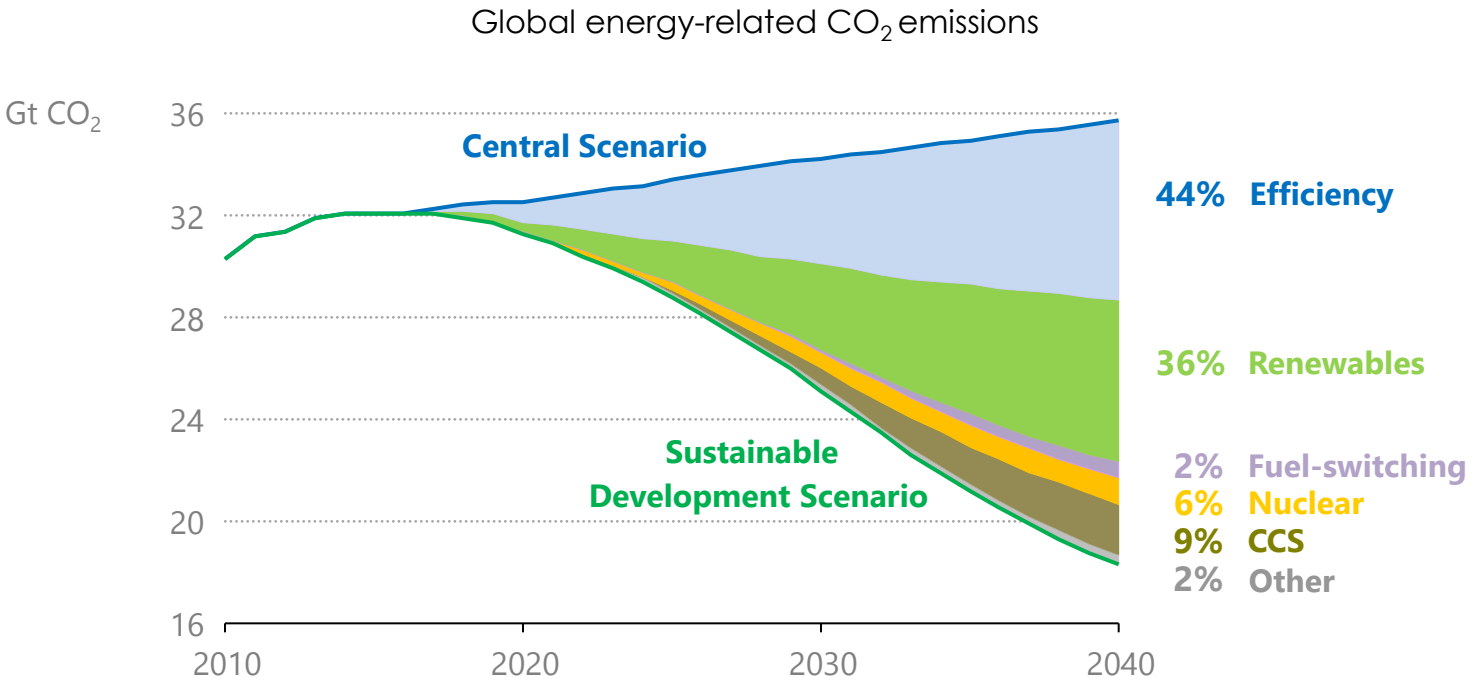
Where do we want to go?

Dave Turk, Acting Director, Sustainability, Technology and Outlooks

EU Talanoa Conference, 13 June 2018, Brussels

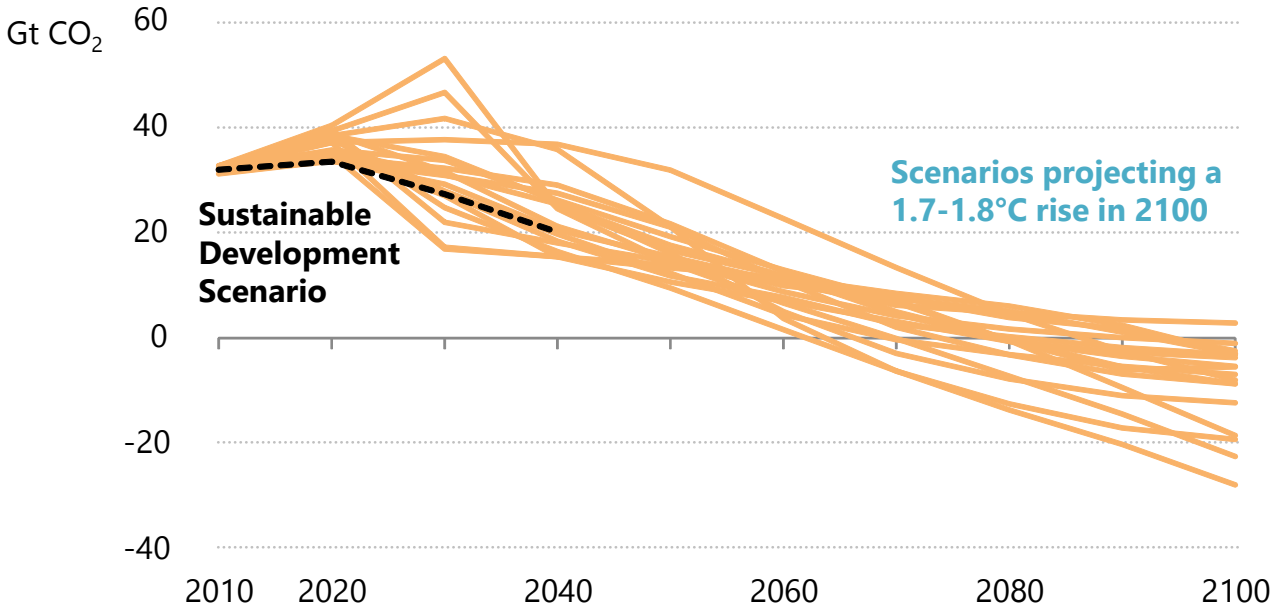
IEA

Where do we want to go?



