: APERC Analysis

Renewables in APEC – 2012, 2030 and 2040

Preliminary results



- Geothermal
- Other Renewables
- Solar
- Wind
- Hydro

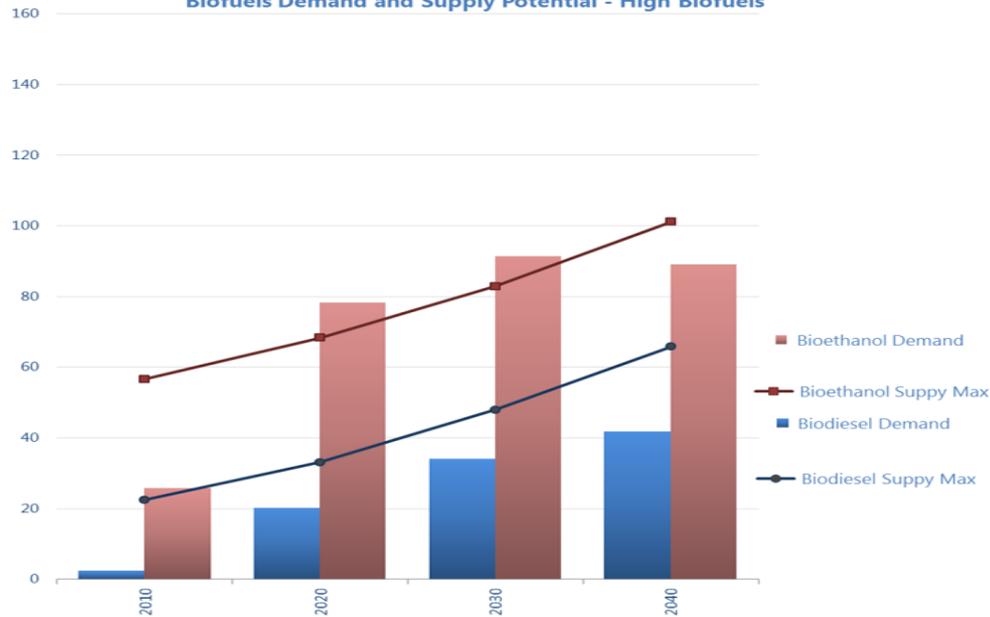
2012 BAU: 761 GW
 2030 High Renewables (HR): 2,526 GW
 2040 High Renewables (HR): 2,874 GW

Source: APERC Analysis

Note: This map is for illustrative purposes and is without prejudice to the status of or sovereignty over any territory covered by this map.

Renewables in Transport

Biofuels Demand and Supply Potential - High Biofuels



Preliminary results

- Just considering the gov't blend targets, the share of biofuels will more than double from 2.2% in the total transport demand in 2010 to 6.0% in 2030
- However as only 1st generation biofuels are assumed in the model, supply potential for bioethanol for both BAU and high supply does not meet the demand by 2020 onwards.

Mtoe	2010	2020	2030	2040
Hi-Bioethanol Demand	26	78	91	89
Hi-Biodiesel Demand	2	20	34	42
Hi-Supply, Bioethanol	57	68	83	101
Hi-Supply, Biodiesel	22	33	48	66

