



# IEA update

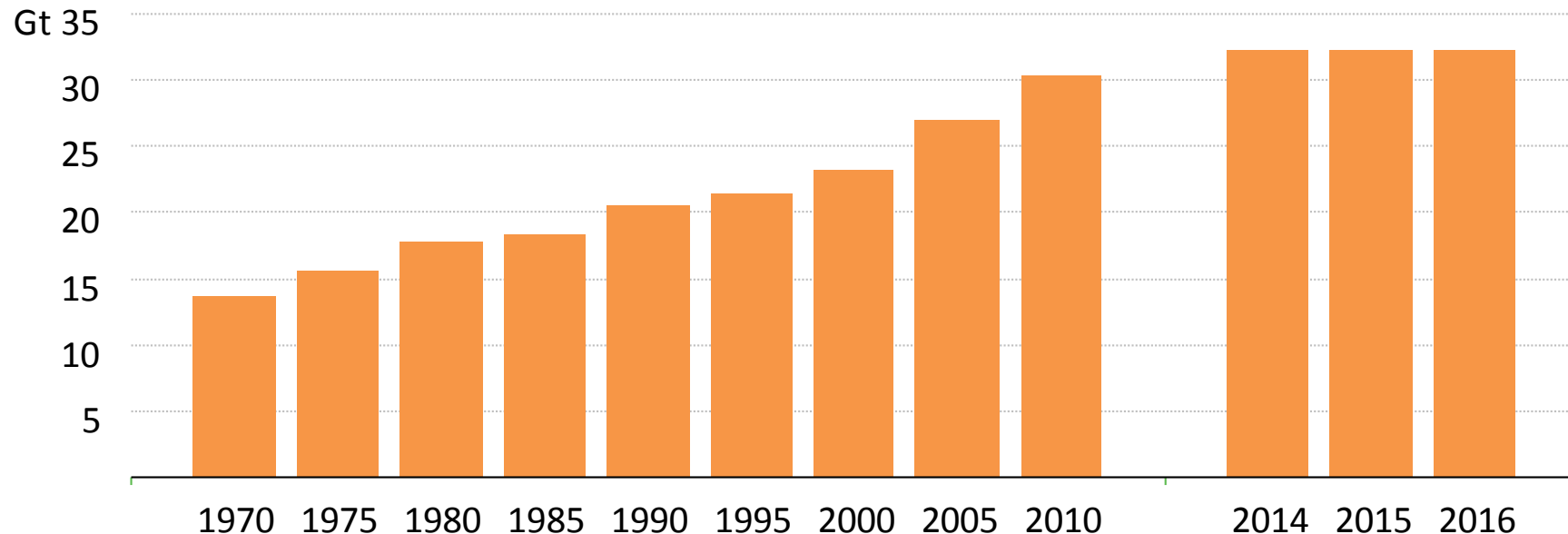
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Luis Munuera, Energy Analyst, ETP Division

- Global energy markets are changing rapidly
  - *Renewables supplied half of global electricity demand growth in 2016, and increase in nuclear capacity reached highest level since 1993*
  - *Global energy intensity improved by 2.1% in 2016*
  - *Electric car sales were up 40% in 2016, a new record year*
- The energy sector remains key to sustainable economic growth
  - *1.2B people lack access to electricity; 2.7B people lack access to clean cooking*
  - *Largest source of GHG emissions today, around two-thirds of global total*
  - *Largest source of air pollution, linked to 6.5 million premature deaths per year*
- There is no single story about the future of global energy
  - *Fast-paced technological progress and changing energy business models*