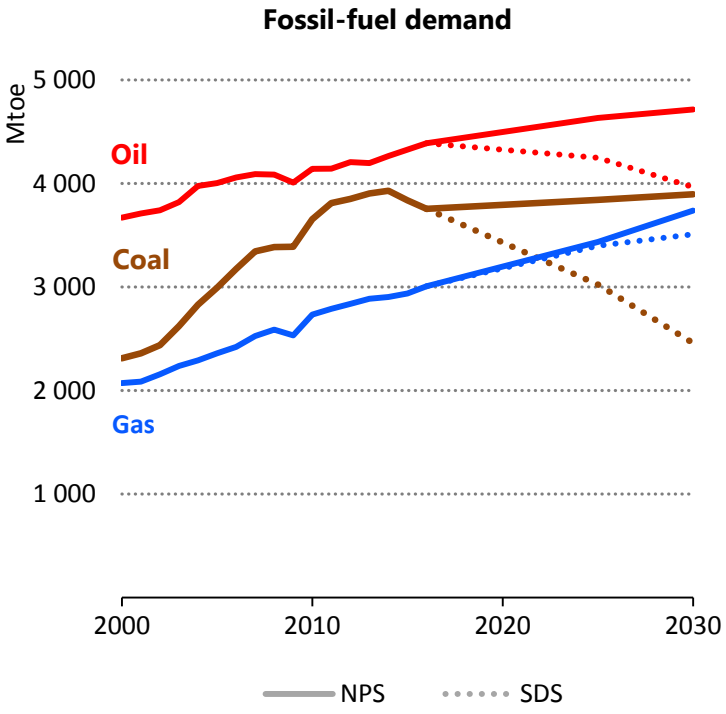
A wide variety of technologies are necessary to meet goals, with energy efficiency and renewables playing lead roles

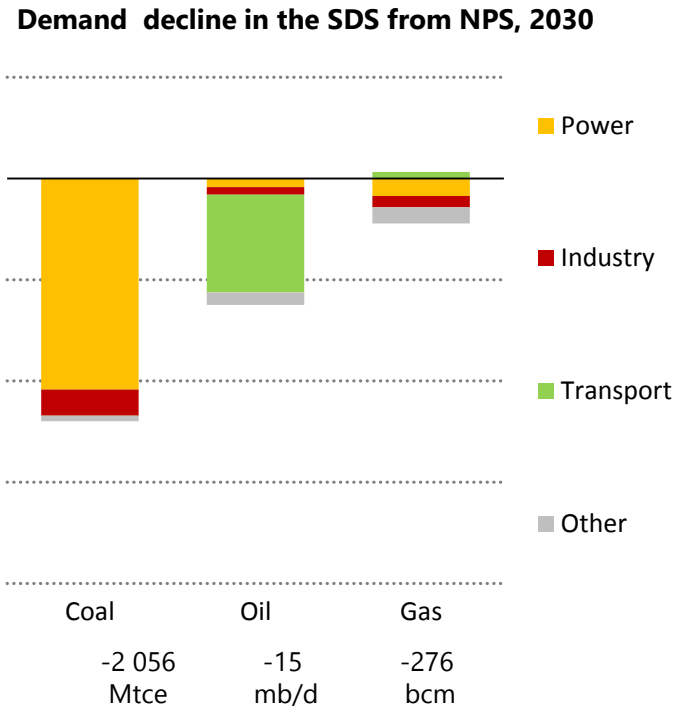
Sustainable Development Scenario vs. other long-term decarbonisation scenarios



Sustainable Development Scenario is at more ambitious end of 1.7 °C to 1.8 °C scenarios

SDS – unabated fossil fuels make way for low-carbon energy





In the Sustainable Development Scenario, fossil fuels step back substantially as low-carbon energy takes centre stage

Tracking Clean Energy Progress 2018

Power

- Renewable power
  - Solar PV
  - Onshore wind
  - Offshore wind
  - Hydropower
  - Bioenergy
  - Geothermal
  - Concentrating solar power
  - Ocean
- Nuclear power
- Natural gas-fired power
- Coal-fired power
- CCS in power

Industry

- Cement
- Chemicals
- Steel
- Aluminum
- Pulp and paper
- CCS in industry

Transport

- Electric vehicles
- International shipping
- Fuel economy
- Trucks
- Transport biofuels
- Aviation
- Rail

