World Energy Outlook 2018

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20 November 2018

Global energy demand and the growing IEA Family

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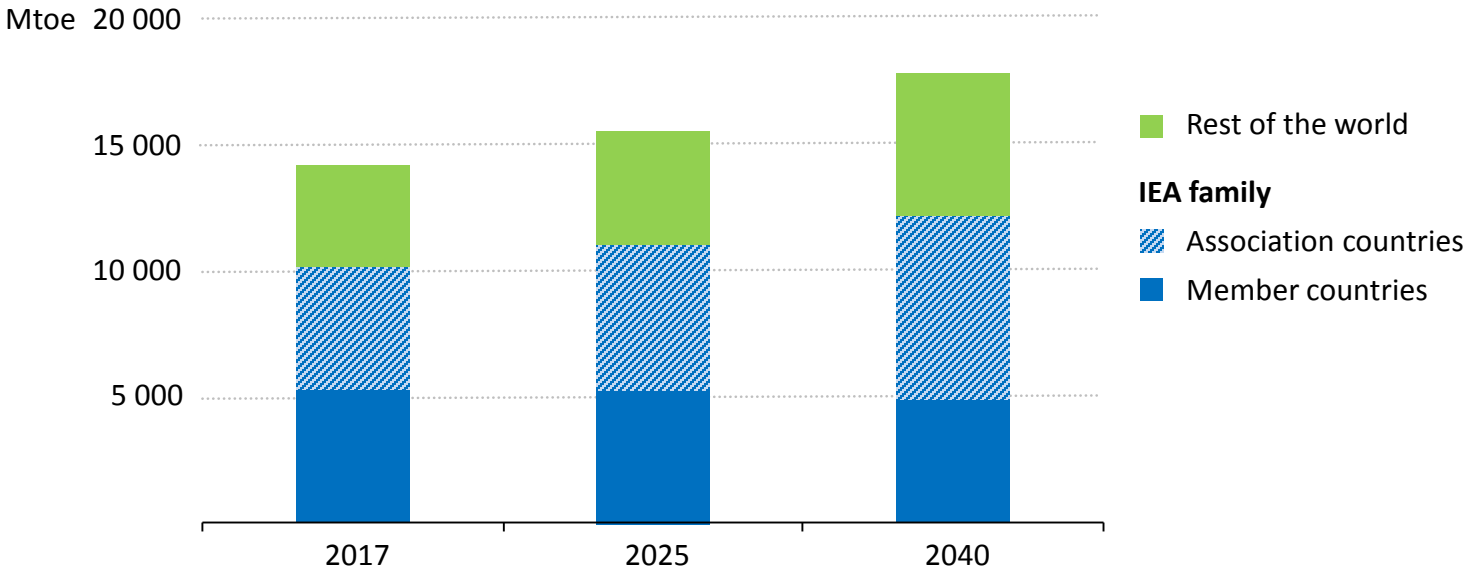
Share of IEA member and association countries in global energy demand



With South Africa the latest country to join the IEA as an Association member, the IEA Family now accounts for over 70% of global energy demand from under 40% in 2015

