



Clean Energy Transition Pathways and Tracking Progress with Paris Agreement Implementation

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The IEA at COP25

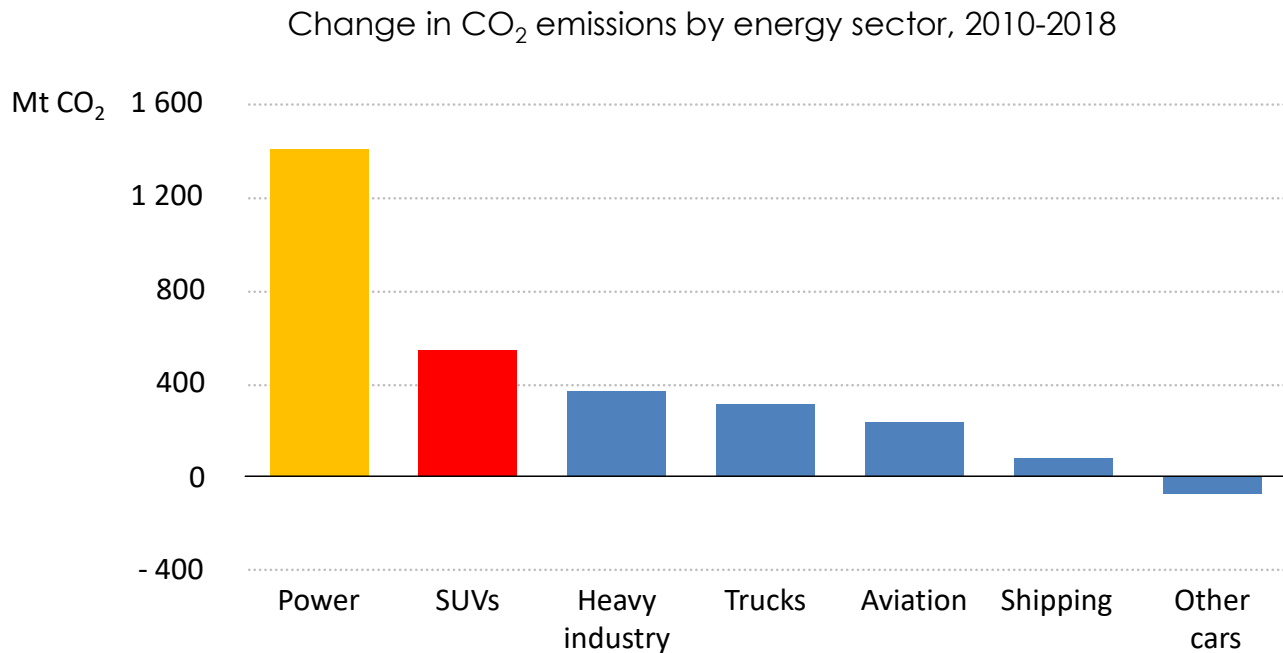
CLIMATE CHANGE IS A GLOBAL CHALLENGE, AND A KEY PRIORITY FOR THE IEA

- 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

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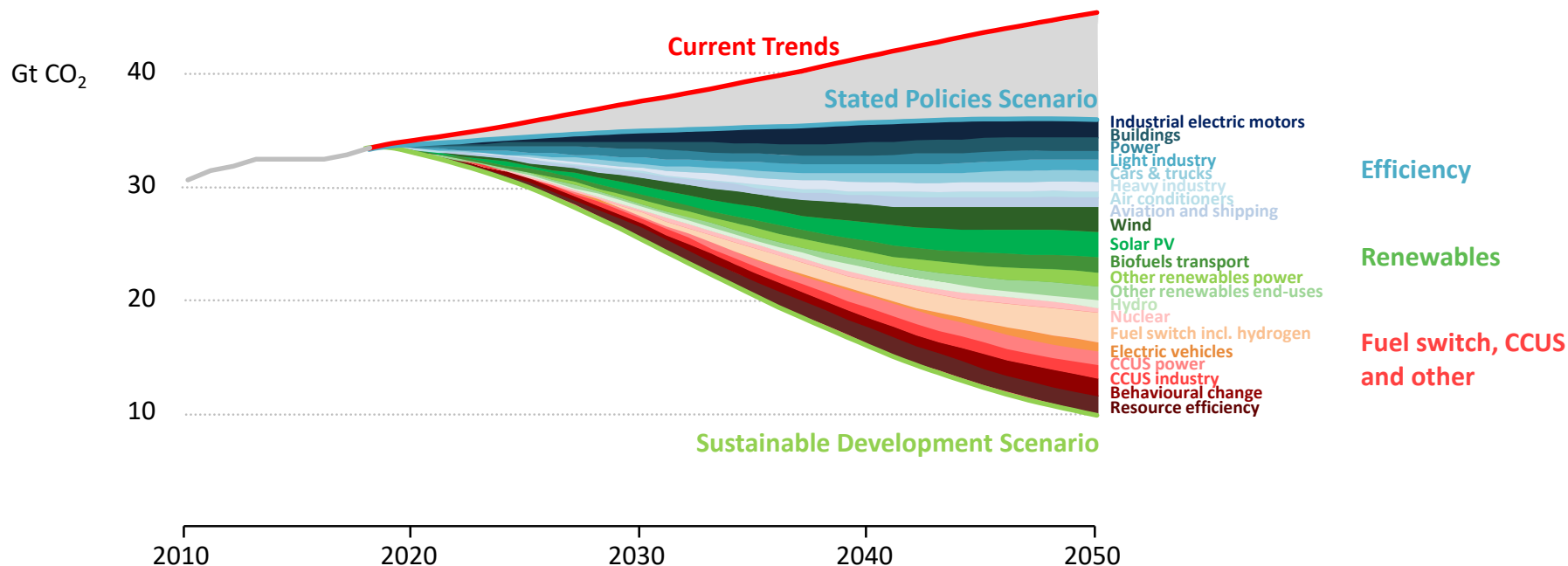