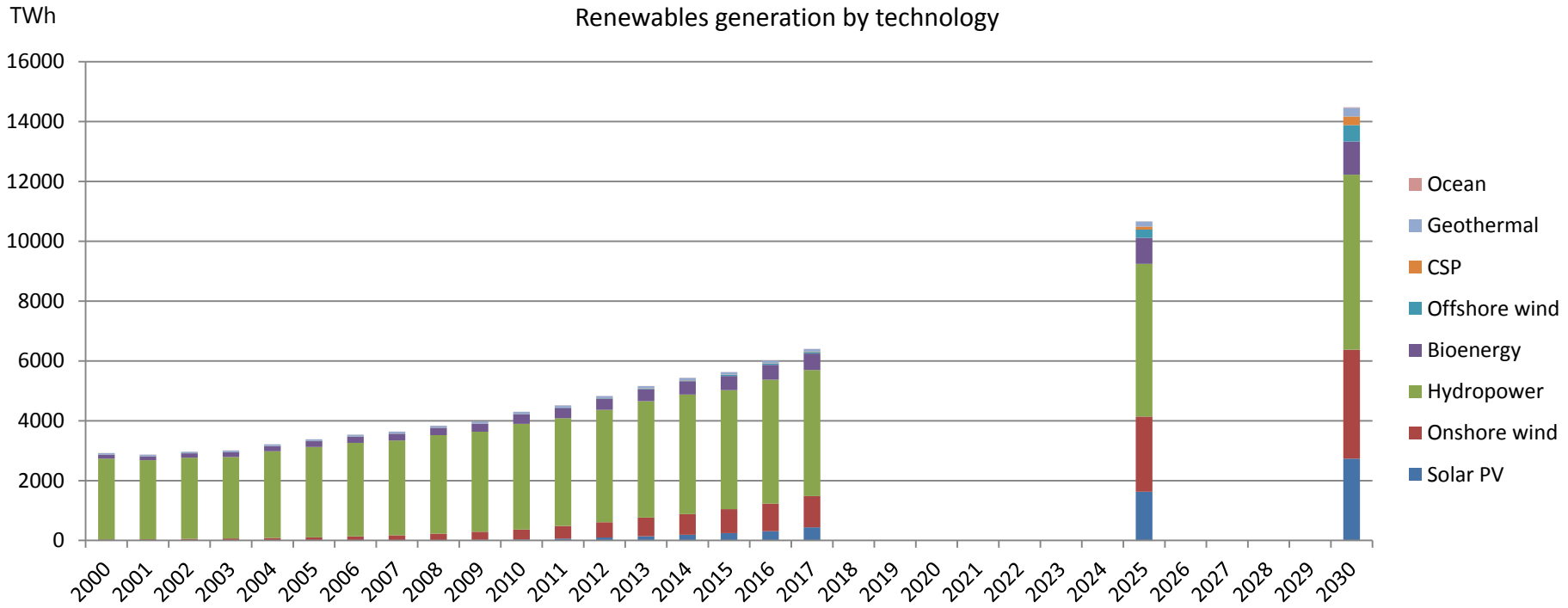
Buildings

- Building codes
- Heating
- Cooling
- Lighting
- Appliances & equipment
- Data centres and networks

Energy Integration

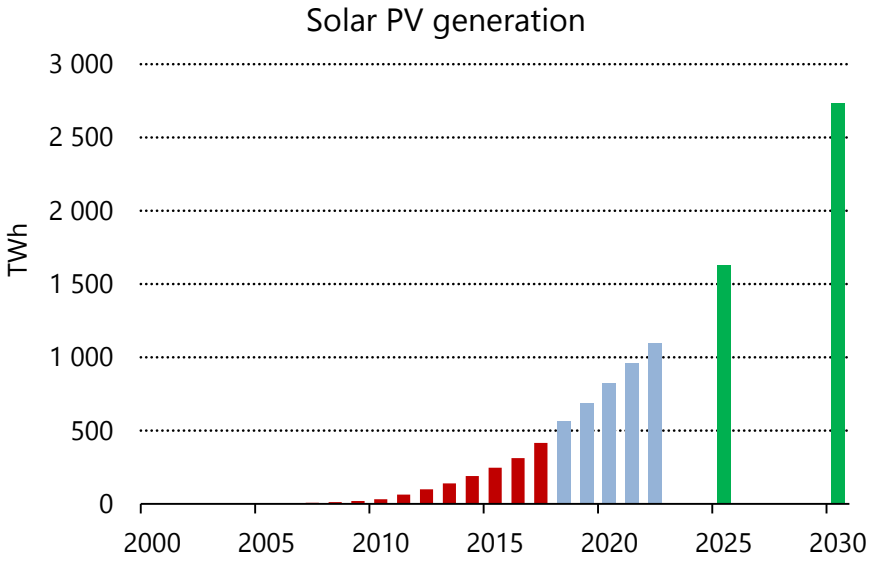
- Energy storage
- Smart grids
- Demand response
- Digitalization
- Hydrogen
- Renewable heat

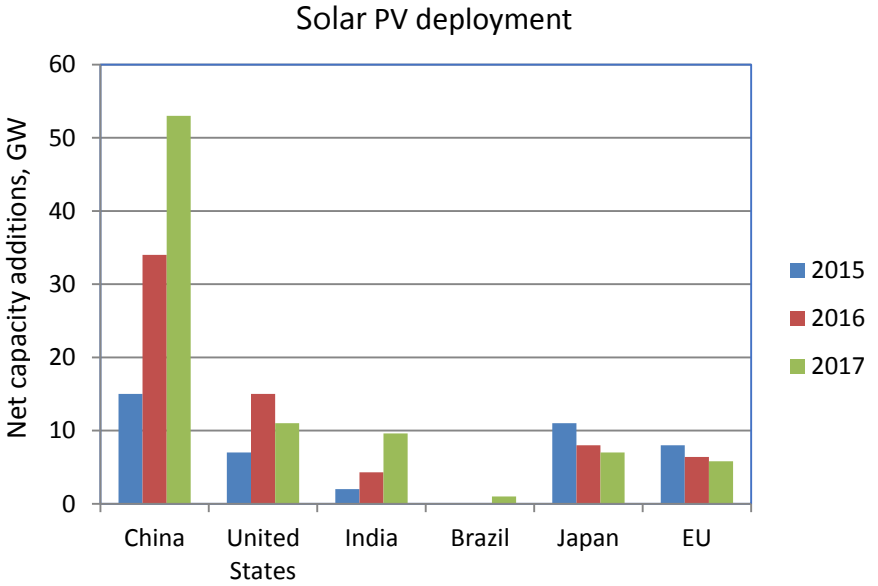
Overall renewables growth is not fully on track