Today's energy context

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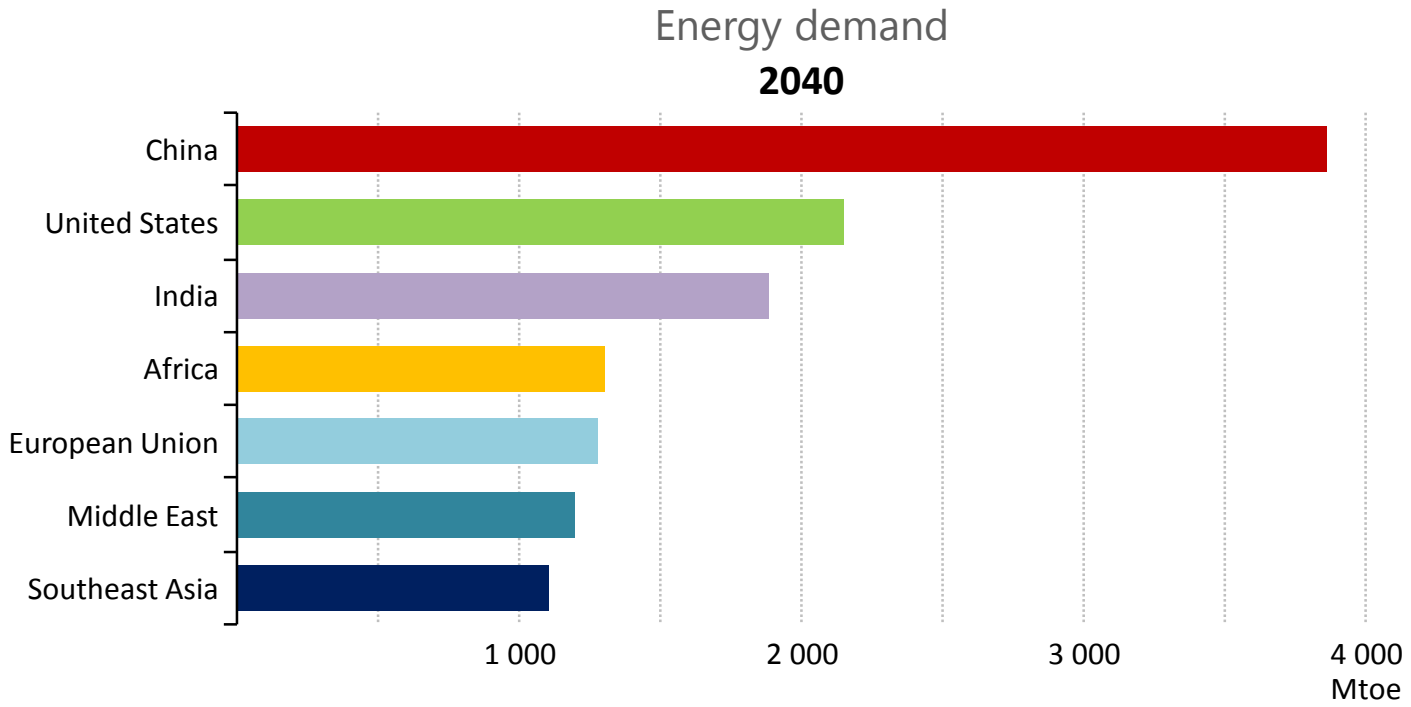
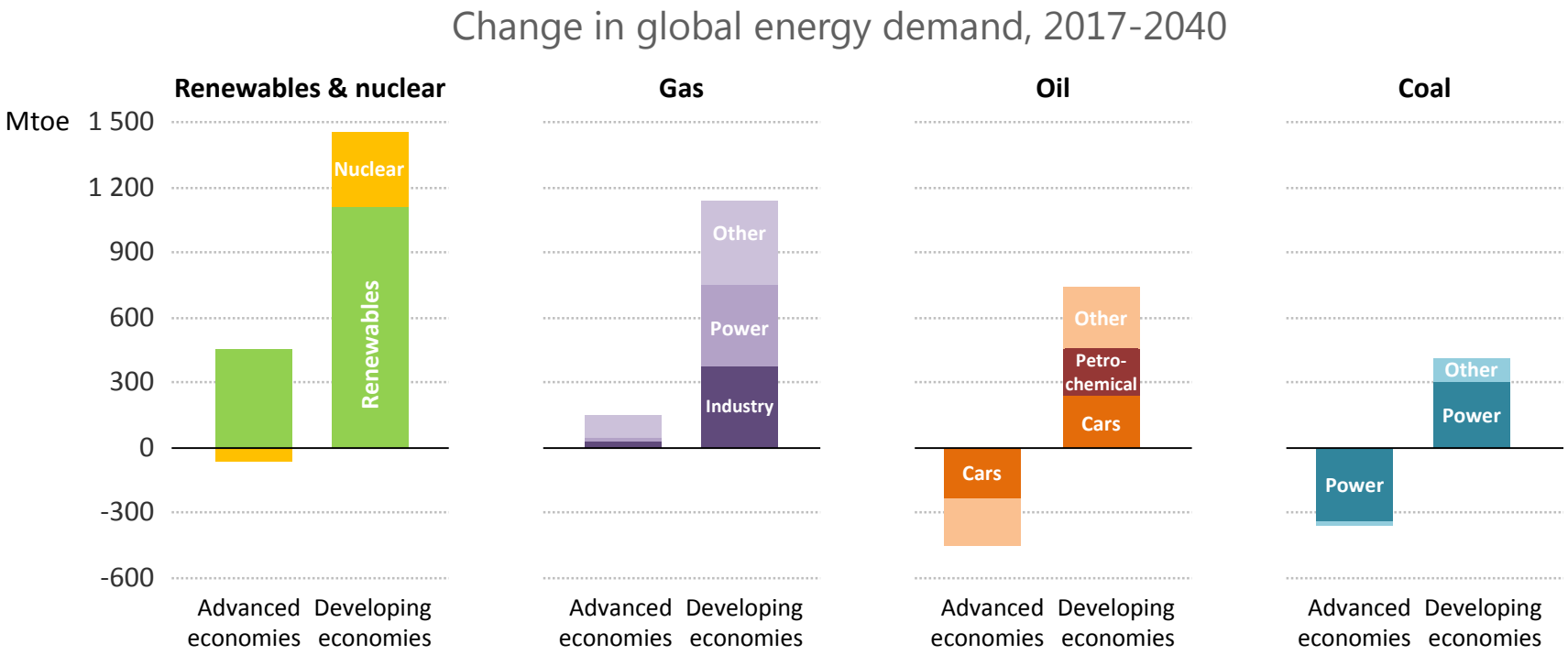
- Mixed signals about the pace & direction of change in global energy:
  - Oil markets are entering a period of renewed uncertainty & volatility
  - Natural gas is on the rise: China's rapid demand growth is erasing talk of a 'gas glut'
  - Solar PV has the momentum while other key technologies & efficiency policies need a push
  - Our assessment points to energy-related CO_2 emissions reaching a historic high in 2018
  - For the first time, the global population without access to electricity fell below 1 billion
- Electricity is carrying great expectations, but questions remain over the extent of its reach in meeting demand & how the power systems of the future will operate
- Policy makers need well-grounded insights about different possible futures & how they come about. The *WEO* provides two key scenarios:
  - New Policies Scenario
  - Sustainable Development Scenario