Power and SUVs have been the main forces driving emissions higher



The global fleet of SUVs increased from 35 million in 2010 to over 200 million in 2018, becoming a major force in rising oil demand and the second-largest reason for CO₂ emissions growth since 2010

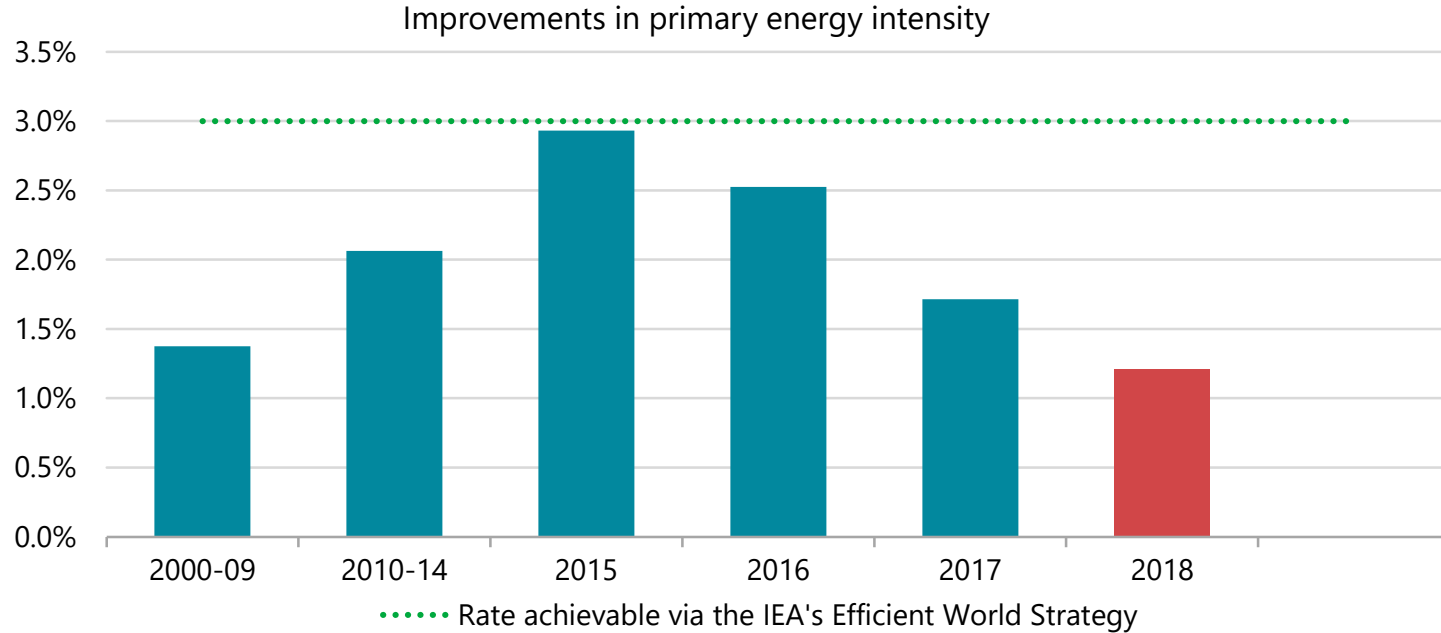
No single or simple solutions to reach sustainable energy goals