Renewables saw highest rate of generation growth among all energy sources in 2017, but deployment must further speed up to meet 2030 targets

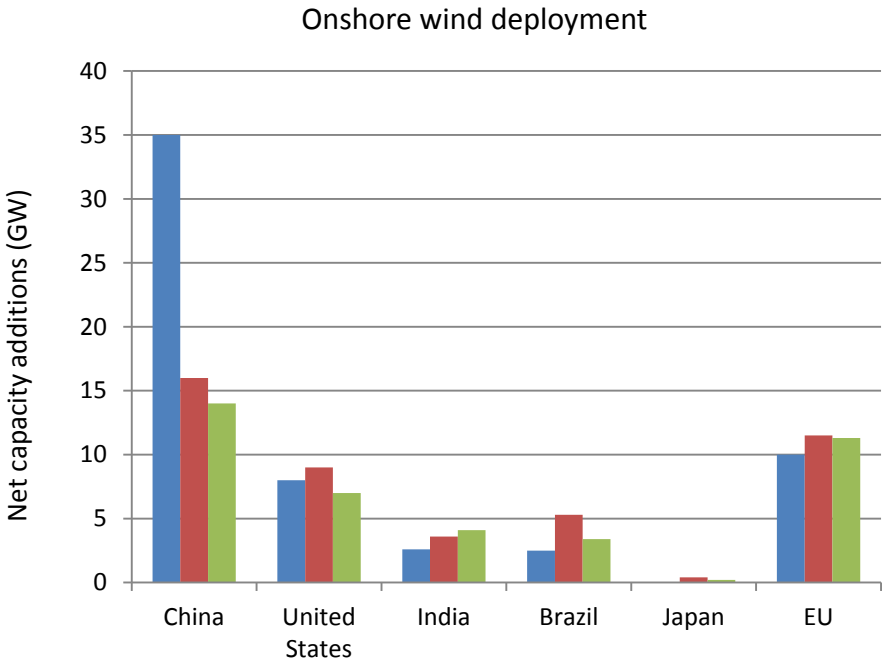
Solar PV is the only renewable technology on track

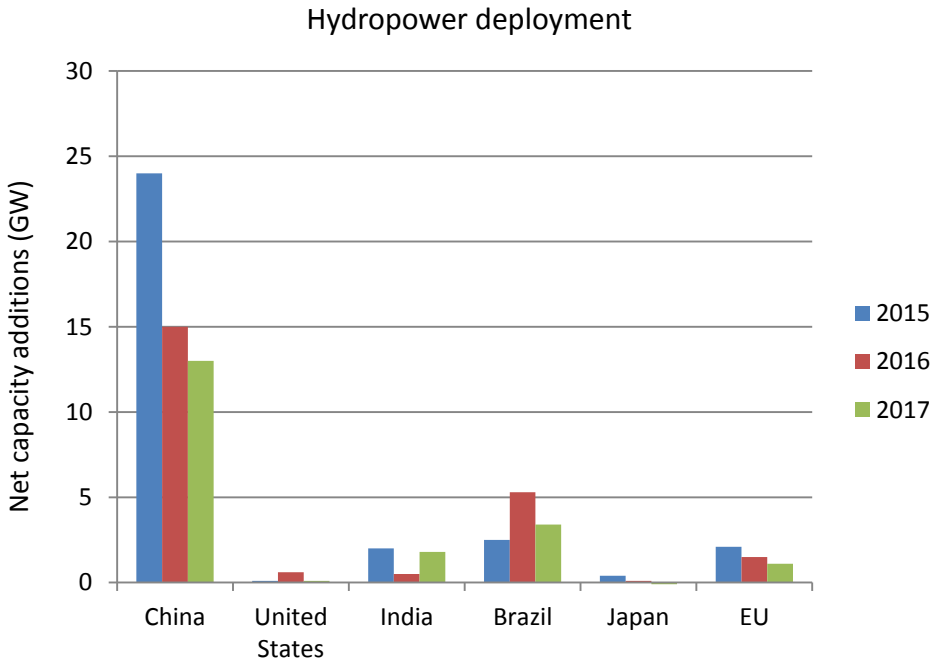




Solar PV has shown record growth in 2017; it is well on track to meet its SDS target