# Global CO<sub>2</sub> emissions flat for 3 years – an emerging trend?

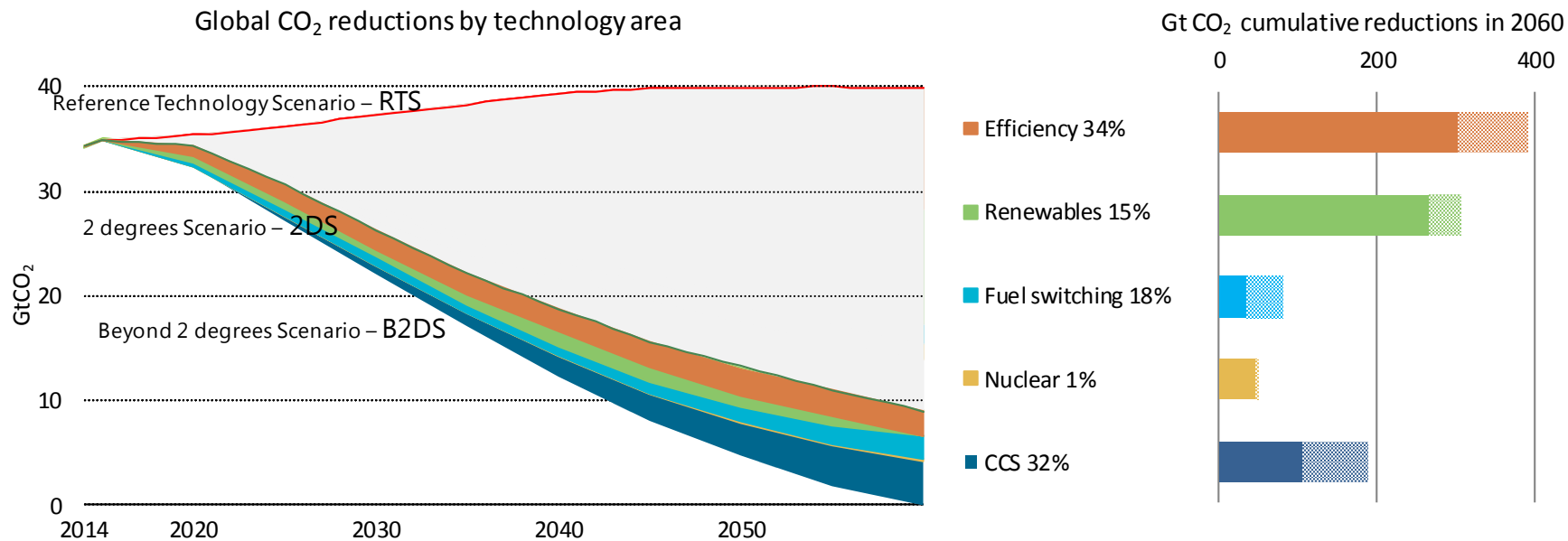
Global energy-related CO<sub>2</sub> emissions



**IEA analysis shows that global CO<sub>2</sub> emissions remained flat in 2016 for the third year in a row, even though the global economy grew, led by emission declines in the US and China.**

# How far can technology take us?

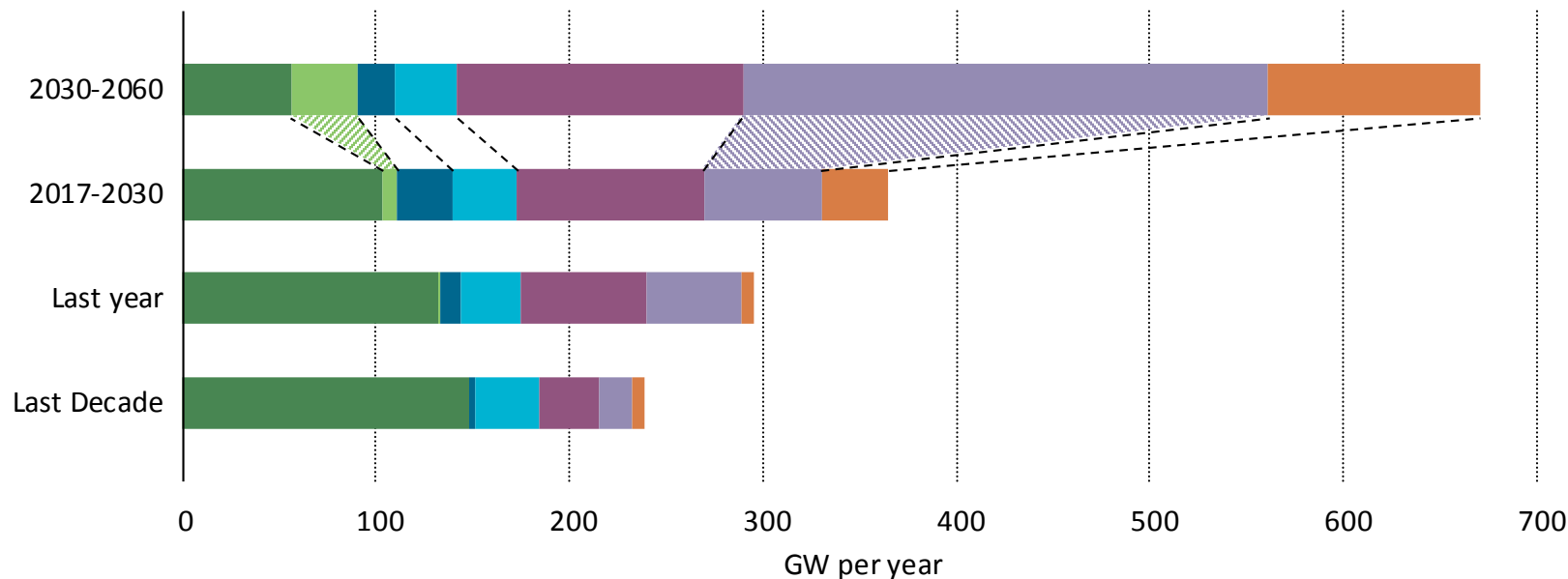
## Technology area contribution to global cumulative CO<sub>2</sub> reductions



