



Clean Energy Transition Pathways and Tracking Progress with Paris Agreement Implementation

Peter Janoska, Environment and Climate Change Analys

COP 25, 12 December 2019

The IEA at COP25

CLIMATE CHANGE IS A GLOBAL CHALLENGE, AND **A KEY PRIORITY FOR THE IEA**

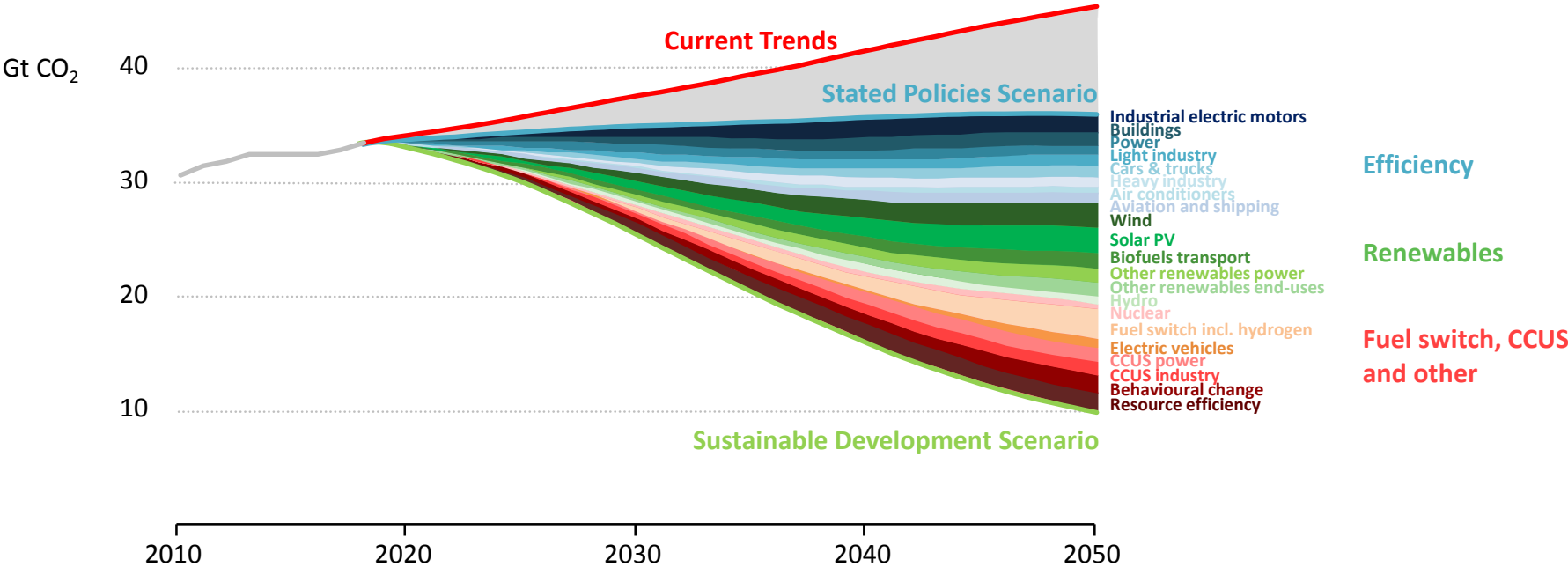
- To achieve the Paris Agreement goals, energy-related CO₂ emissions need to decline steeply.
- IEA data, analysis and solutions provide support and guidance for countries on their energy transition pathways.
- The IEA can help:
 - countries understand the global state-of-play, opportunities and challenges in the energy space
 - frame efforts in the context of sustainable energy pathways
 - guide and support countries to develop and implement policies for a sustainable energy pathway

