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3-5. Total Primary Energy Supply and Renewable Energy in the BAU

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Energy Statistics Refresher

Total primary energy supply (TPES)

Top-down

| | | |
|------------|--------------------|--------------------|
| + | Production | (positive) |
| +/- | Net Imports | (positive) |
| +/- | Bunkers | (positive) |
| +/- | Stock | (?/balance) |

TPES

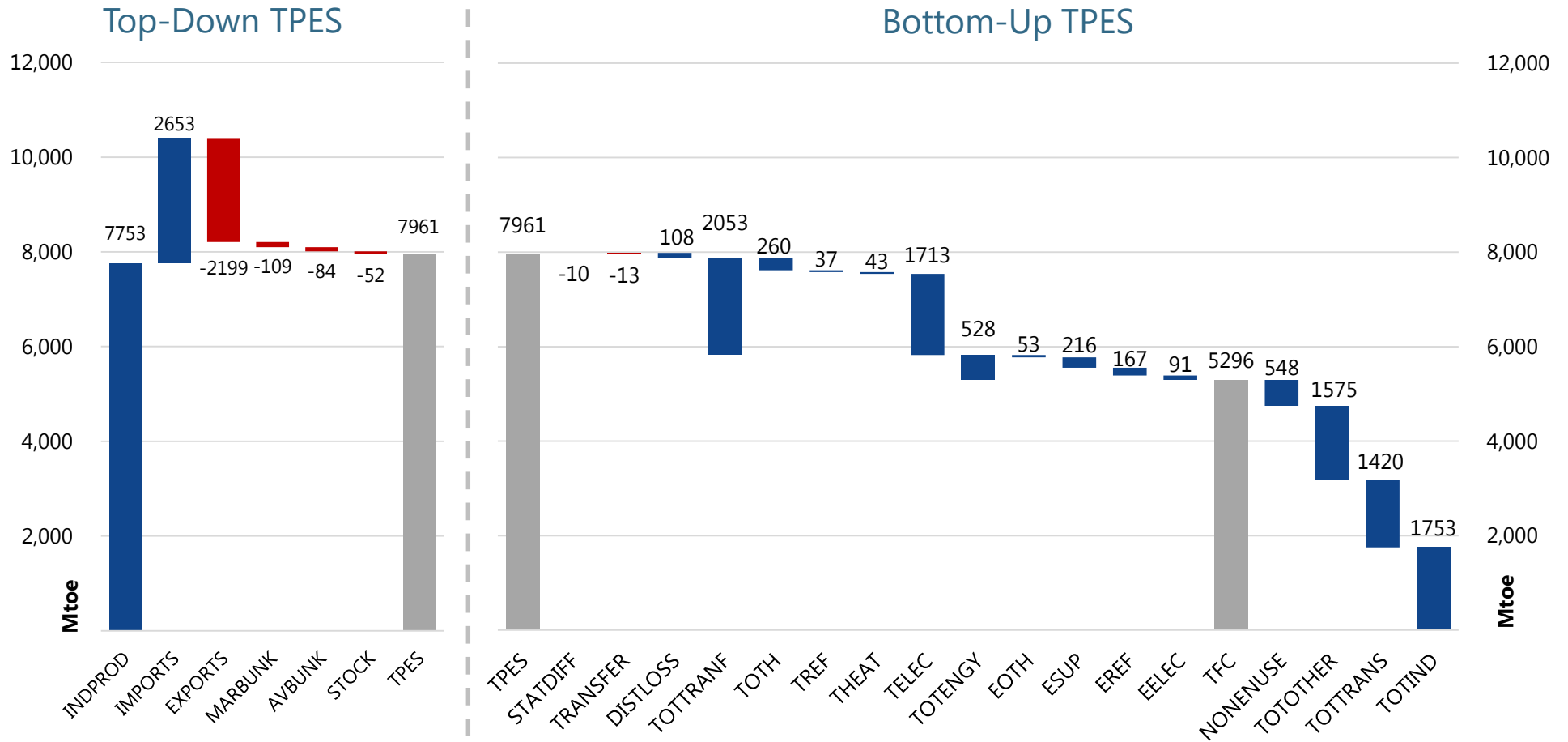
Bottom-Up

| | | |
|------------|--------------------------|--------------------|
| +/- | Transformation | (negative) |
| - | Energy Own Use | (negative) |
| - | Distribution Loss | (negative) |
| - | SD/Transfers | (?/balance) |