The *new* geography of energy



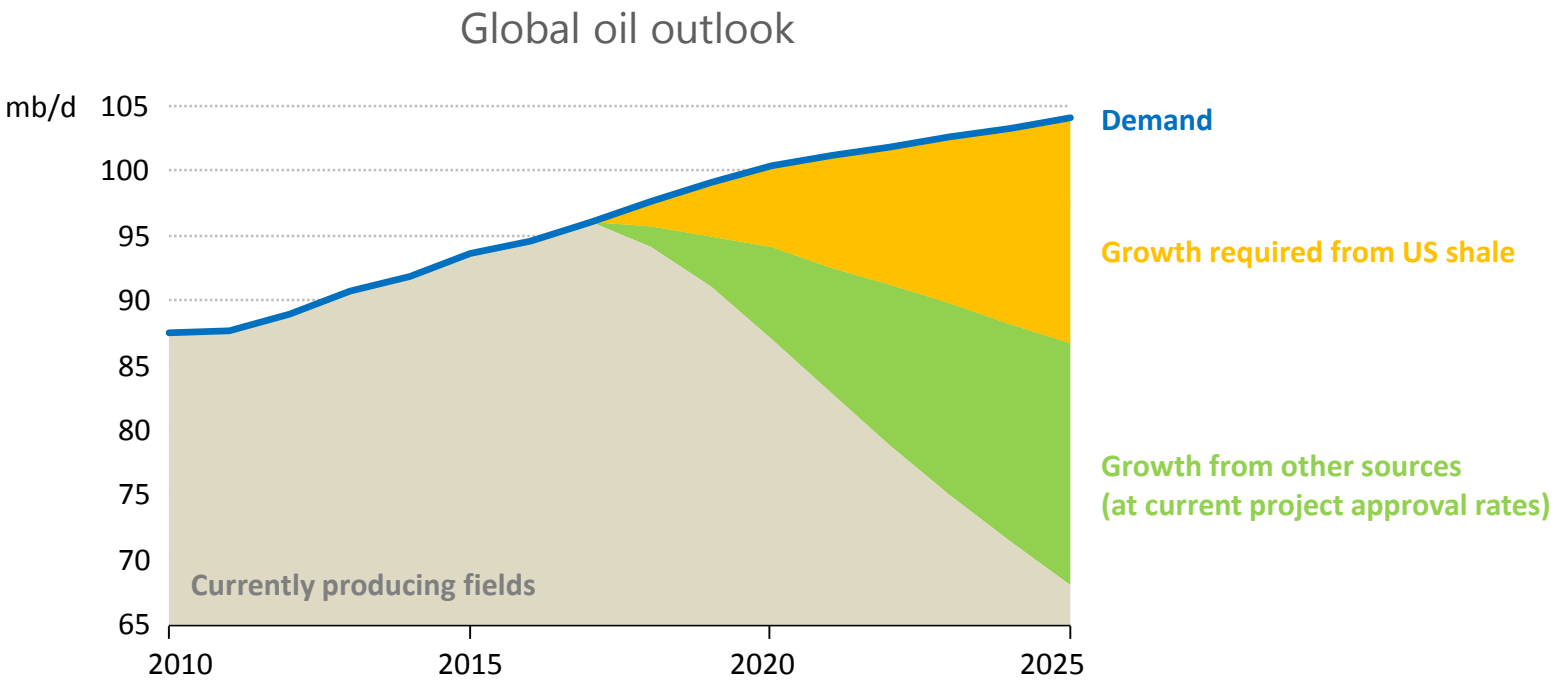
In 2000, more than 40% of global demand was in Europe & North America and some 20% in developing economies in Asia. By 2040, this situation is completely reversed.