Alternative Power Mix Scenario

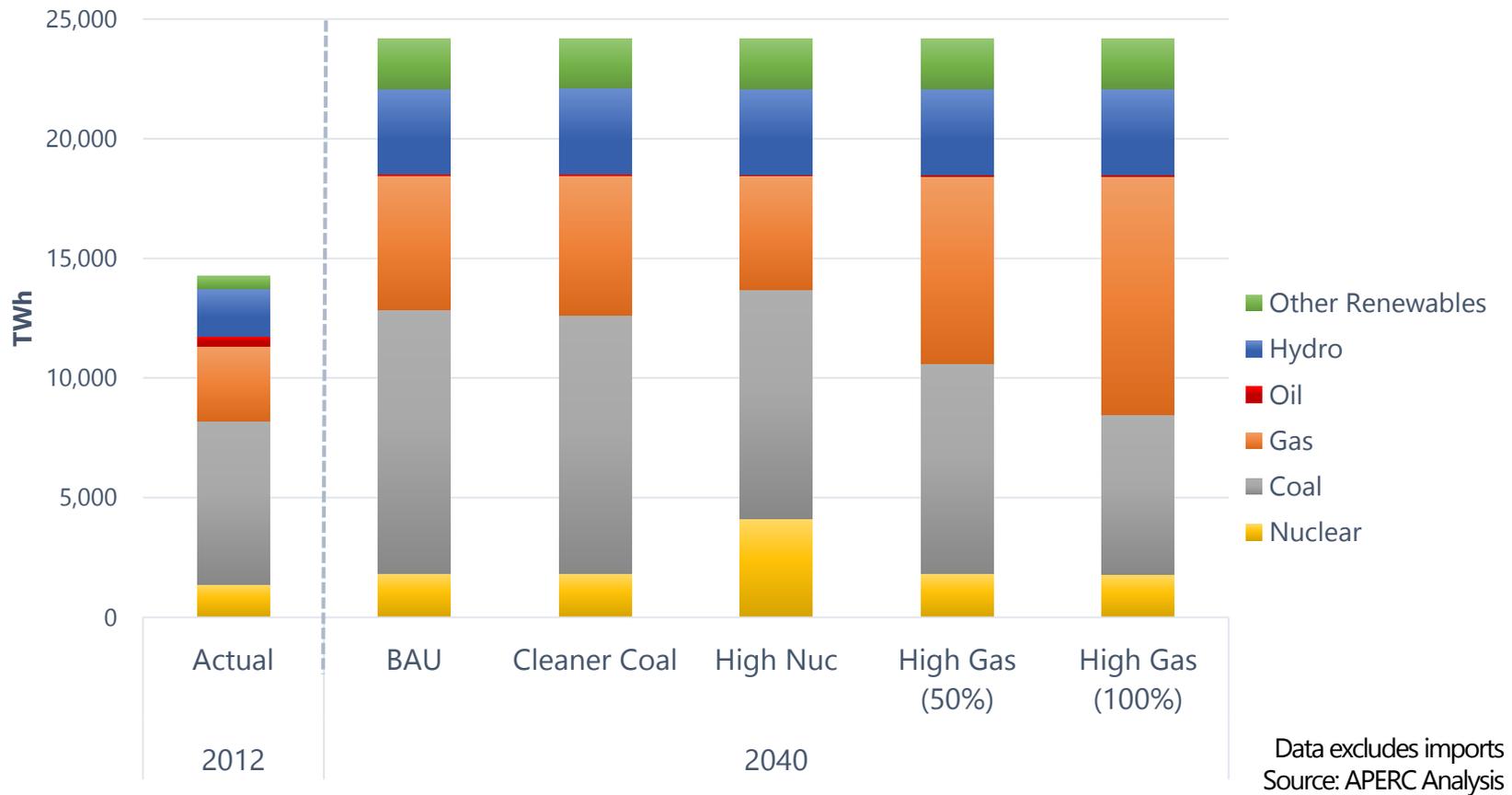
- The scenario strives to maximize the use of **clean coal, natural gas and nuclear in the electricity generation** of APEC member economies



- To illustrate the hypothetical effects and policy implications from drastic changes in the power mix