+ TFC

TPES

APEC TPES, 2015

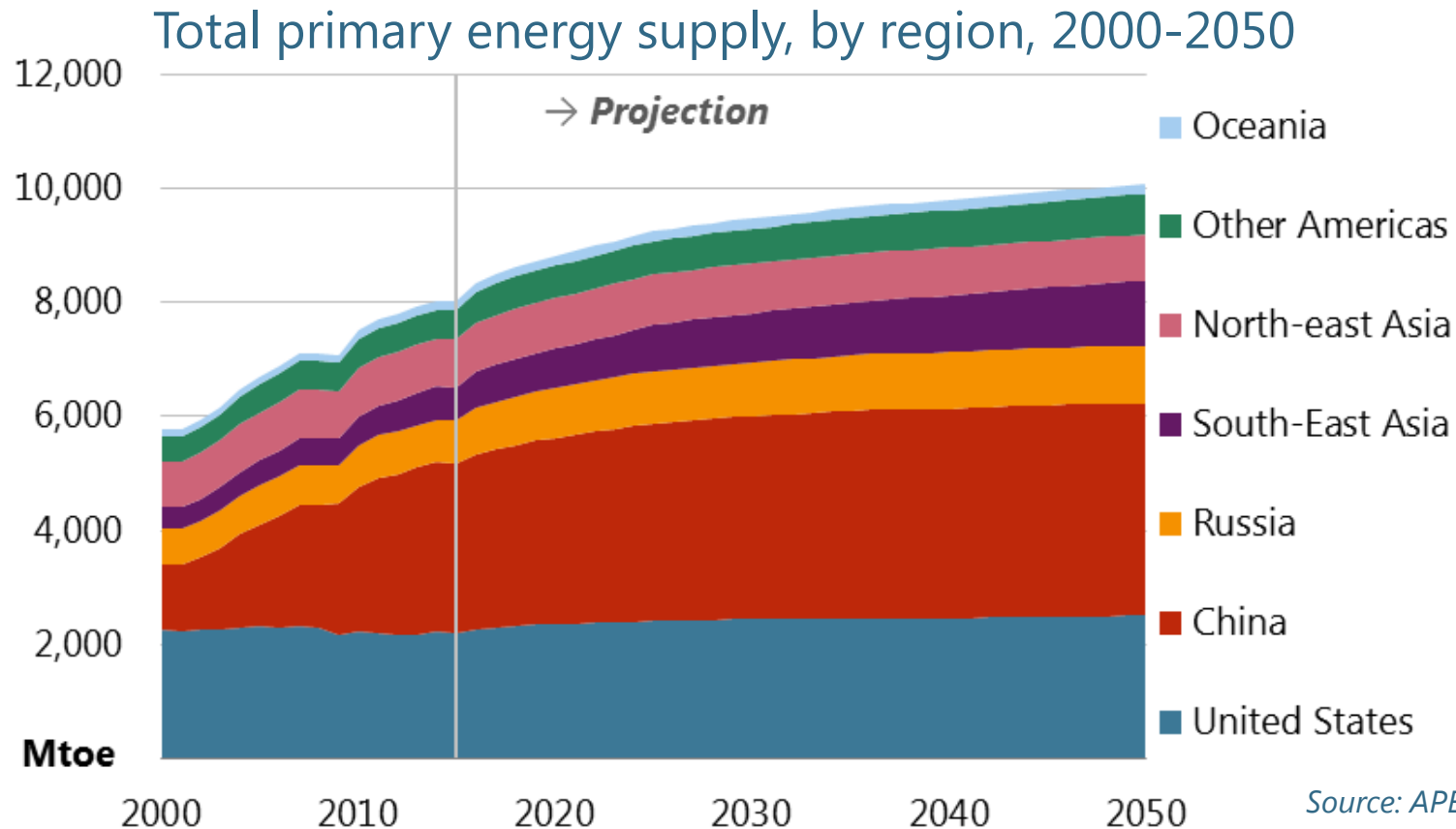


Source: IEA World Energy Balances (2017)