**Pushing energy technology to achieve carbon neutrality by 2060 could meet the mid-point of the range of ambitions expressed in Paris.**

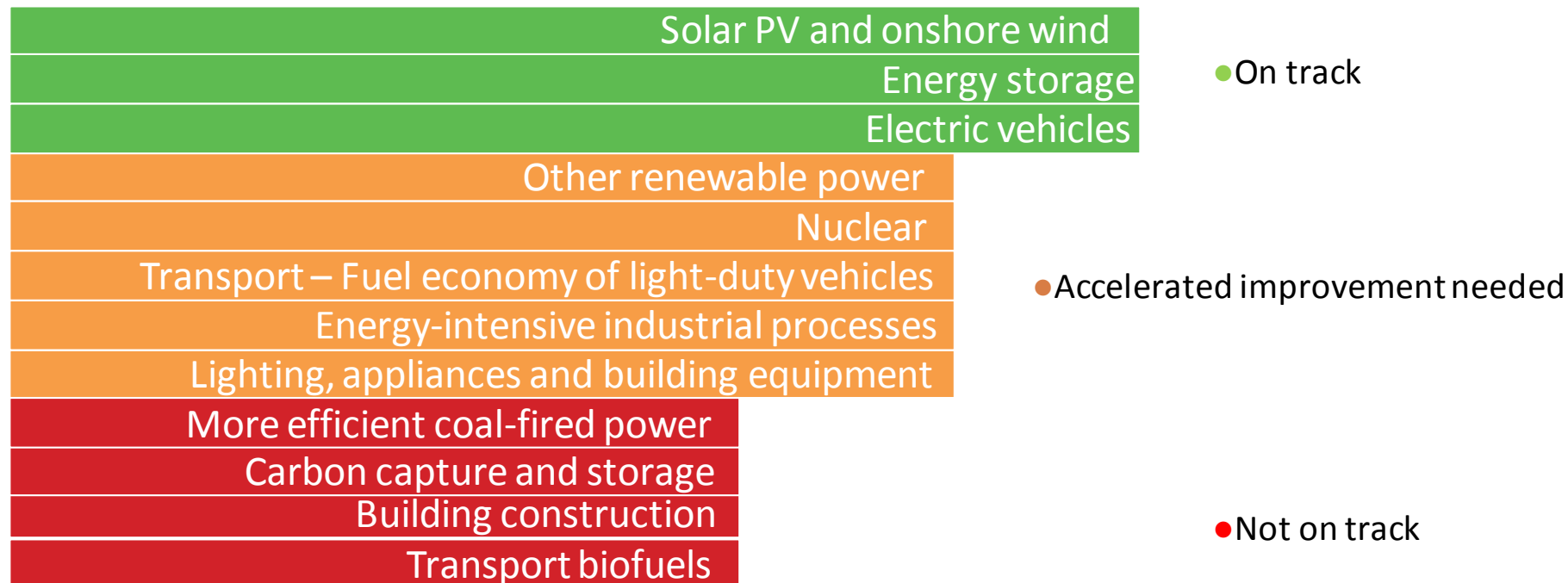
# Can we push up the low-carbon power deployment pace?