**Learn more
about IEA
work and
COP25 events:
iea.org/cop25**



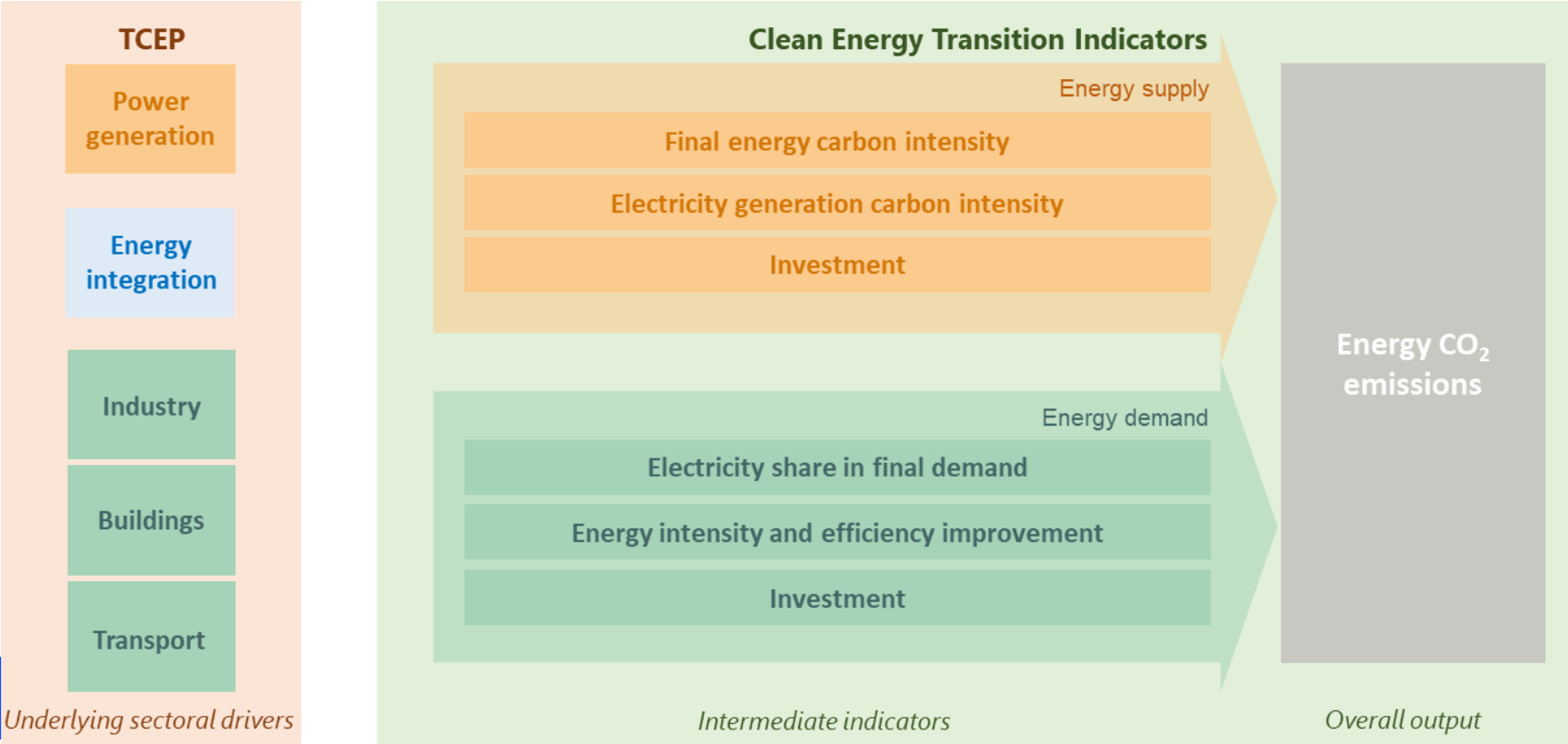
No single or simple solutions to reach sustainable energy goals

Energy-related CO₂ emissions and reductions in the Sustainable Development Scenario by source