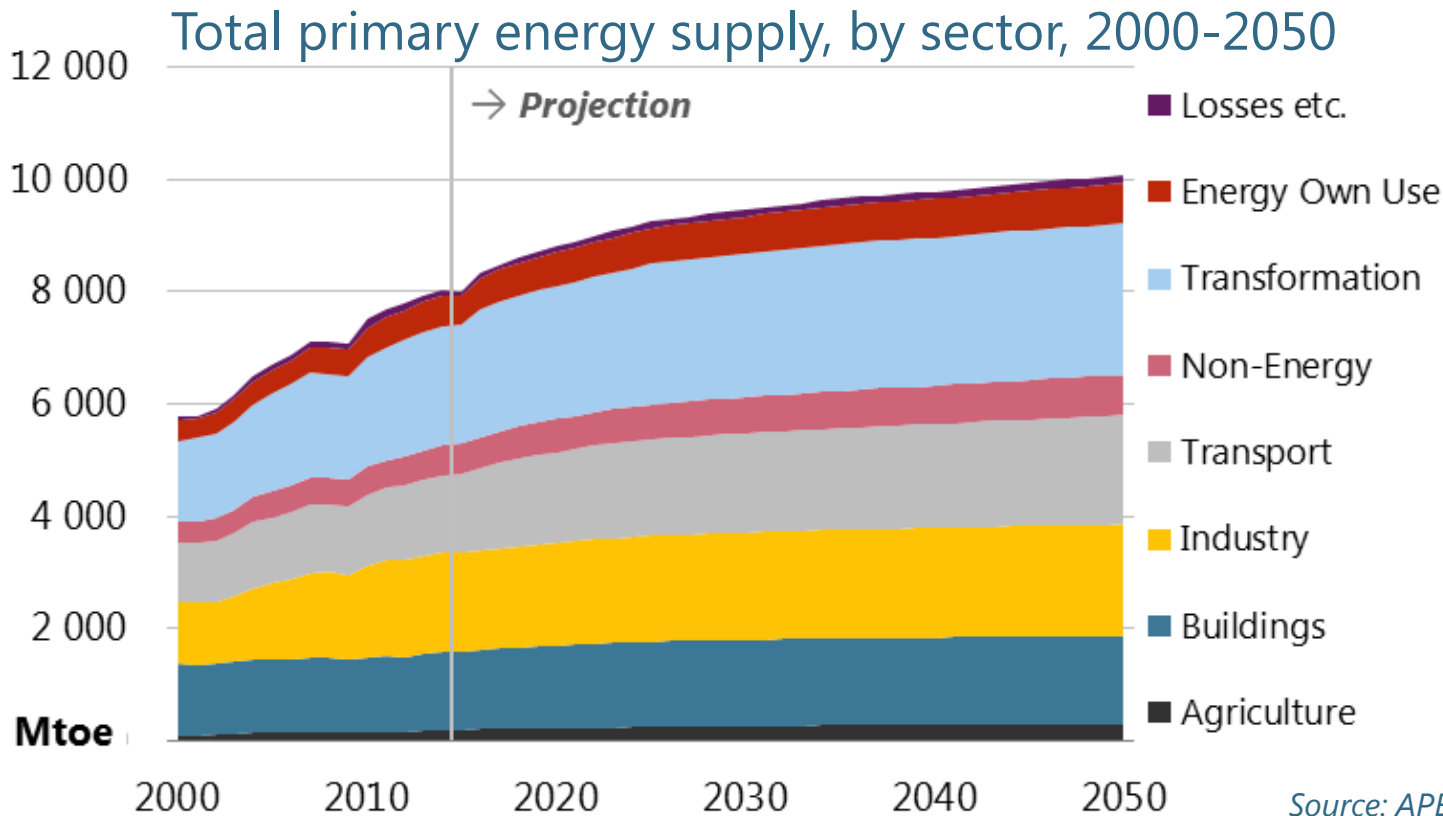
Outlook preliminary results – TPES

Non-OECD economies increase share



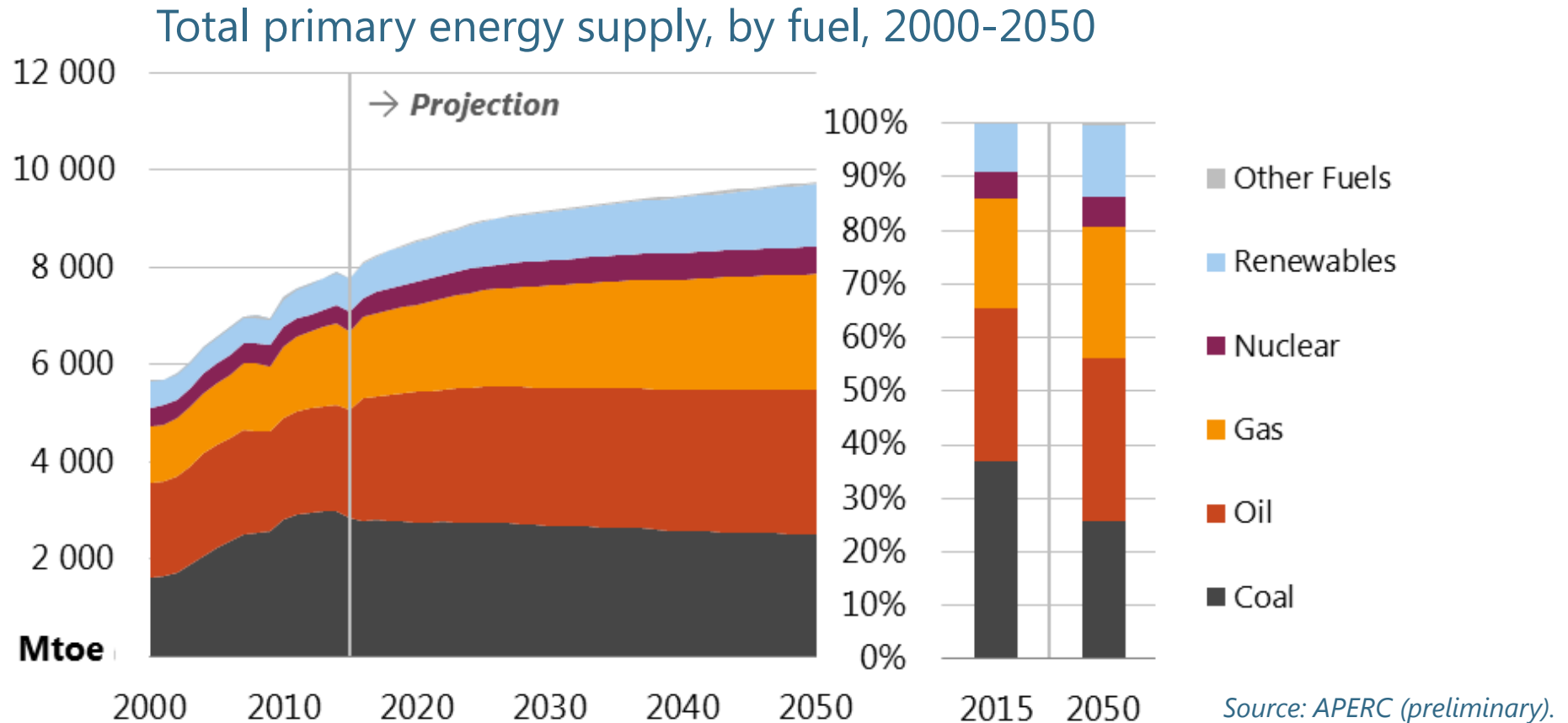
- South East Asia, other Americas and Russia all increase their share of total in 2050, while China and Oceania are flat.
- All regions grow in absolute terms.

Slower energy growth in buildings and industry



- Buildings and industry sectors lose share while all others (particularly transport) increase share.
- All sectors grow in absolute terms (transformation largest in 2050 at 27% of APEC total, industry and transport next at 20%).

Growing renewables, shrinking coal



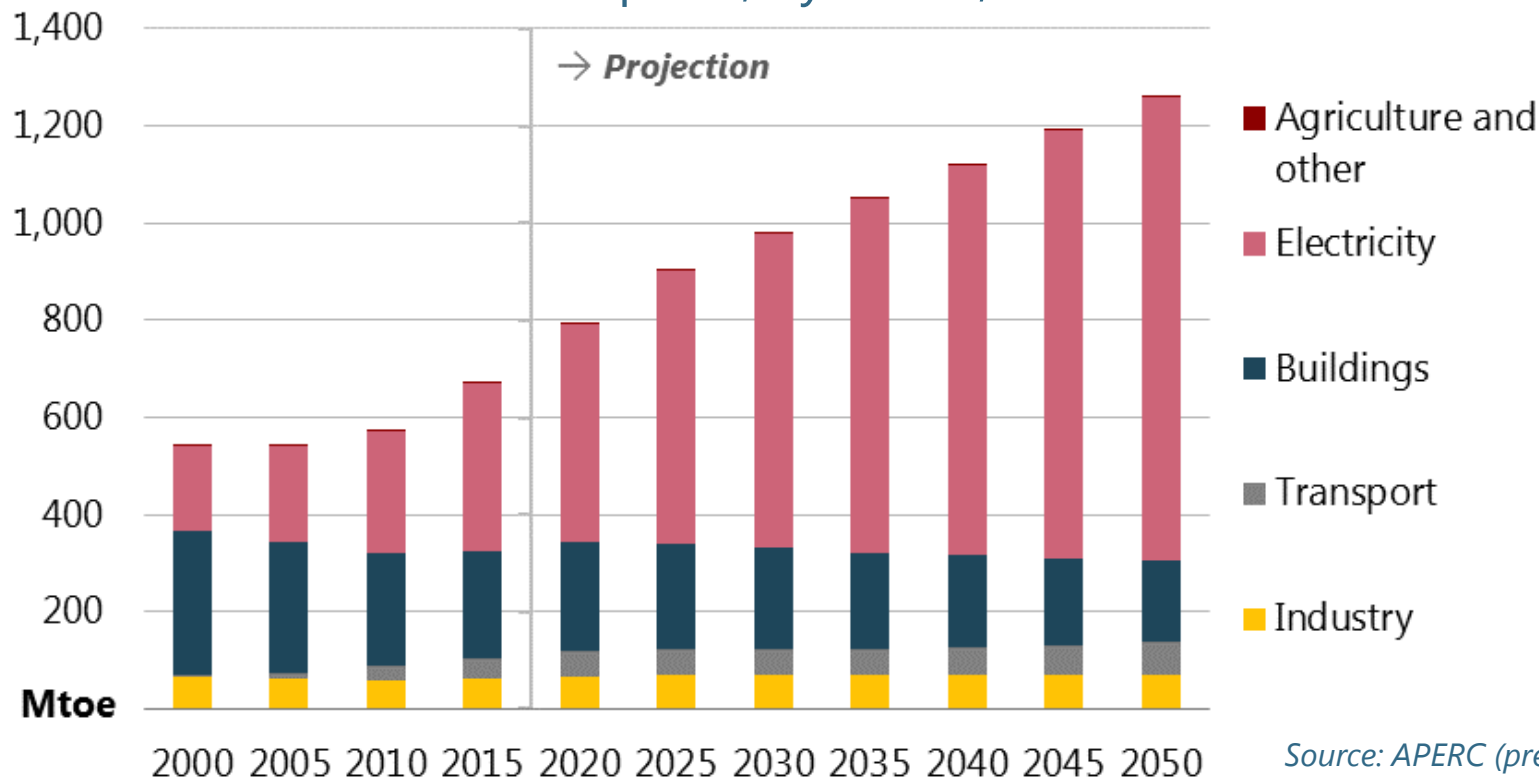
- Oil grows slowly and surpasses coal in the fuel mix from 2024.
- Renewables grow more strongly – from 9% in 2015 to 13% in 2050. Gas also increases share from 21% to 25%.