Average capacity additions in different periods in the B2DS



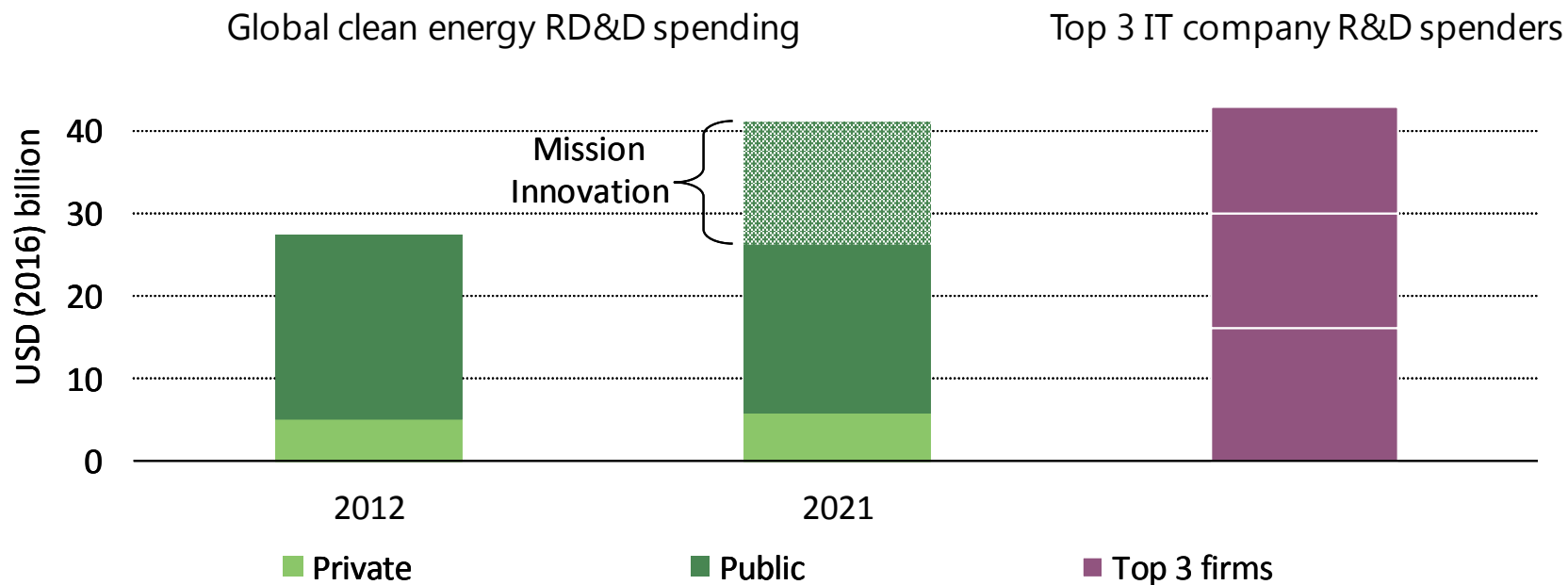
**Recent successes in solar and wind**  
**will have to be extended to all low-carbon solutions, and brought to a scale never experienced before.**

# The potential of clean energy technology remains under-utilised



**Recent progress in some clean energy areas is promising, but many technologies still need a strong push to achieve their full potential and deliver a sustainable energy future.**