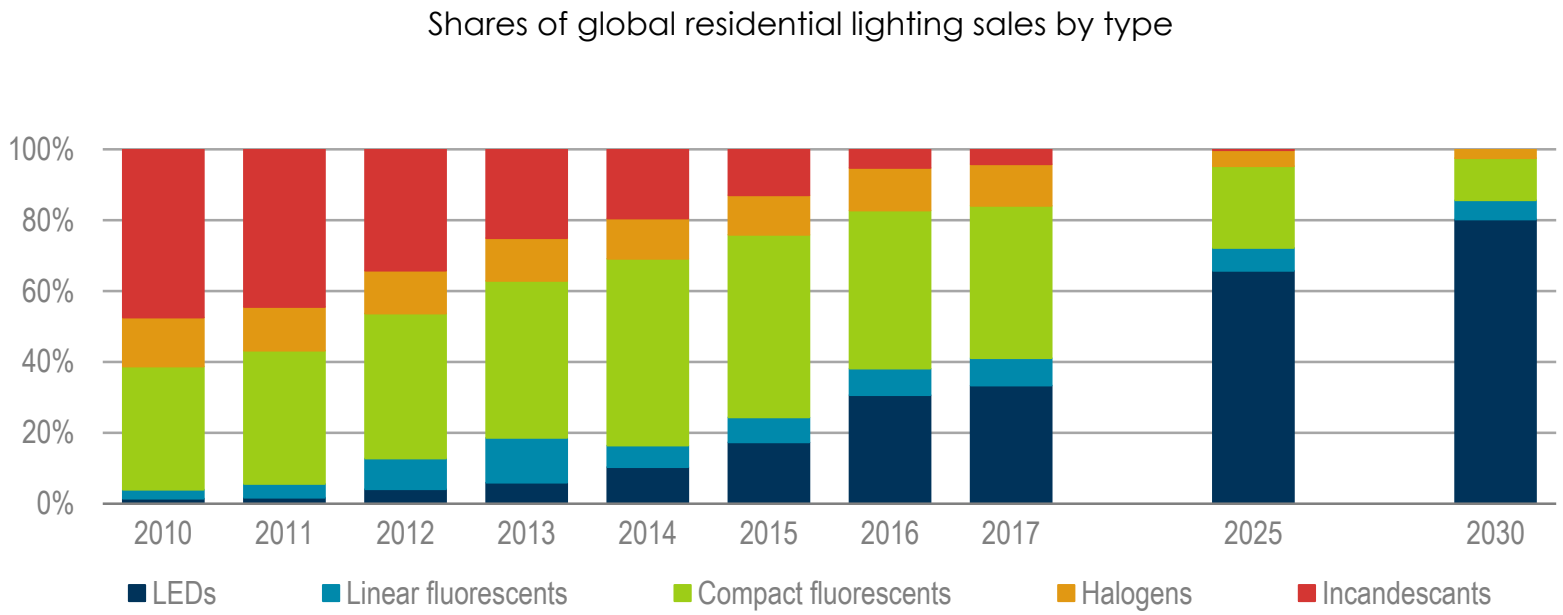
Onshore wind and hydro need more improvement





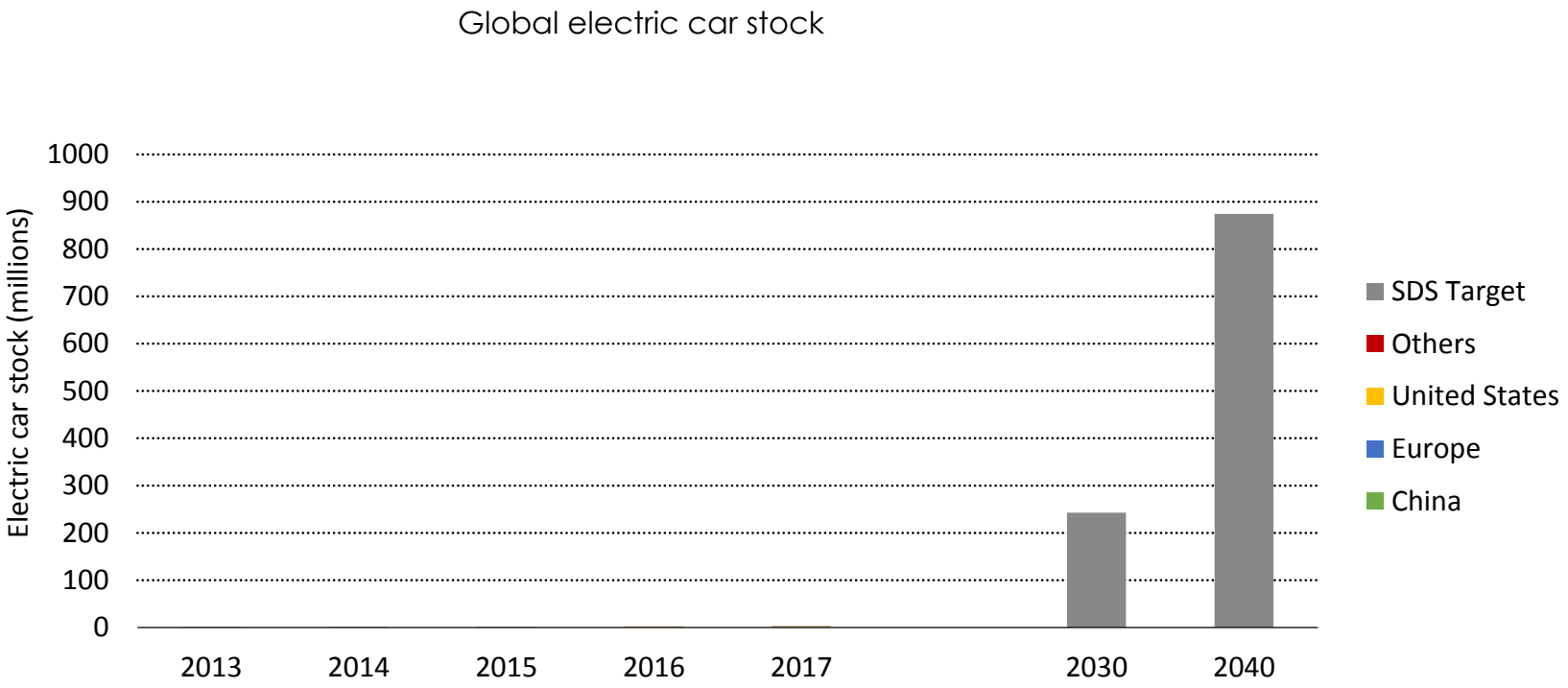
Onshore wind capacity additions declined by 10% in 2017, marking the second year of decline; hydropower additions have also decreased for the fourth consecutive year

