Today’s energy context

- 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 CO₂ 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
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The new geography of energy

**Energy demand**

**China**

**United States**

**India**

**Africa**

**European Union**

**Middle East**

**Southeast Asia**

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.
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?

Global oil outlook

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.
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.
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Our energy destiny rests with governments

Total investment in energy supply

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.
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.
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Two directions for nuclear power

Without policy changes

The contribution of nuclear power could decline substantially in leading markets, while large growth is coming, as China takes first position within a decade.
What if the future is electric?

**Scenario:**
- **New Policies**
- **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 CO₂ emissions today and half are less than 15 years old; policies are needed to support CCUS, efficient operations and technology innovation.
Can we unlock a different energy future?

Global energy-related CO₂ emissions

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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