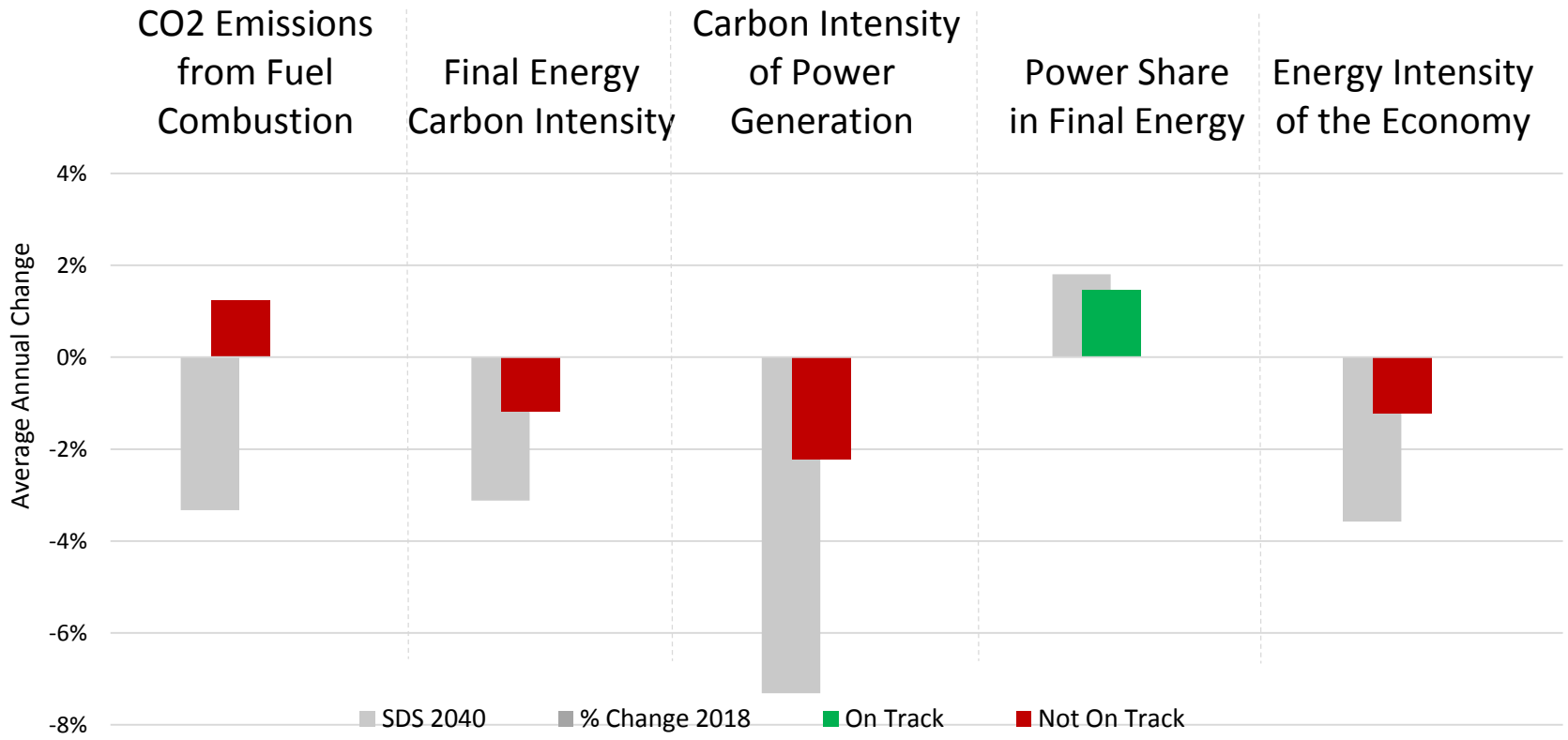


A host of policies and technologies will be needed across every sector to keep climate targets within reach, and further technology innovation will be essential to aid the pursuit of a 1.5°C stabilisation