Outlook preliminary results – Renewables

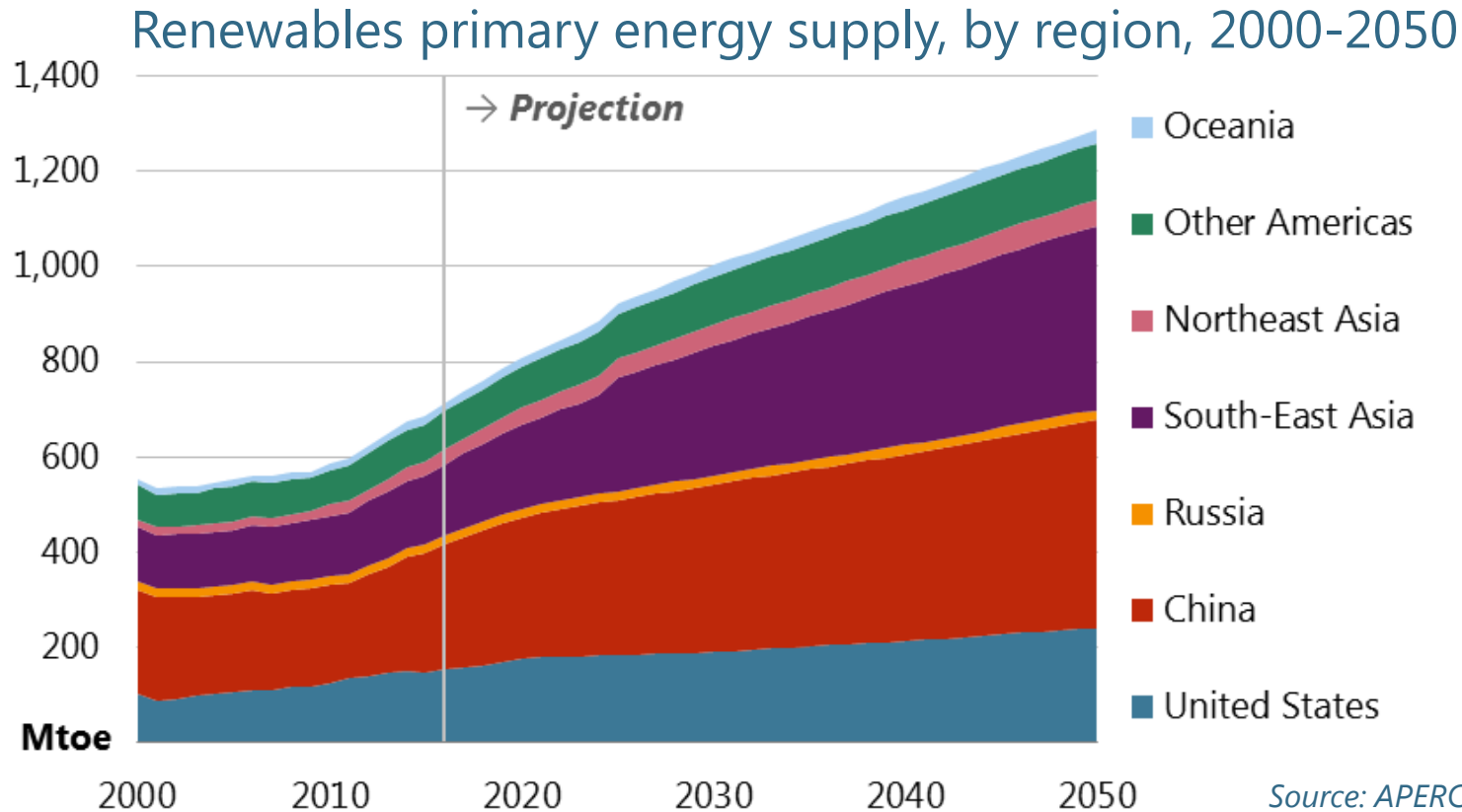
Electricity demand growth drives renewables