LED sales on track to reach 80% of total by 2030



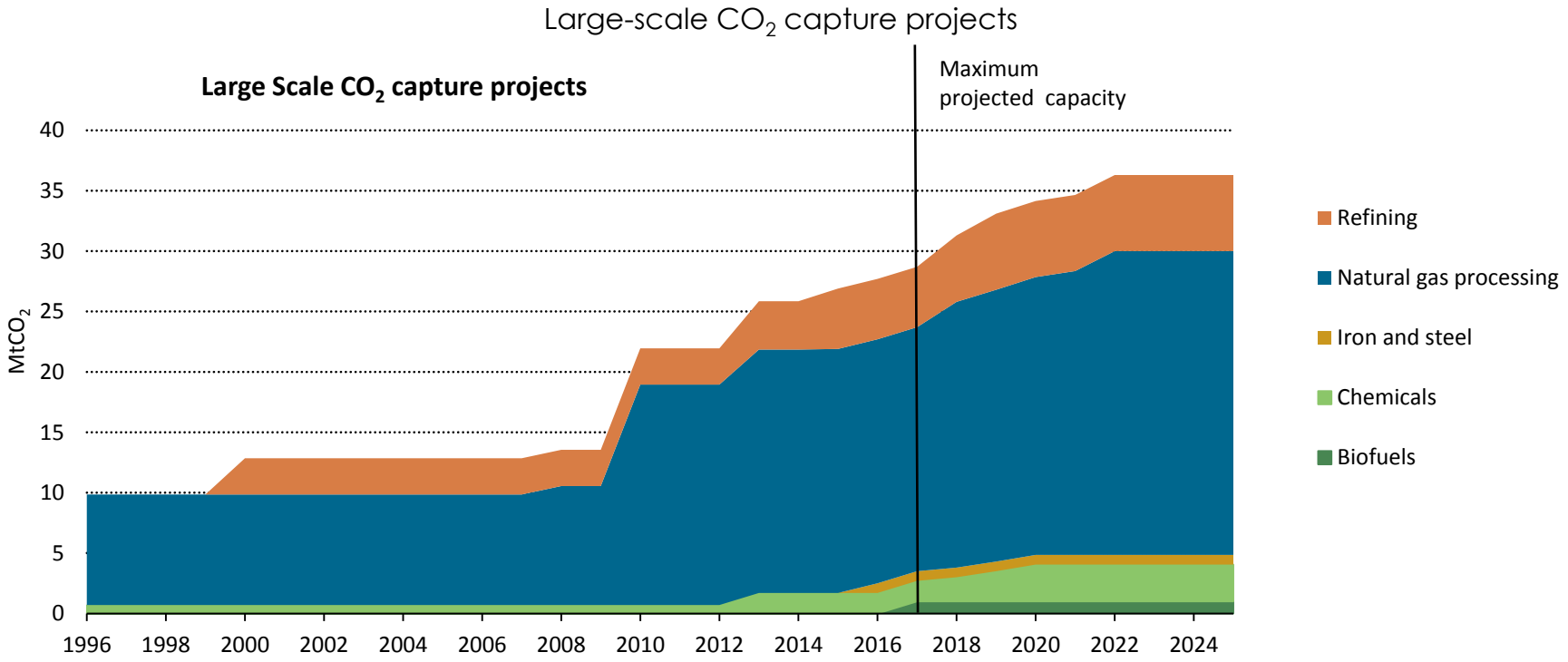
LEDs are on track to dominate residential lighting by around 2020;
3.3 billion LEDs were installed in 2017, underpinned by falling costs & government policy