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



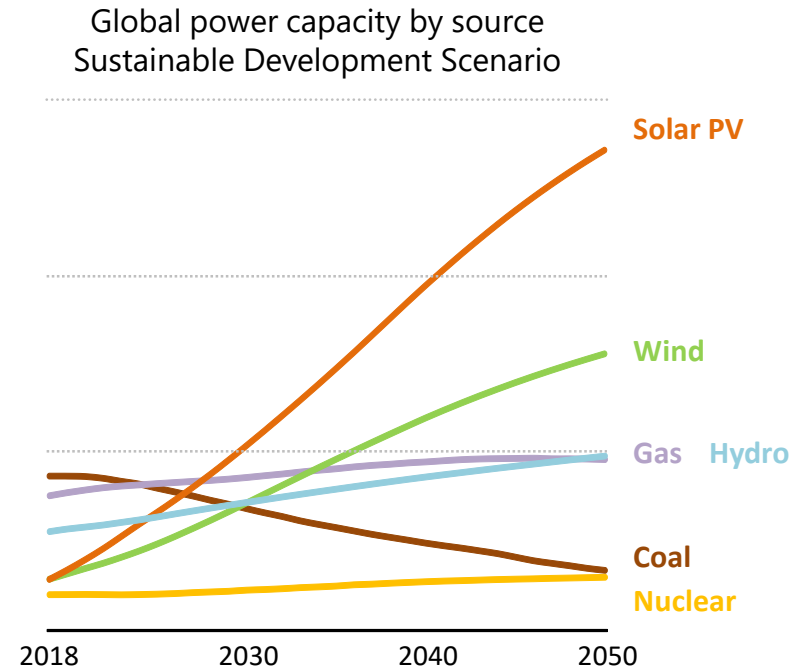
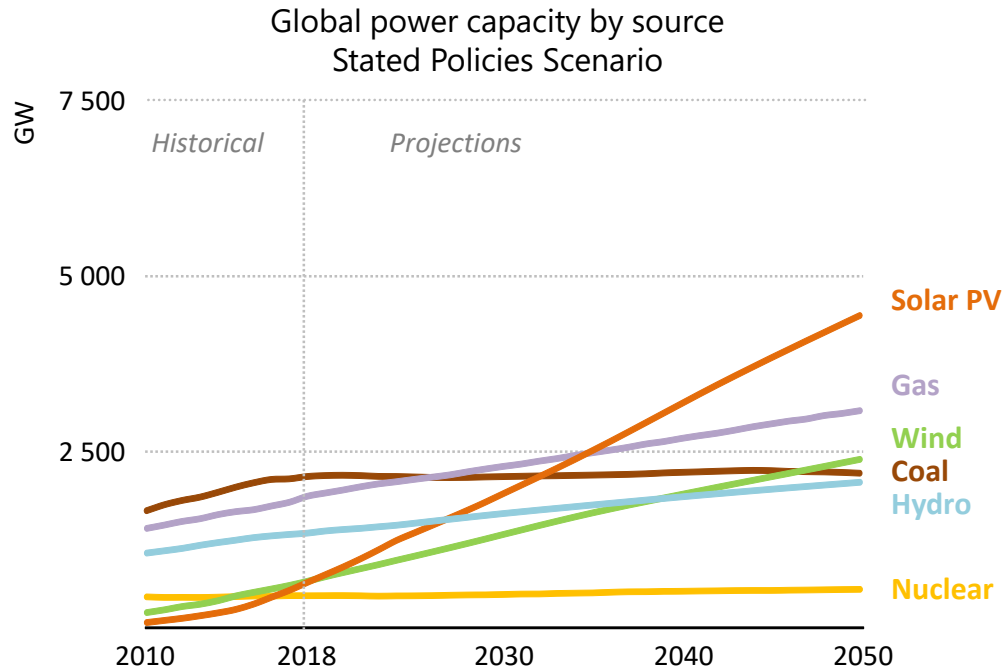
A host of policies and technologies will be needed across every sector to keep climate targets within reach, and further technology innovation will be essential to aid the pursuit of a 1.5°C stabilisation