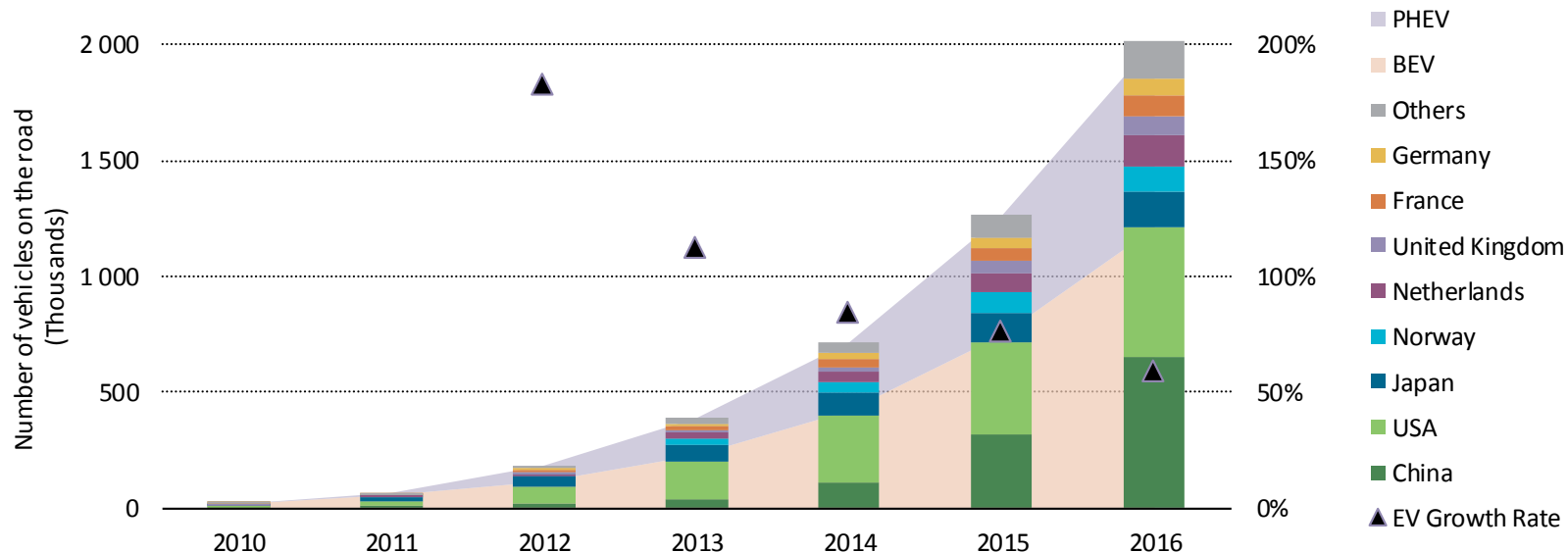
# Global clean energy RD&D spending needs a strong boost



**Global RD&D spending in efficiency, renewables, nuclear and CCS plateaued at \$26 billion annually, coming mostly from governments. Mission Innovation could provide a much needed boost.**