Renewables consumption, by sector, 2000-2050



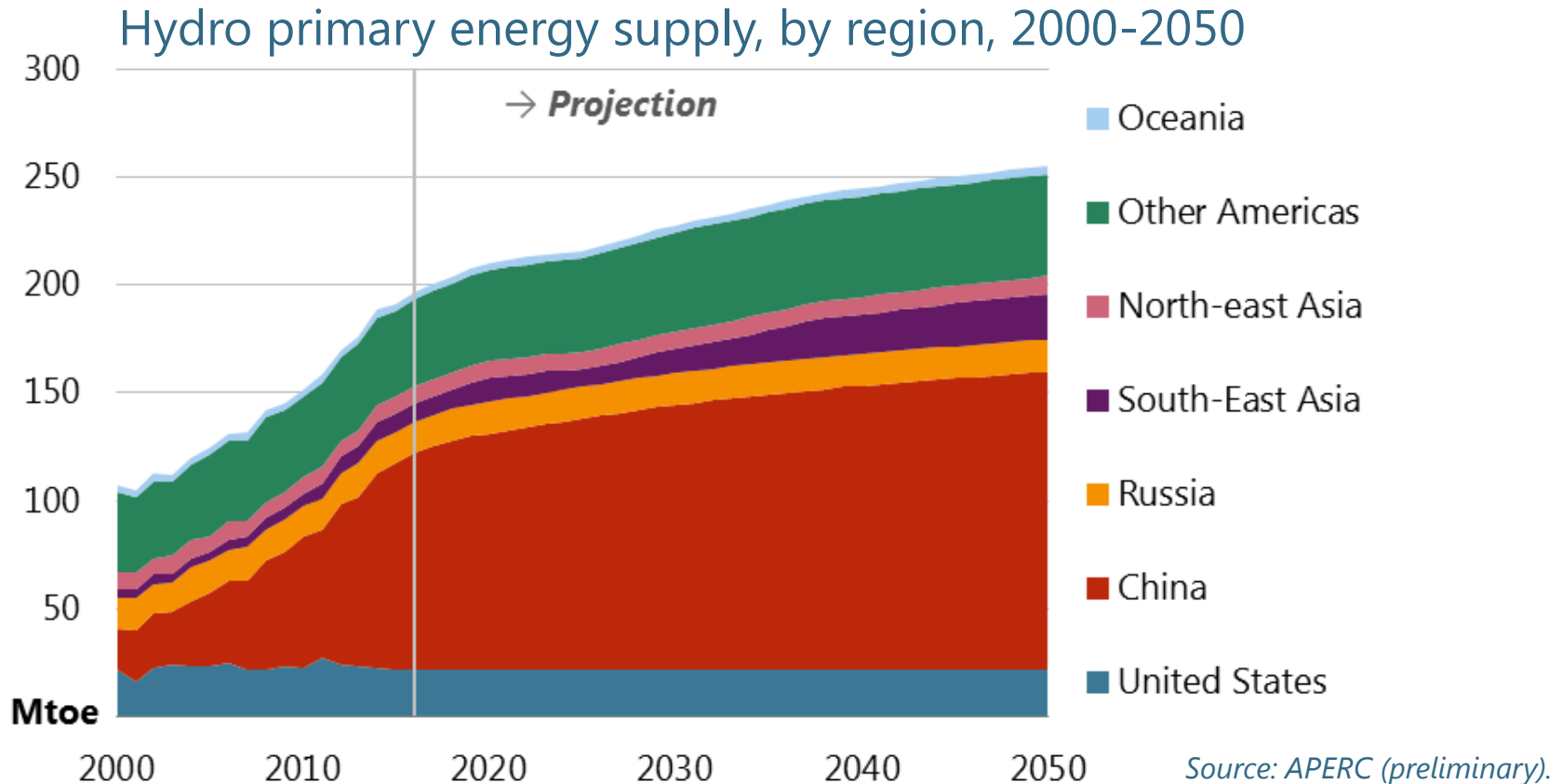
- Renewables in electricity nearly triples from 2015 to 2050.
- Buildings shrinks as traditional biomass is displaced by electricity and cleaner fossil fuels (gas, LPG).

China and SEA drive renewables growth



- South-East Asia is the only region to increase share, from 21% in 2015 to 30% in 2050.
- All other regions lose share but grow in absolute terms. China has the largest share in both 2015 (37%) and 2050 (34%).

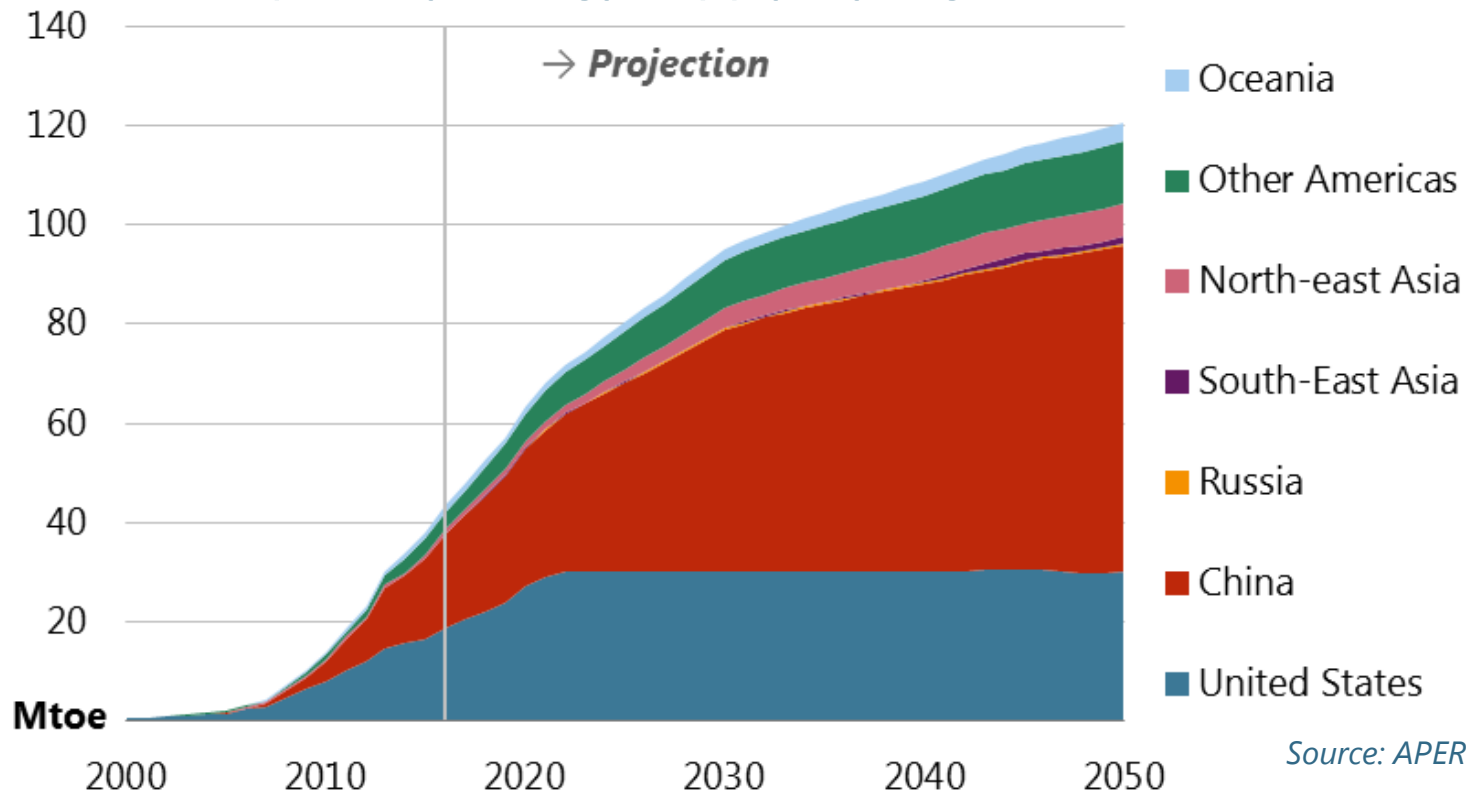
Steady hydro growth



- Hydro grows by 34% from 2015 to 2050 across APEC.
- South East Asia and China are responsible for 85% of APEC growth. Less undeveloped potential in other regions.