Energy transition indicators tracking framework



- **Latest status on energy transition indicators**



Tracking Clean Energy Progress

● Power

- Renewable power
 - Solar PV
 - Onshore wind
 - Offshore wind
 - Hydropower
 - Bioenergy
 - Geothermal
 - CSP
 - Ocean
- Nuclear power
 - Gas-fired power
 - Coal-fired power
 - CCUS in power

● Industry

- Chemicals
- Iron and steel
- Cement
- Pulp and paper
- Aluminium
- CCUS in industry & transformation

● Transport

- Electric vehicles
- Fuel economy
- Trucks & buses
- Transport biofuels
- Aviation
- Shipping
- Rail

● Buildings

- Building envelopes
- Heating
- Heat pumps
- Cooling
- Lighting
- Appliances & equipment
- Data centres and networks

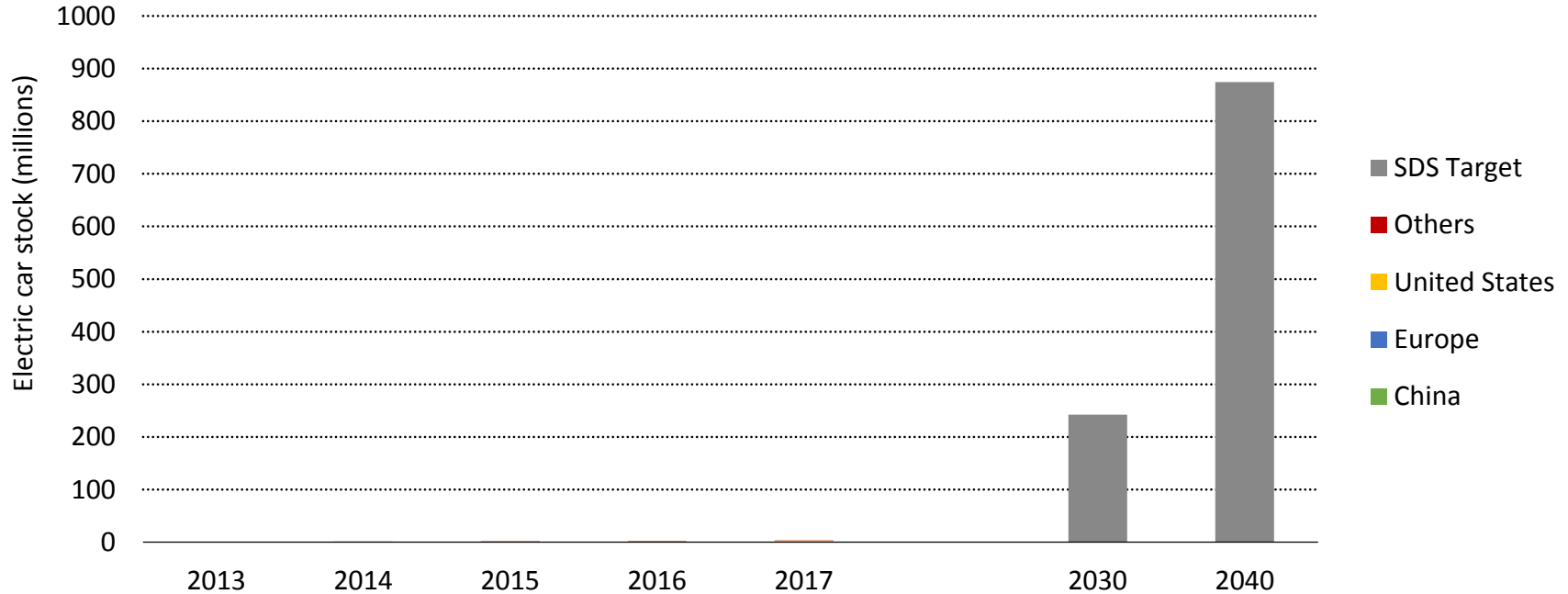
● Fuel supply

- Methane emissions from oil and gas
- Flaring emissions

● Energy integration

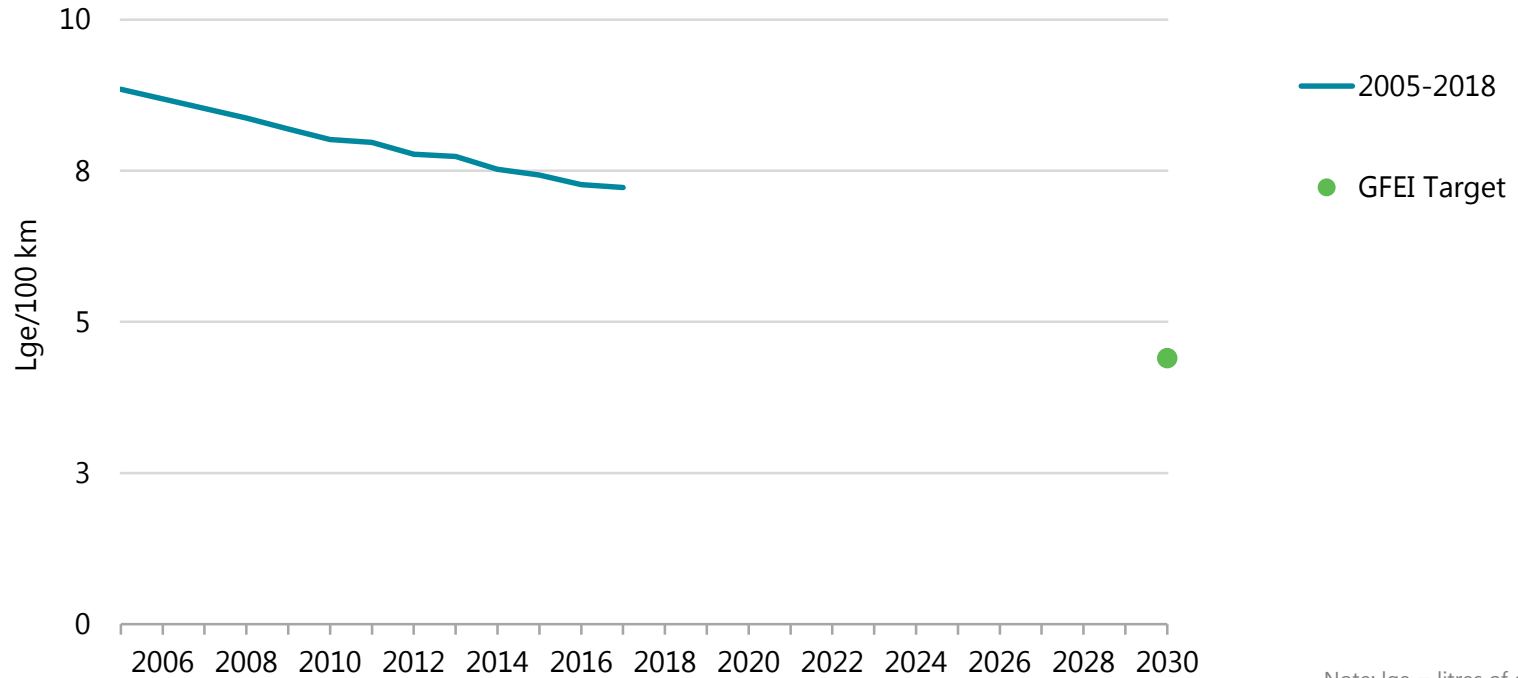
- Energy storage
- Hydrogen
- Smart grids
- Demand response

EV growth has grown rapidly; strong momentum needs to continue



The number of passenger electric cars on the road passed 5 million in 2018, but challenges remain to reach their estimated potential of 240 million by 2030