Fuelling the demand for energy



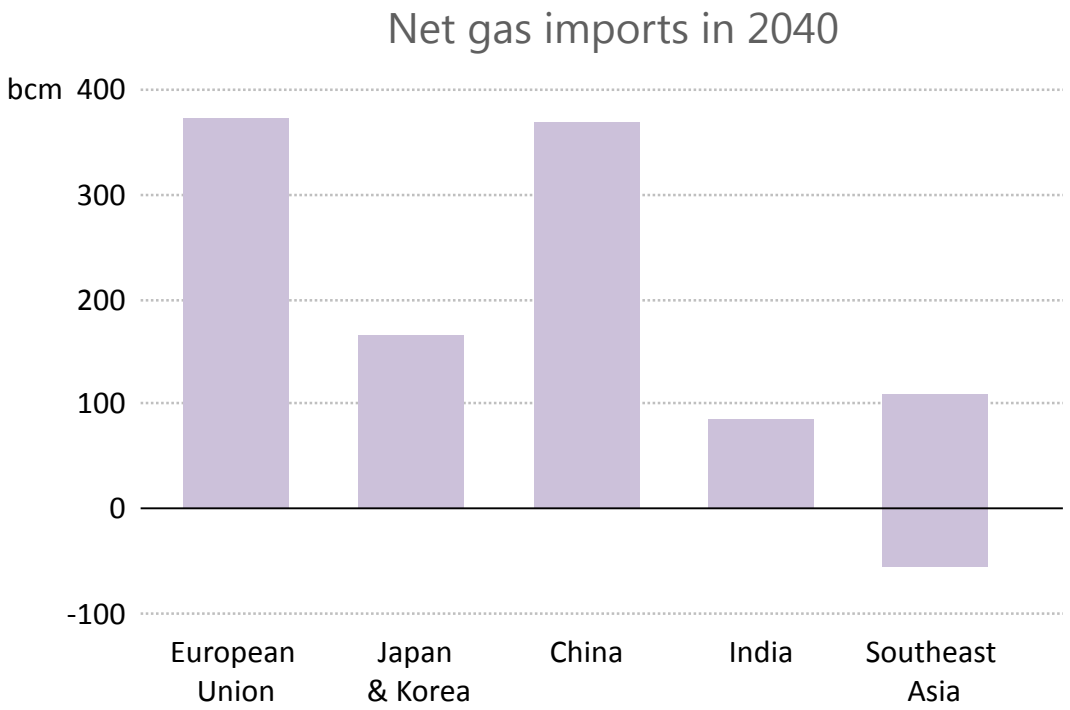
The increase in demand would be twice as large without continued improvements in energy efficiency, a powerful tool to address energy security & sustainability concerns