EV growth has grown rapidly; strong momentum needs to continue



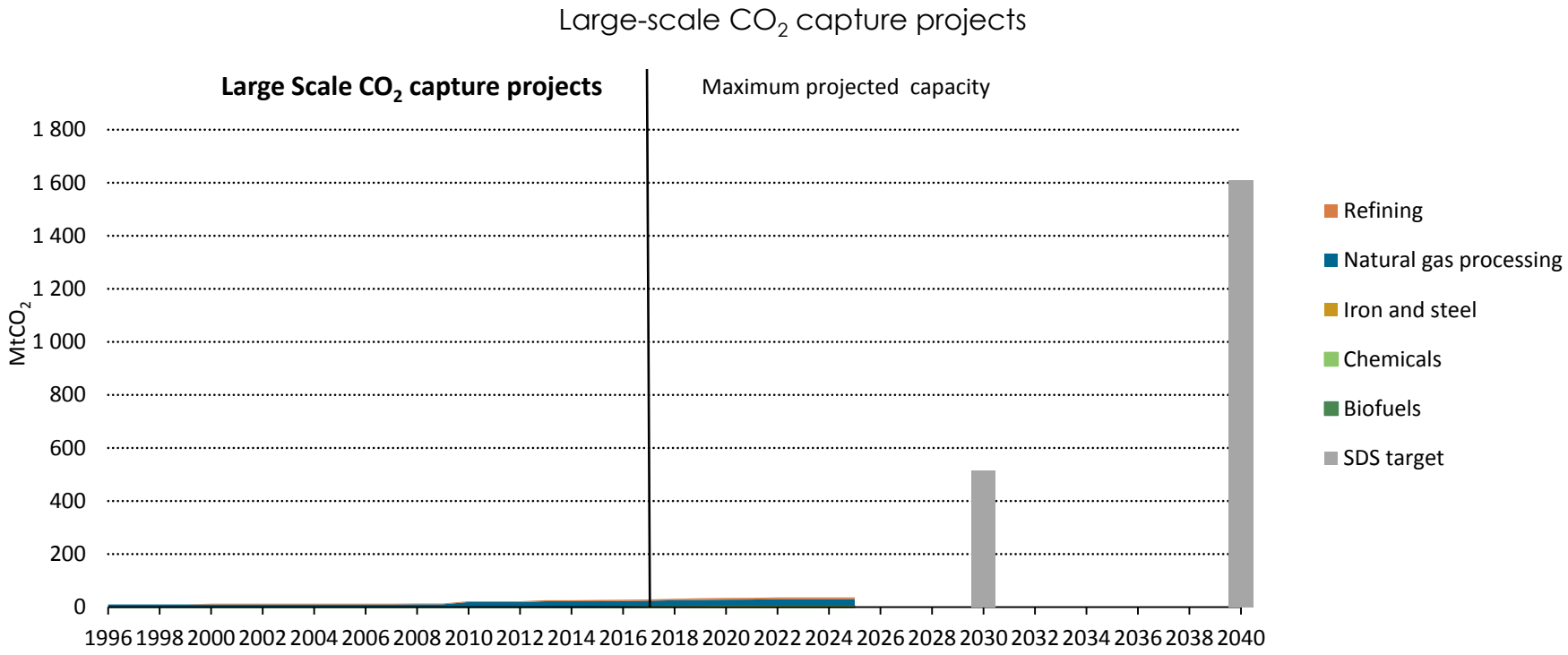
The number of passenger electric cars on the road passed 3 million in 2017, but it needs to grow to 240 million by 2030 in the SDS

Industry CCUS pipeline is growing...



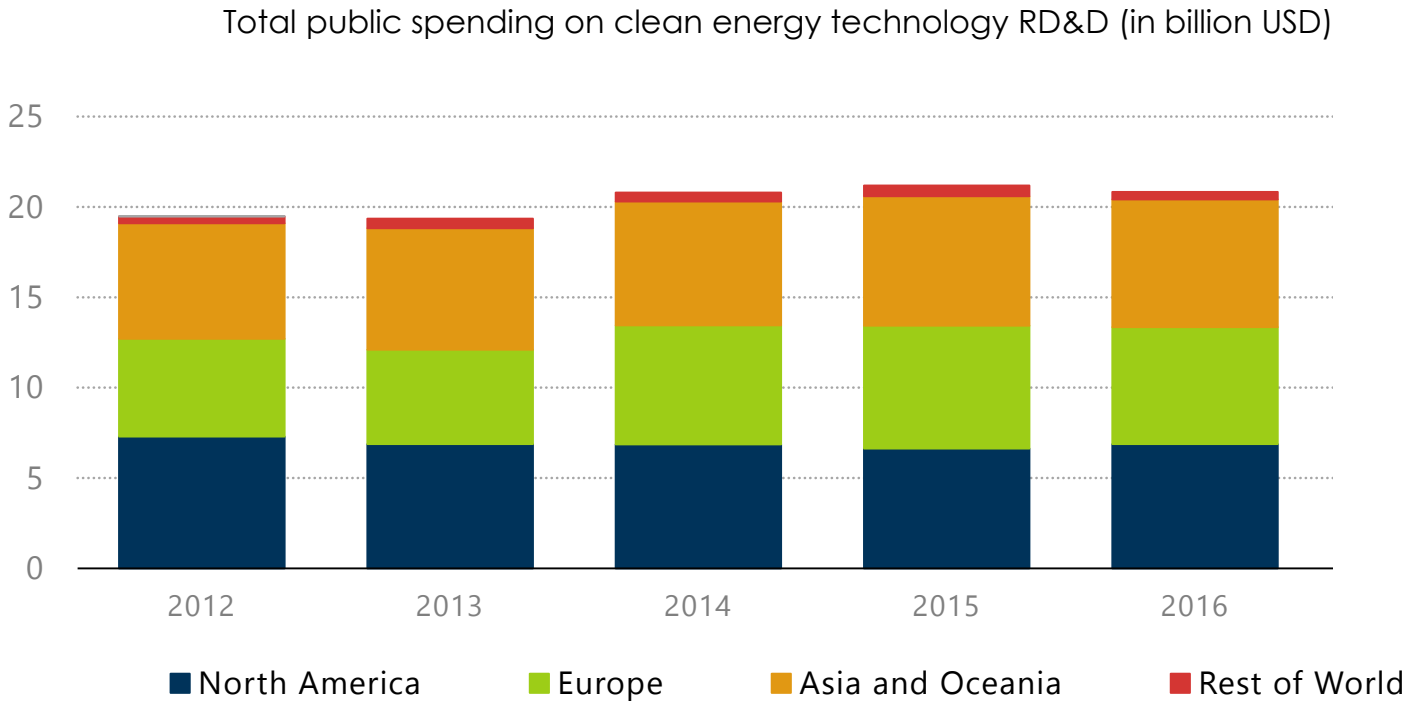
The global portfolio of large-scale CCUS projects continued to expand in 2017, with one additional industrial project linked to bioenergy coming into operation (in the U.S.)

…but industry and fuel transformation remains way off track….



CCUS is one of the few existing mitigation technology options for industry, but remains woefully off track to achieve the 2030 target.