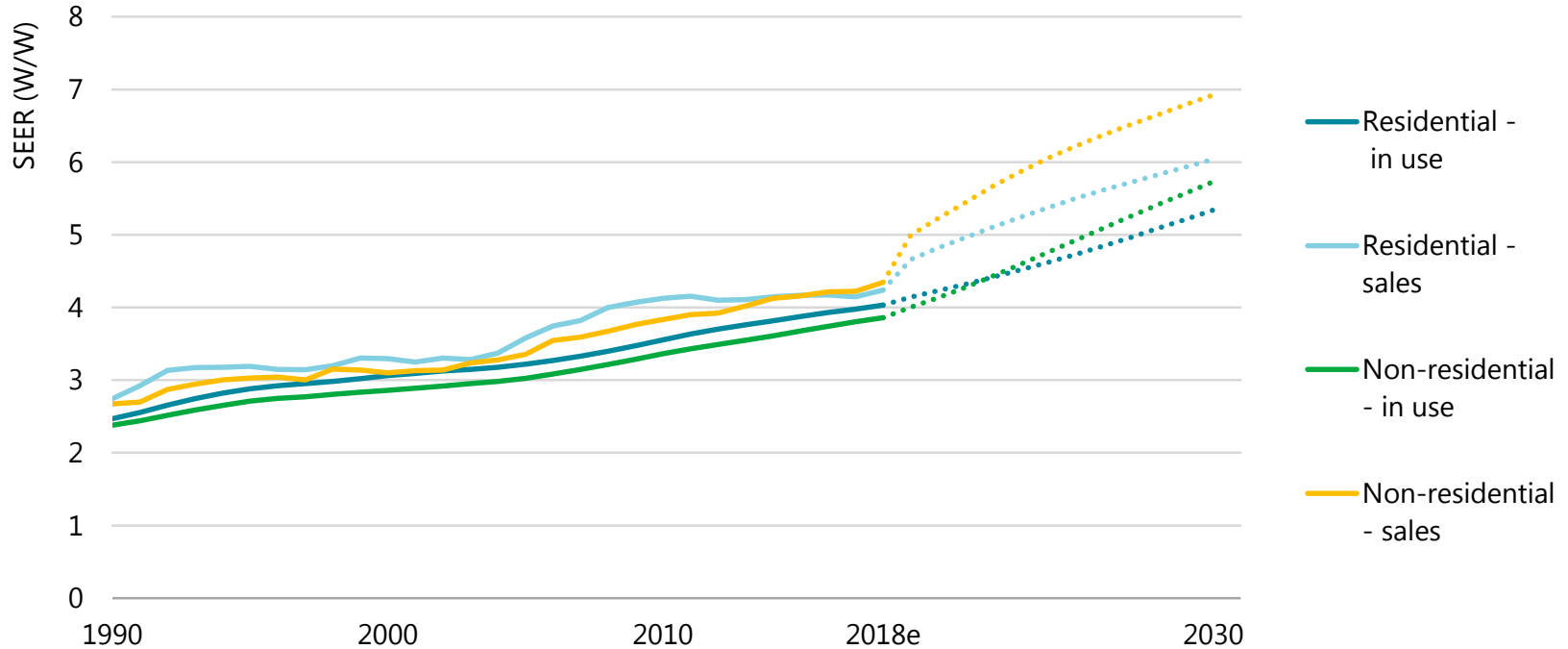
Average new global LDV fuel economy



Note: Lge = litres of gasoline equivalent.

Average global LDV fuel economy improvement slowed down in recent years to only 0.7% in 2017 and is not on track with needed annual improvement rate of 3.7%