# EVs are still on track, but need continued support

Evolution of the global BEV and PHEV stock, 2010-2016

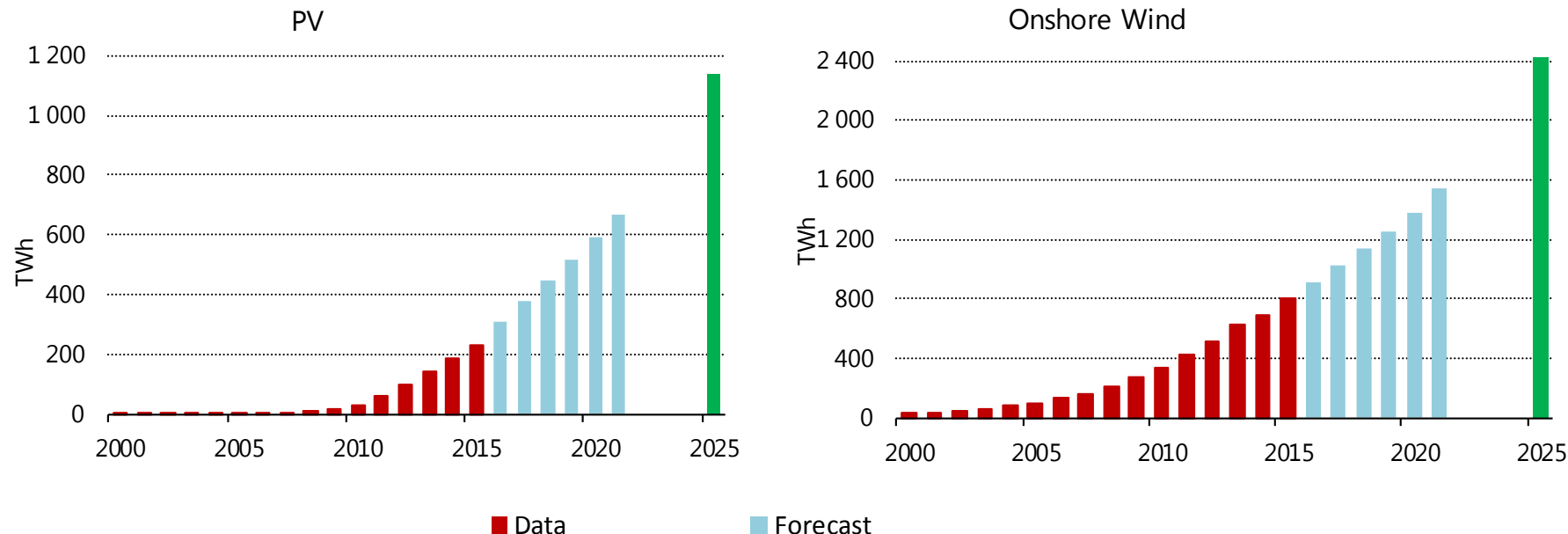


**The global PEV car stock has reached 2 million units in circulation last year, but sales growth went from 70% last year to 40% this year, suggesting an increasing risk to start diverging from a 2DS trajectory.**



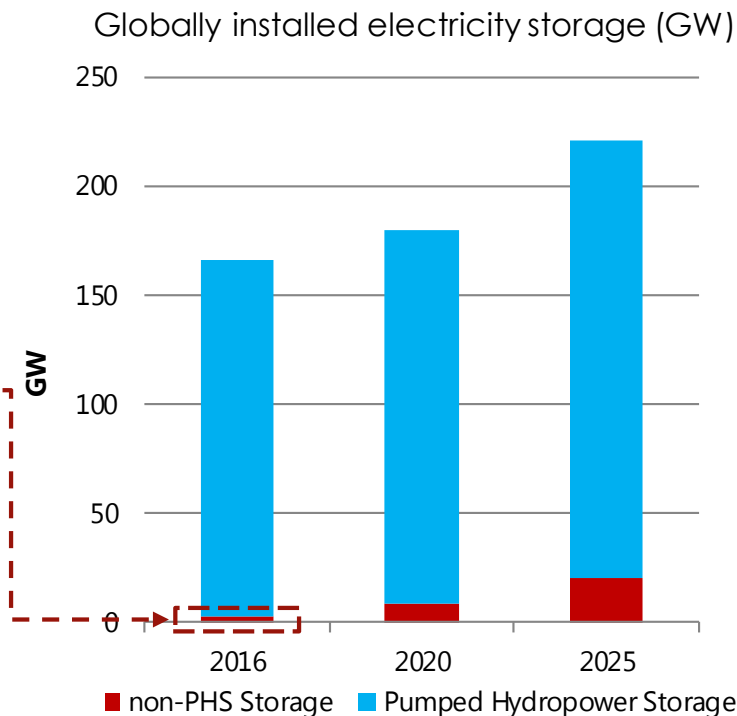
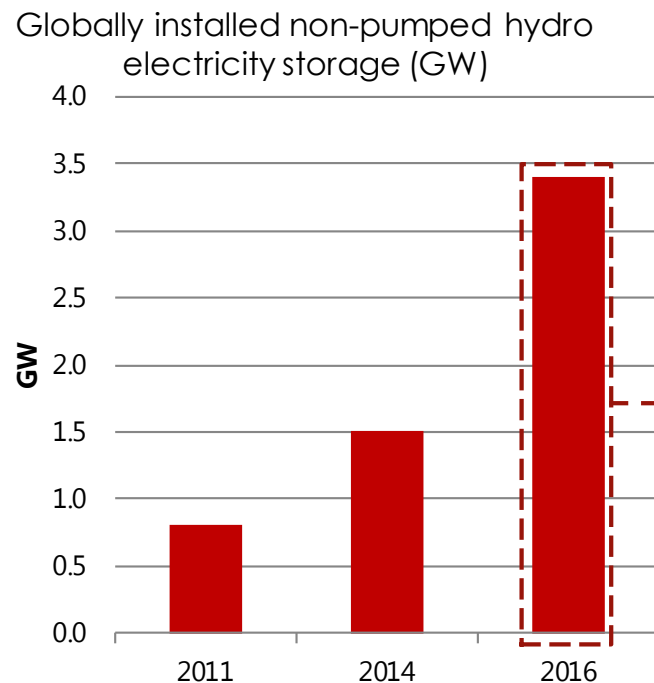
# Solar PV and Wind are still leading the transition...