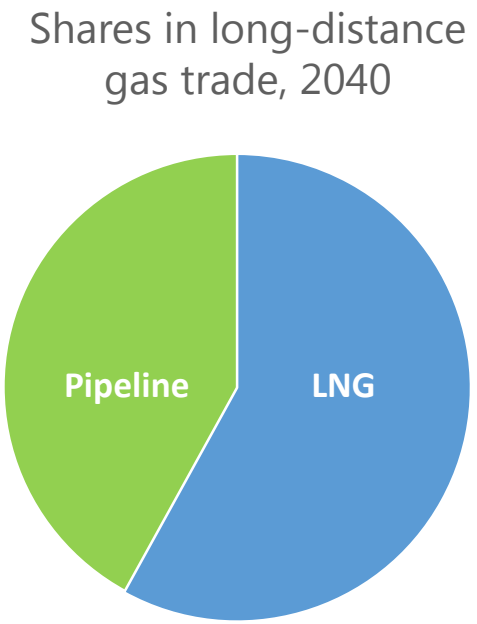
Can US shale alone avoid a turbulent oil market?



Oil demand looks robust in the near term; if approvals of new conventional projects remain low, market stability would require continuous exceptional growth in US shale

China – the emerging giant of gas demand





Developing countries in Asia – led by China – dominate the rise in long-distance gas trade; more than 80% of the growth to 2040 comes in the form of LNG

Our energy destiny rests with governments

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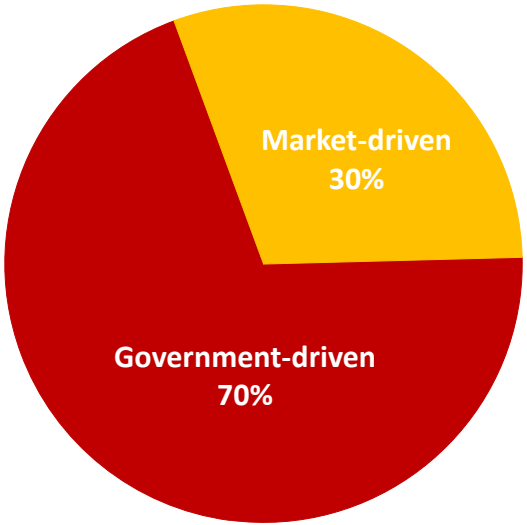
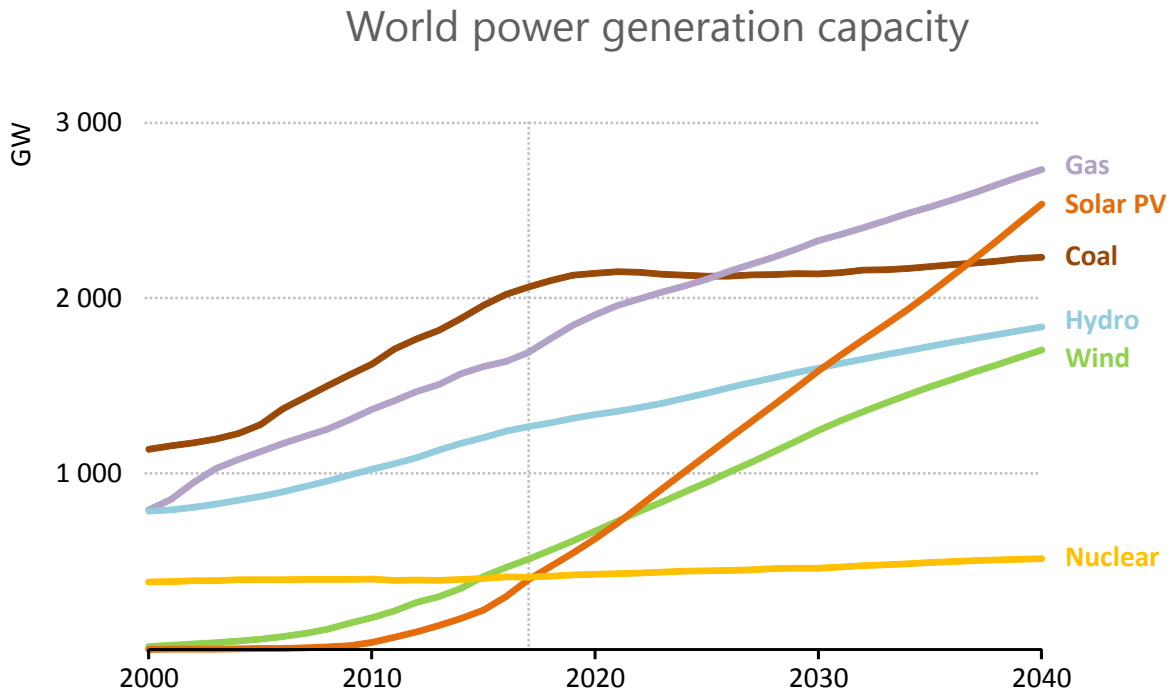
Total investment in energy supply to 2040:
$42.3 trillion