Clean energy R&D investment is finally on the rise…



Investment in clean energy R&D rose in 2017, but more is needed; Mission Innovation is having an impact

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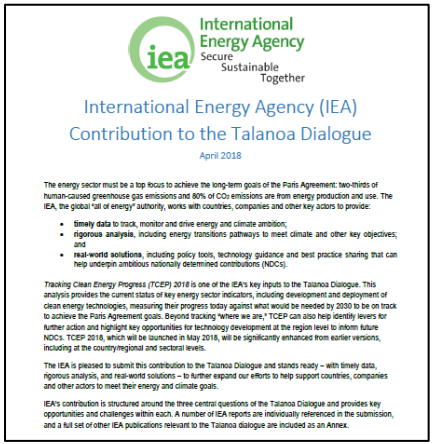
IEA Engagement in Talanoa Dialogue

1. Timely data, rigorous analysis and real-world solutions

2. Written submission; 2nd submission for October 2018 deadline

3. Participated in Talanoa Dialogue discussions at May session in Bonn and happy to join other dialogues / events as well



International Energy Agency
Secure Sustainable Together

International Energy Agency (IEA)
Contribution to the Talanoa Dialogue

April 2018

The energy sector must be a top focus to achieve the long-term goals of the Paris Agreement: two-thirds of human-caused greenhouse gas emissions and 80% of CO_2 emissions are from energy production and use. The IEA, the global "all of energy" authority, works with countries, companies and other key actors to provide:

- **timely data** to track, monitor and drive energy and climate ambition;
- **rigorous analysis**, including energy transitions pathways to meet climate and other key objectives; and
- **real-world solutions**, including policy tools, technology guidance and best practice sharing that can help underpin ambitious nationally determined contributions (NDCs).

Tracking Clean Energy Progress (TCEP) 2018 is one of the IEA's key inputs to the Talanoa Dialogue. This analysis provides the current status of key energy sector indicators, including development and deployment of clean energy technologies, measuring their progress today against what would be needed by 2030 to be on track to achieve the Paris Agreement goals. Beyond tracking "where we are," TCEP can also help identify levers for further action and highlight key opportunities for technology development at the region level to inform future NDCs. TCEP 2018, which will be launched in May 2018, will be significantly enhanced from earlier versions, including at the country/regional and sectoral levels.

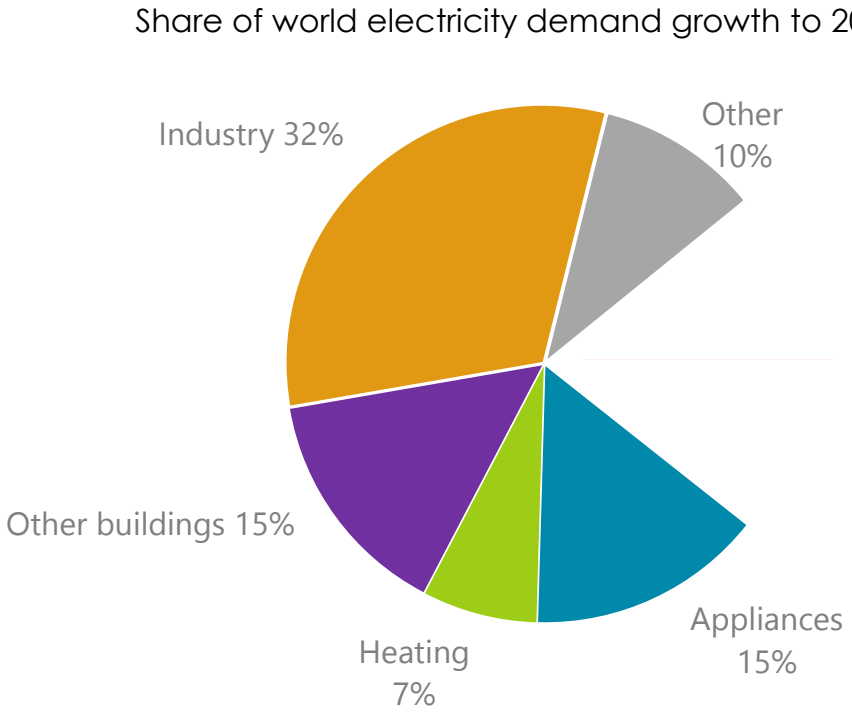
The IEA is pleased to submit this contribution to the Talanoa Dialogue and stands ready – with timely data, rigorous analysis, and real-world solutions – to further expand our efforts to help support countries, companies and other actors to meet their energy and climate goals.

IEA's contribution is structured around the three central questions of the Talanoa Dialogue and provides key opportunities and challenges within each. A number of IEA reports are individually referenced in the submission, and a full set of other IEA publications relevant to the Talanoa dialogue are included as an Annex.

Key messages

- IEA supports the Talanoa Dialogue through its data, analysis, and real world solutions.
- The Sustainable Development Scenario (SDS) defines a future energy vision that integrates climate change, energy access and air quality goals.
- In the SDS, energy efficiency and renewable deployment drive the vast majority of emissions reductions; fossil fuels step back as low carbon energy takes center-stage.
- *Tracking Clean Energy Progress* examines "where we are" compared to "where we want to go", while providing guidance on "how we get there."
- As countries develop their NDCs, short-term actions need to be guided by, and consistent with, longer-term goals of "where we want to go."

Cooling is driving electricity demand growth



Electricity demand for air conditioning could more than triple by 2050 – requiring as much new electricity capacity as all of the United States, EU and Japan today – but better policies could cut it in half