The context

- **Investment is the lifeblood of the energy system, which determines long-term trends of supply, emissions and fuel demand**

- **Investors face new challenges and opportunities from recent trends**
  - Macroeconomic uncertainty and structural change affects demand patterns
  - The energy sector faces accelerated technological change
  - Lower energy prices and increasing inter-fuel competition reshape investment

- **Global energy investment declined in 2015, mainly due to lower oil and gas spending**

- **Share of renewables in investment boosted by technology progress, strong policy support and growth in good resource markets**
Investment flows signal a reorientation of the global energy system

Global Energy Investment, 2015

USD 1.8 trillion

- Oil & Gas: 46%
- Power Generation: 23%
- Energy Efficiency: 12%
- Electricity Networks: 14%
- Coal: 4%
- Biofuels and Solar Heat: 1%

An 8% reduction in 2015 global energy investment results from a $200 billion decline in fossil fuels, while the share of renewables, networks and efficiency expands.
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Top five markets comprised over half of global energy supply investment

Energy supply investment in 2015, selected markets

Boosted by record power sector spending, China regains its position as top investment market, while the US declines due to sharply lower oil and gas investment.
Energy efficiency investment rose 6%, bucking the trend despite lower energy prices.

Lower oil prices can reduce energy efficiency spending. But government policies remain the key driver, a warning against complacency.
Unprecedented wave of investment cuts in the upstream oil and gas industry

Global upstream capital spending 2010-2017

Cost deflation, efficiency improvements and reduced activity levels might lead for the first time to three consecutive years of investment decline
The share of NOCs in global upstream investment reaches an all time high

Share of upstream oil and gas investment, by company type

Upstream investment remains robust in the Middle East and Russia while North American shale and global offshore spending have been hit most severely
Investment in renewables-based capacity more than covers 2015 global electricity growth. Wind leads, surging 35% in 2015 on economics and record offshore growth.
In electricity networks, batteries accelerate though grids comprise most investment growth.

Grid-scale battery storage spending has expanded tenfold since 2010. Their value lies most in complementing grids that constitute the bulk of investment.
Infrastructure costs favour coal power over gas in Asian energy importers

Asian markets comprised 85% of global coal power investment, while N. America and Middle East, with robust infrastructure, favoured gas for new fossil fuel power.
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Global nuclear investment remains robust due to China

Nuclear construction starts, 2000-2015

Economics and public concerns remain a challenge to significant nuclear expansion
Conclusions

- Global energy investment in 2015 is 8% lower. The share of oil & gas declined, while that of renewables, efficiency and nuclear rose.

- Massive cost deflation across the entire energy spectrum is reshaping competition between fuels and technologies.

- Unprecedented cuts in upstream investment are shifting the geography of oil production.

- Renewables investment accounts for more than two-thirds of power generation and more than covers global electricity demand growth.

- The IEA will continue to measure investment flows and assess their implications for the global energy sector.