More than 70% of the $2 trillion required each year in energy supply investment either comes from state-directed entities or receives a full or partial revenue guarantee

Solar PV outpaces all other technologies



Renewables make up two-thirds of all capacity additions worldwide to 2040, capturing 70% of power plant investment

Flexibility: the cornerstone of tomorrow's power systems

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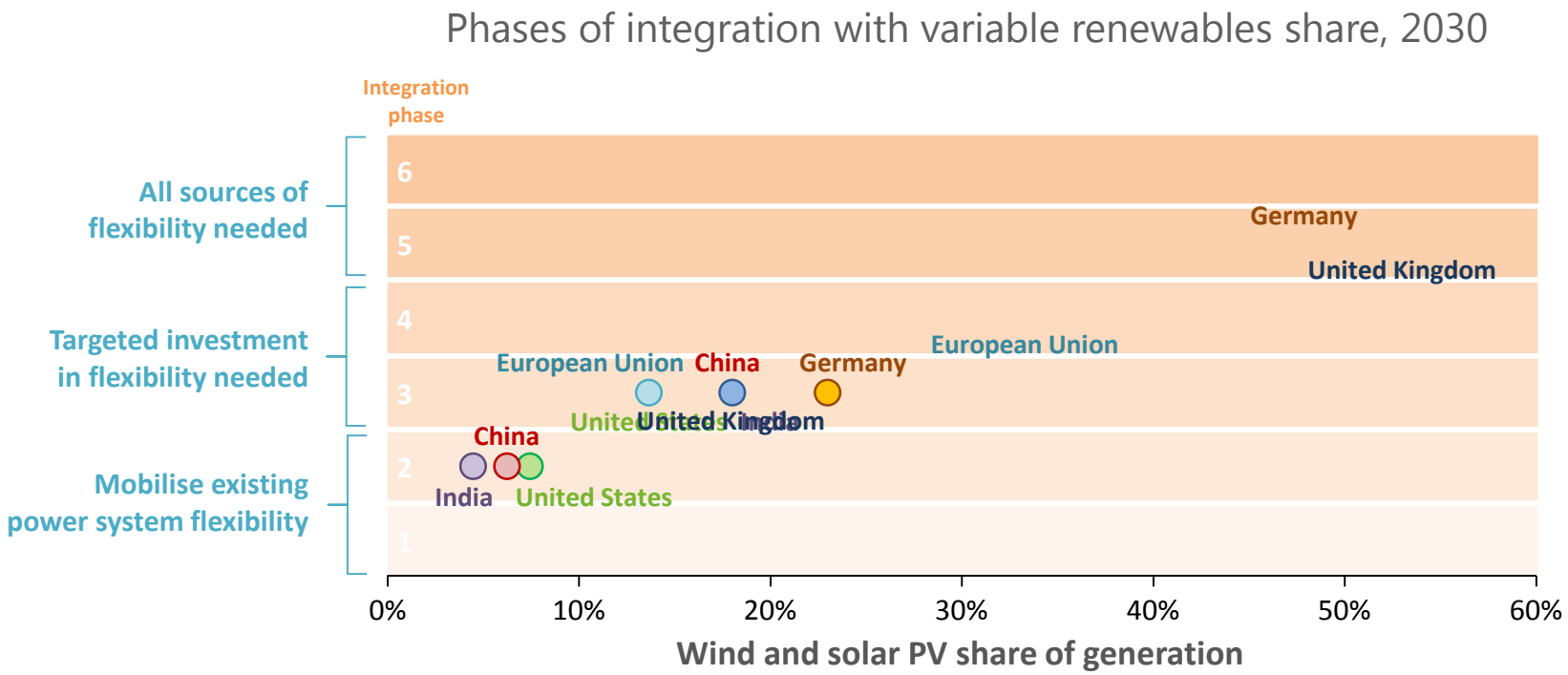
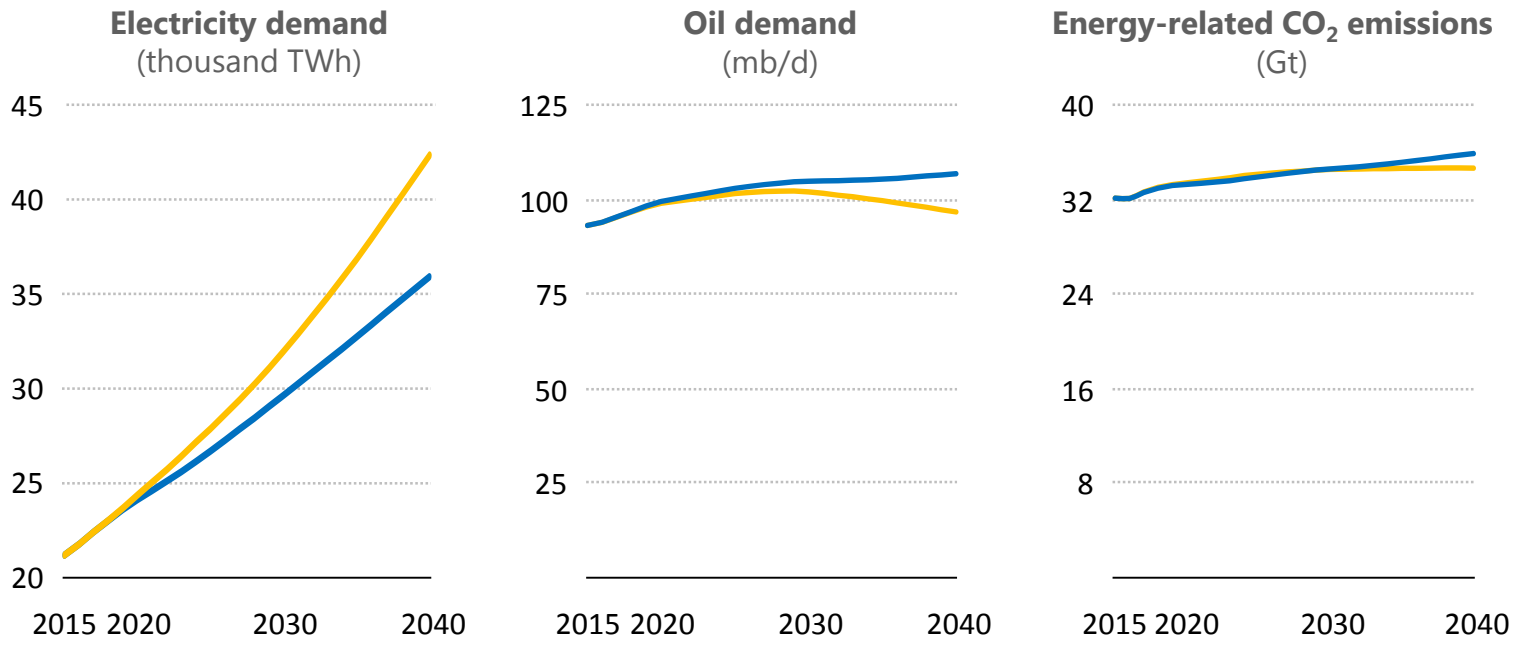