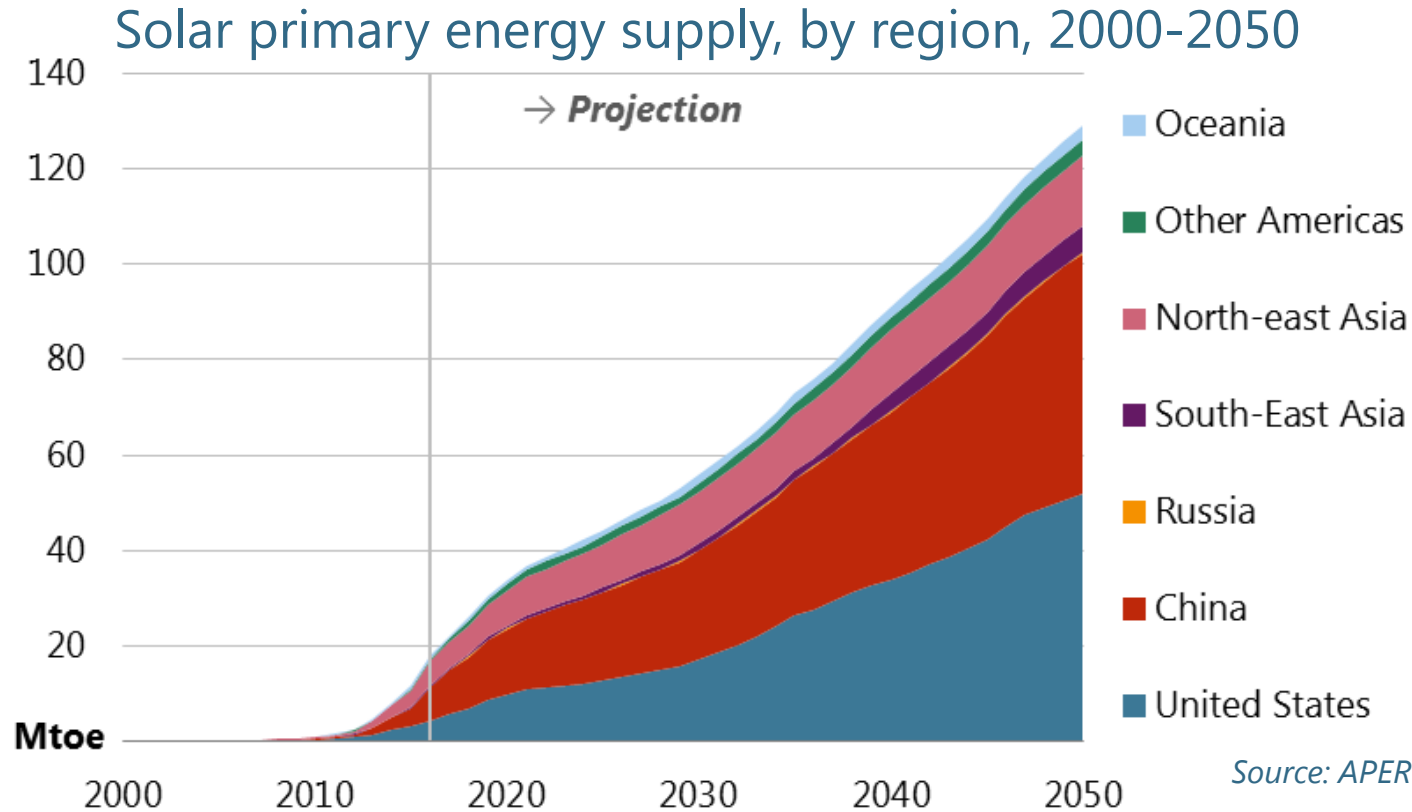
Strong wind growth

Wind primary energy supply, by region, 2000-2050



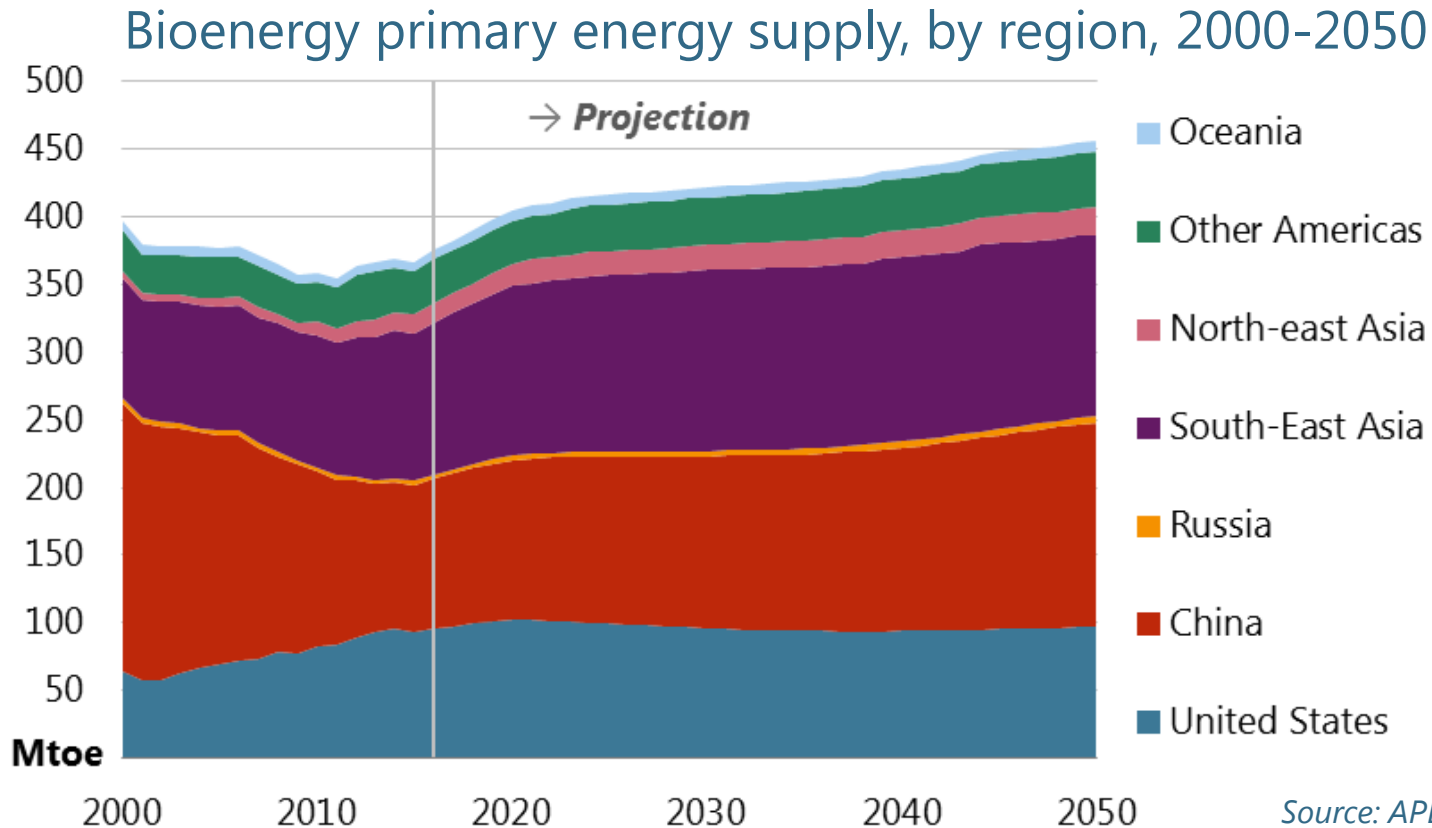
- Strong near-term growth in the US, medium-term growth in other Americas and North-east Asia, and total growth in China.
- Wind grows by 3x across APEC from 2015 to 2050.