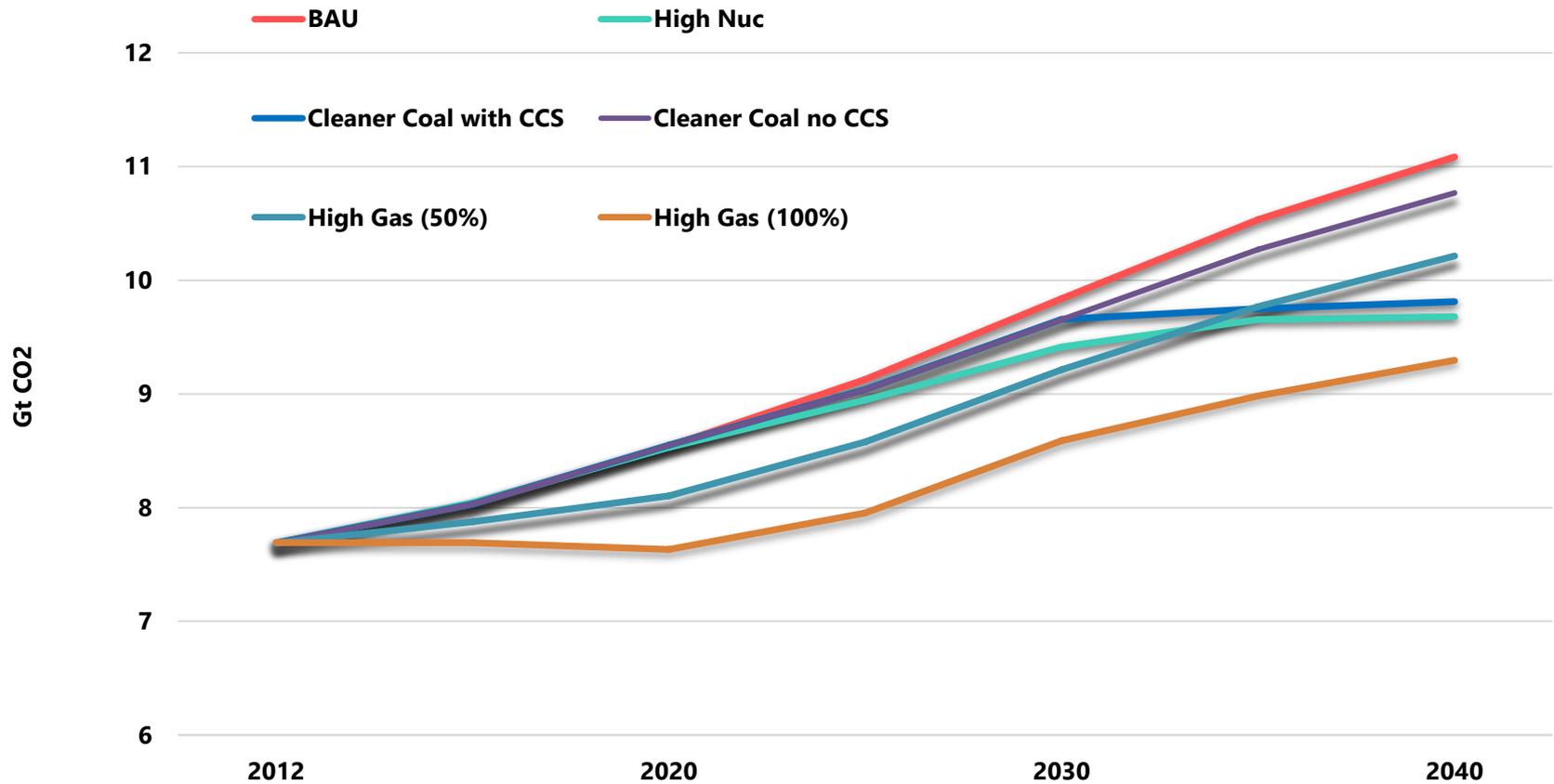
Alternative Power Mix

APEC's electricity generation, 2012 and 2040: Preliminary results



CO₂ Emissions in Power Sector

Preliminary results



Source: APERC Analysis



Next Steps

- **Scenario results will be updated based on feedback gained at the Annual Conference**
- **Drafting to take place from July-October**
- **Volume II (Economy Outlook) to be circulated for review at the end of October, comments requested by end November.**
- **Volume I to be circulated for review end November, comments requested by the end of the year.**
- **Release Spring 2016**

***We look forward to your feedback on
APERC's Outlook!***

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