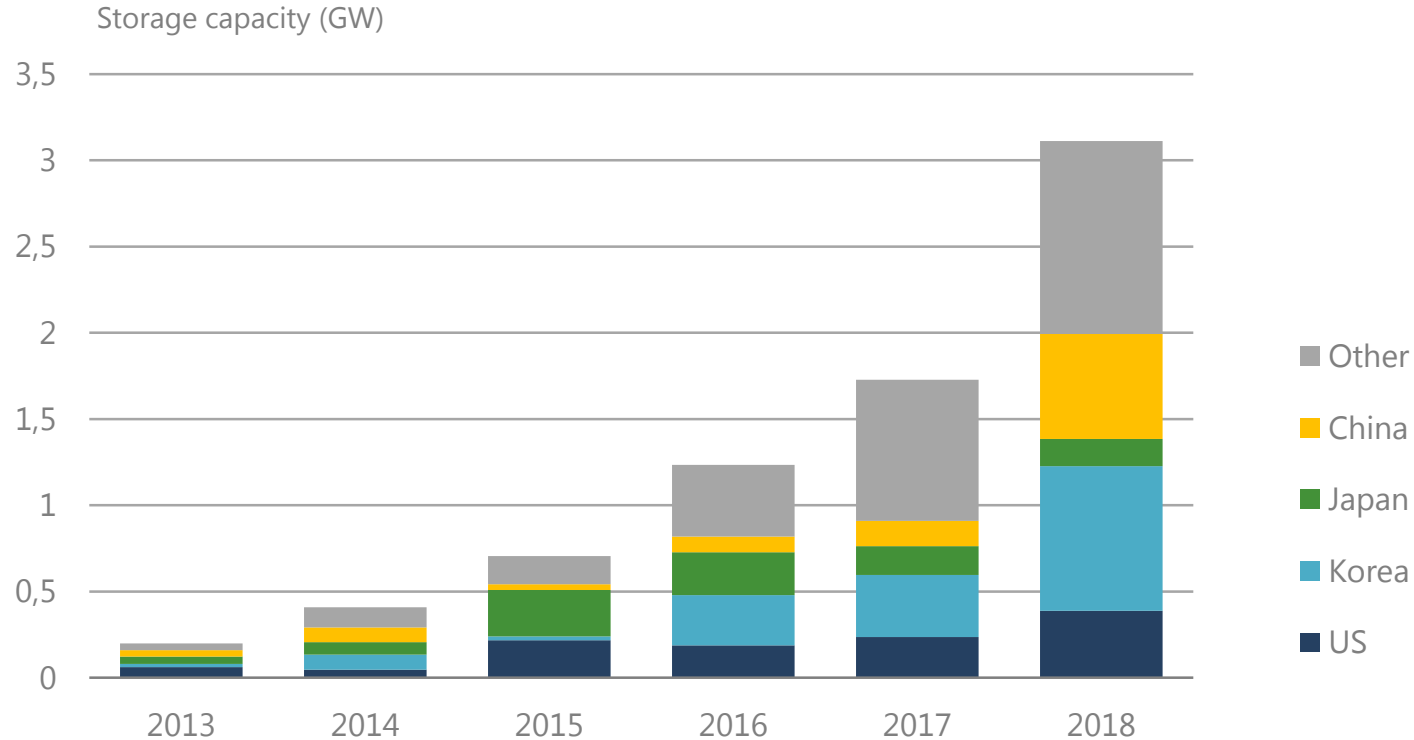
Air conditioner seasonal energy performance to 2030



Notes: SEER = seasonal energy efficiency ratio. W/W = Watt of cooling output per Watt of electricity input.

To be in line with the SDS, air conditioner performance needs to improve by more than 50% by 2030.

Combined utility-scale and behind-the-meter deployment by country



Energy storage deployment reached a record level in 2018, nearly doubling from 2017. Policy support, through mandates and targets, has enabled rapid growth in a selected but growing number of markets

Conclusions

- There is a growing disconnect between climate ambitions and real-world energy trends
- Only one of the four global energy transition indicators – share of electricity in end use – has been on track with the progress needed in 2018
- Only 7 of 45 clean energy technologies are on track for what is required to reach a sustainable energy future
- Governments have a key role to play in shaping investment decisions necessary for clean energy transitions
- There is no single solution to our energy challenges: renewables, nuclear, efficiency & a host of innovative technologies, including storage, CCUS & hydrogen, are all required

Thank you!

Tracking Clean Energy Progress

<https://www.iea.org/topics/tracking-clean-energy-progress#about>

Clean Energy Indicators

<https://www.iea.org/articles/global-transitions-indicators>

iea