Explosive solar growth



- Very strong growth across all regions, especially US and China (AAGR of 10% and 9%) which account for 80% of total supply in 2050.
- APEC-wide increase of 11x from 2015 to 2050.
- By 2050, wind and solar supply combined are equivalent to hydro.

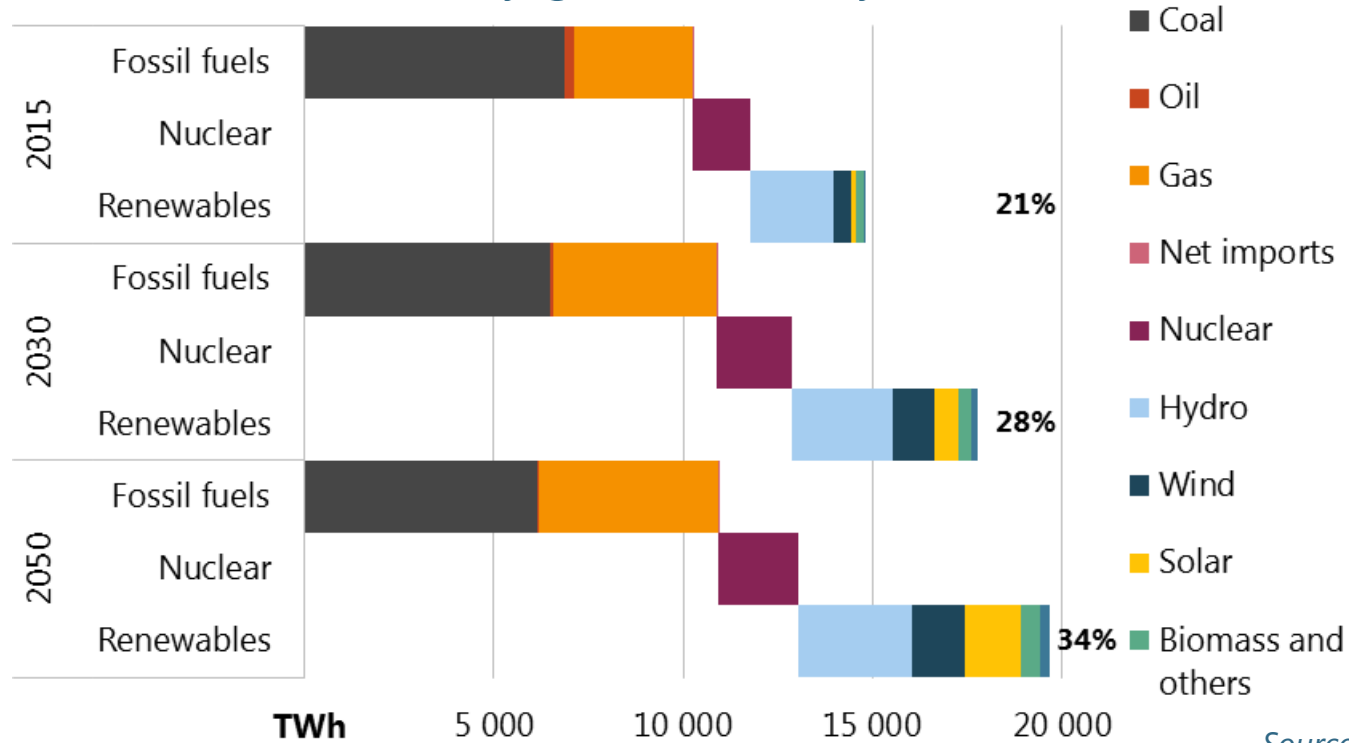
Modest bioenergy growth



- Modest growth as traditional bio-solids in China and South East Asia are replaced by modern bio-solids and -liquids.
- Almost equal to hydro, wind and solar combined in 2050.