Global energy efficiency improvements are slowing down



In 2018 the global economy produced 1.2% more value for every unit of energy used compared to 2017. Cost-effective opportunities exist to deliver an annual improvement rate of 3%.

Towards a low-carbon power sector



Renewables provide three-quarters of the growth in electricity supply to 2040 under stated policies much more is needed: a greater shift towards low-carbon generation and tackling the legacy issues

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

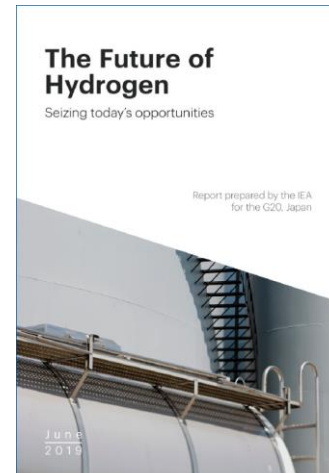
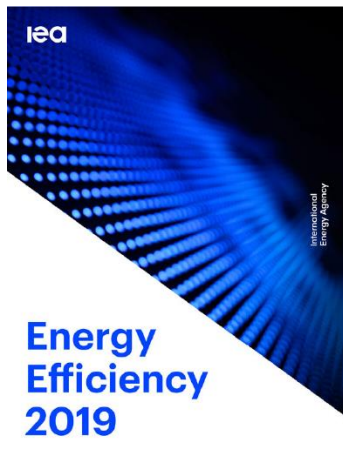
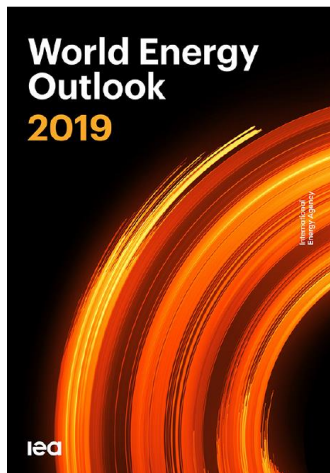
- Energy storage
- Hydrogen
- Smart grids
- Demand response

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

There is no single or simple solution to transform global energy systems

Many technologies and fuels have a part to play across all sectors of the economy, and must be deployed with a laser-like focus on bringing down global emissions.



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Shaping a secure and sustainable energy future for all

Thank you!