Electricity generation of selected renewable power generation technologies



**Solar PV and onshore wind electricity generation are expected to grow by 2.5 times and by 1.7 times, respectively, over 2015-20.**

# The value of storage is starting to drive new solutions



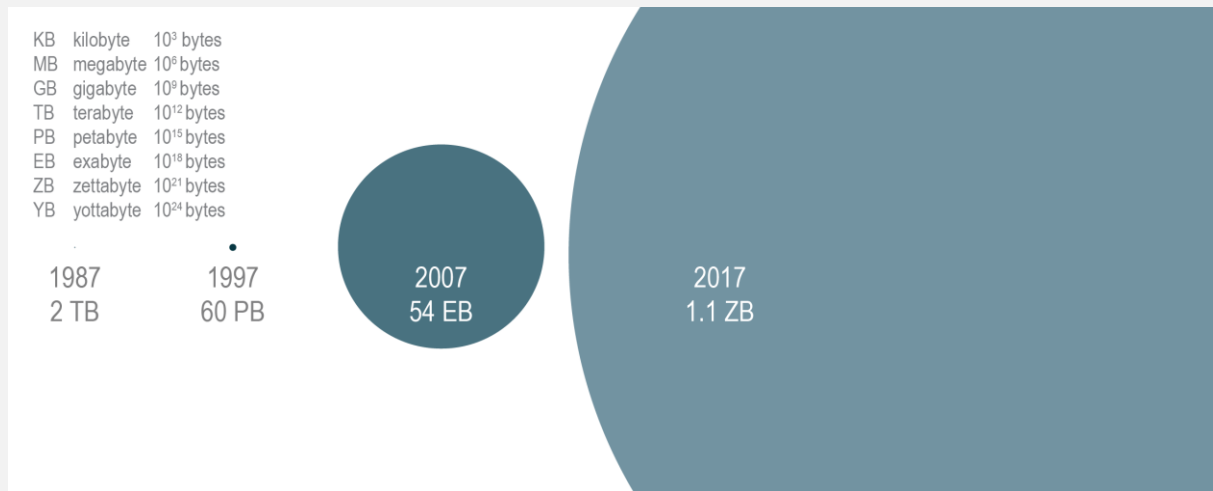
**Positive market and policy trends supported a year-on-year growth of over 50% for non-pumped hydro storage**  
**But near-term storage needs will remain largely answered by existing or planned pumped hydro capacity.**

- Digitalization describes the growing application of information and communications technology (ICT) across the economy, including the energy system.
- Three fundamental elements of the digital world:

1. Data

2. Analytics

3. Connectivity



**Key message:** The world is witnessing a global data explosion: global annual Internet traffic is expected to enter the zettabyte era in 2017.

- TCP Universal meeting
- Launch of WEO, Digitalization and Energy, Energy and Development
- IEA Ministerial meeting



**IEA is the host of the Clean Energy Ministerial Secretariat**

- Early signs point to changes in energy trajectories, helped by policies and technologies, but progress is too slow
- An integrated systems approach considering all technology options must be implemented now to accelerate progress
- Each country should define its own transition path and scale-up its RD&D and deployment support accordingly
- Achieving carbon neutrality by 2060 would require unprecedented technology policies and investments
- Innovation can deliver, but policies must consider the full technology cycle, and collaborative approaches can help

# Explore the data behind *ETP*



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