Renewables meet electricity demand growth

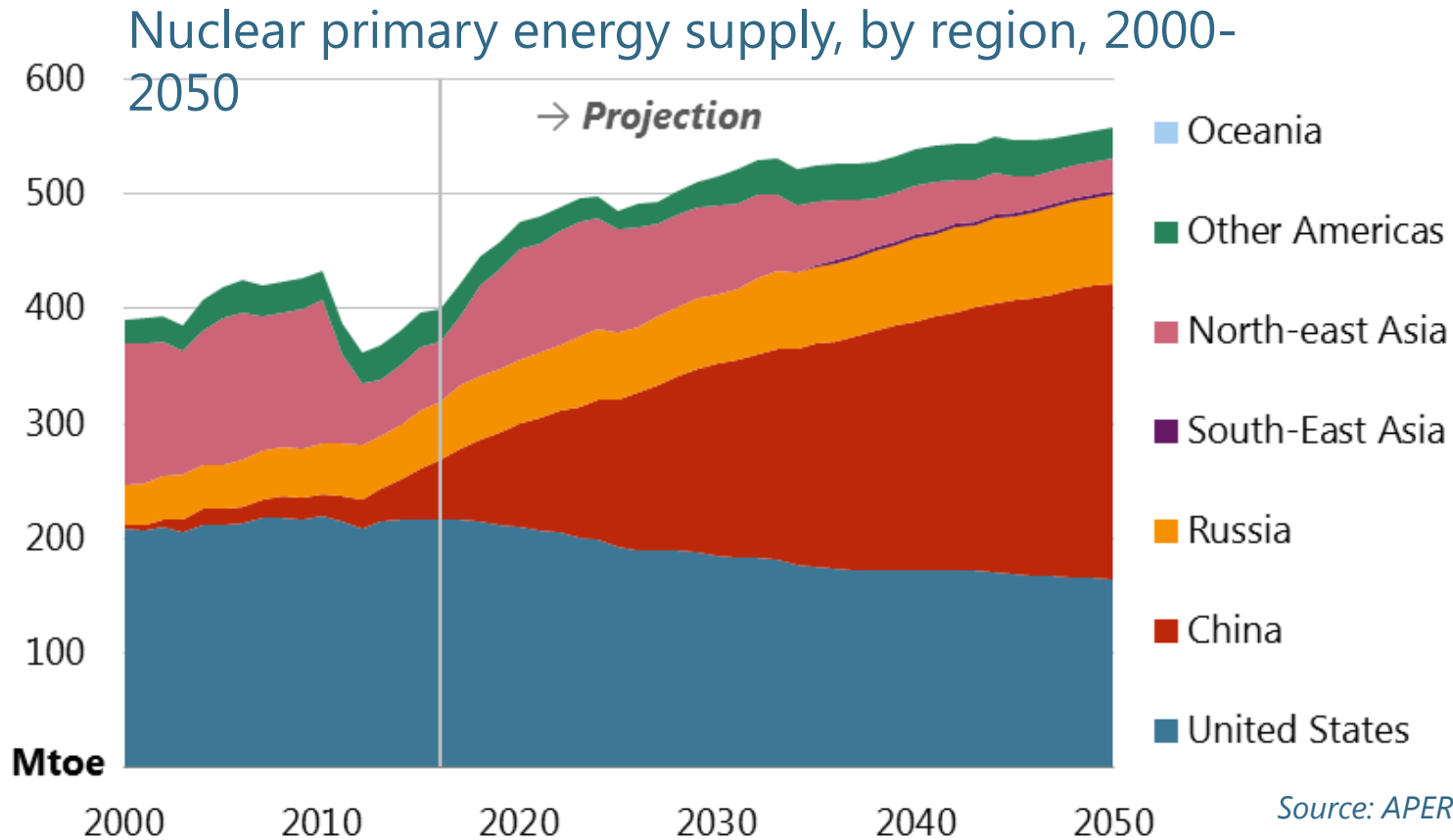
Electricity generation, by fuel, 2000-2050



Source: APERC (preliminary).

- Coal and oil shrink (both in share and absolute terms) and all other fuel types grow.
- Wind and solar have the strongest growth (3x and 11x, respectively from 2015 to 2050) due to falling costs.

China drives nuclear growth



- China increases APEC share, from 13% in 2015 to 46% in 2050.
- Short-term restarts in Japan and medium- to long-term end-of-life retirements in the US, Japan, Korea and Chinese Taipei.



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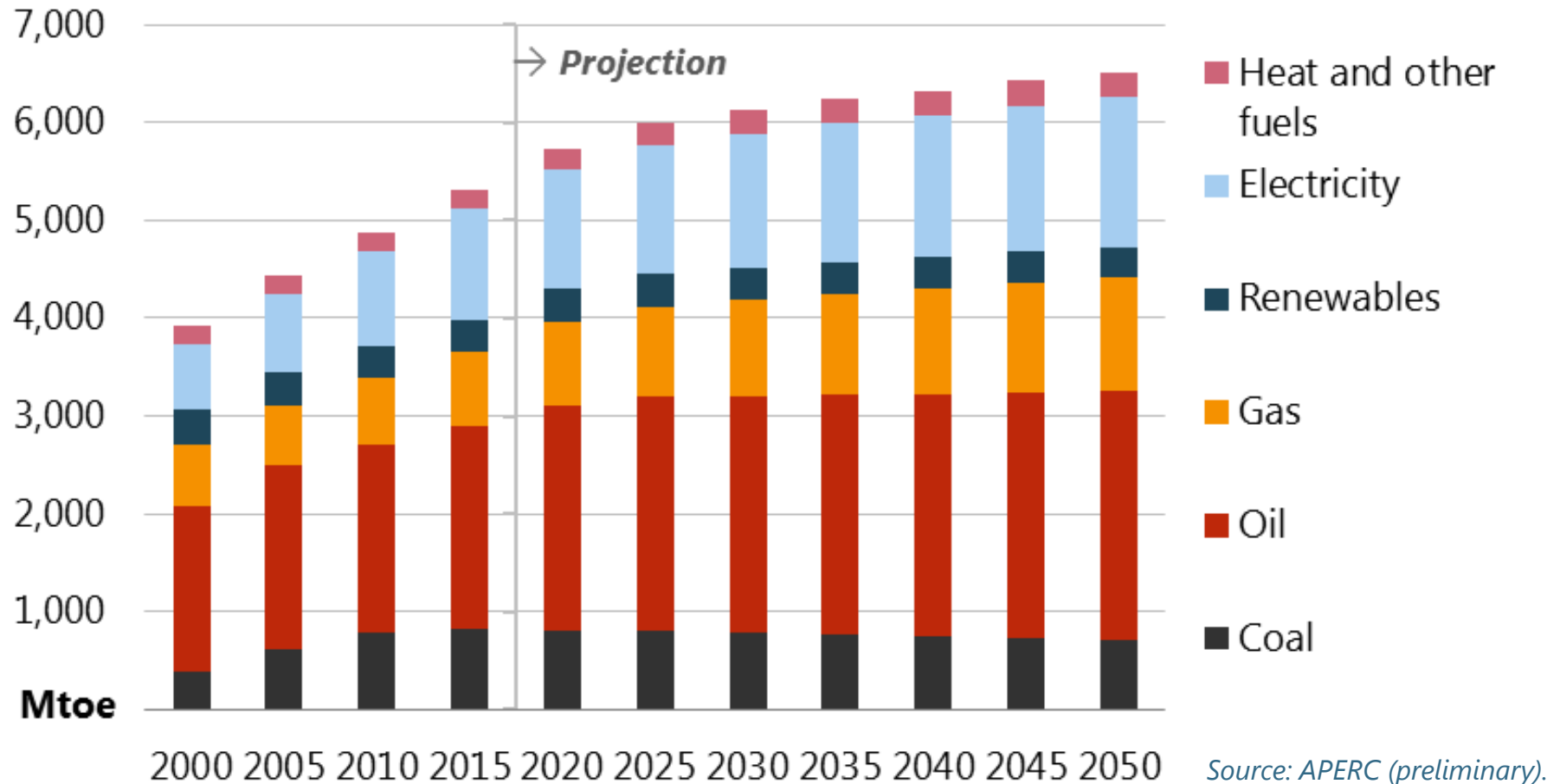


Additional slides



Growing gas, oil and electricity demand

Final energy demand, by fuel, 2000-2050



Growing China and SEA

Final energy demand, by region, 2000-2050