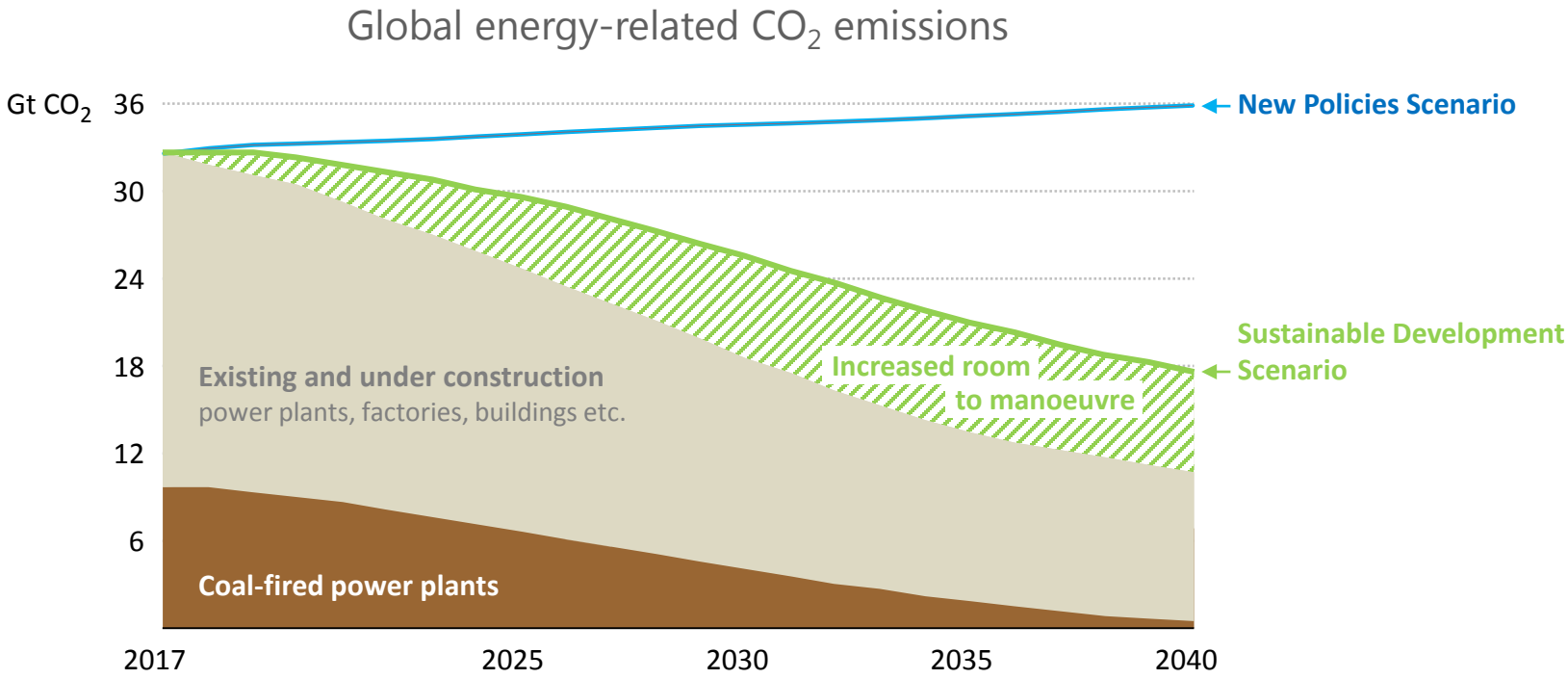
Higher shares of variable renewables raise flexibility needs and call for reforms to deliver investment in power plants, grids & energy storage, and unlock demand-side response

What if the future is electric?



Increased electrification leads to a peak in oil demand, avoids 2 million air pollution-related premature deaths, but does not necessarily lead to large CO_2 emissions reductions

Can we unlock a different energy future?



Coal plants make up one-third of CO_2 emissions today and half are less than 15 years old; policies are needed to support CCUS, efficient operations and technology innovation

Conclusions

- The links between energy & geopolitics are strengthening & becoming more complex, a major factor in the outlook for energy security
- A mismatch between robust oil demand in the near term & a shortfall in new projects risks a sharp tightening of oil markets in the 2020s
- The rapid growth of electricity brings huge opportunities; but market designs need to deliver both electricity *and* flexibility to keep the lights on
- There is no single solution to turn emissions around: renewables, efficiency & a host of innovative technologies, including storage, CCUS & hydrogen, are all required
- The future pathway for energy is open: governments will determine where our energy destiny lies

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