



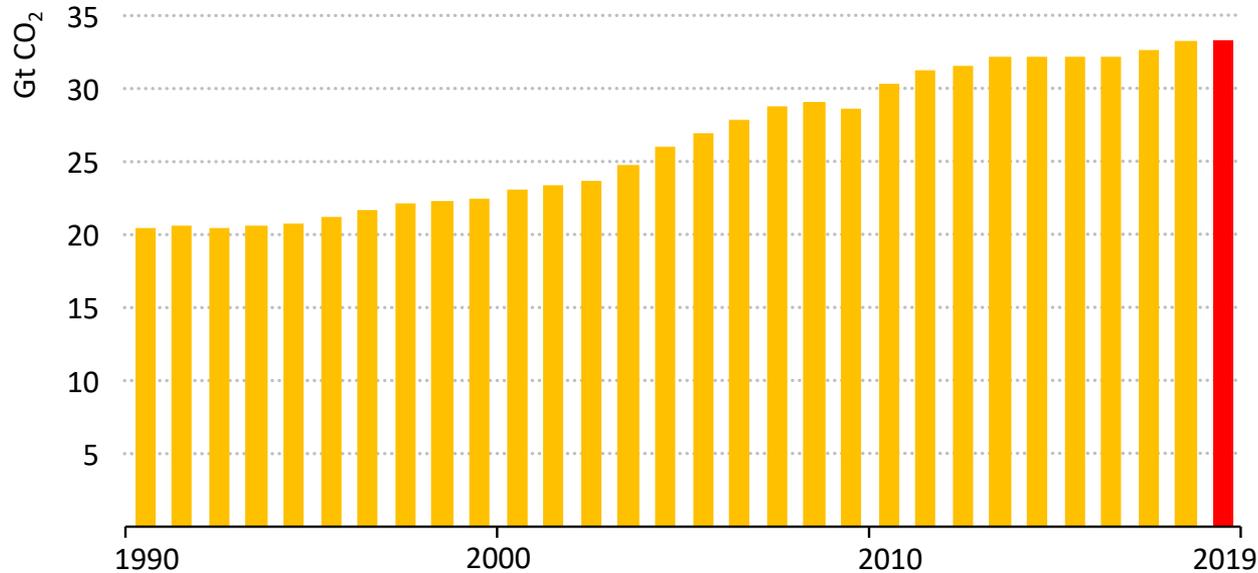
Pathways to a more sustainable energy outlook

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Riyadh, 20 February 2020

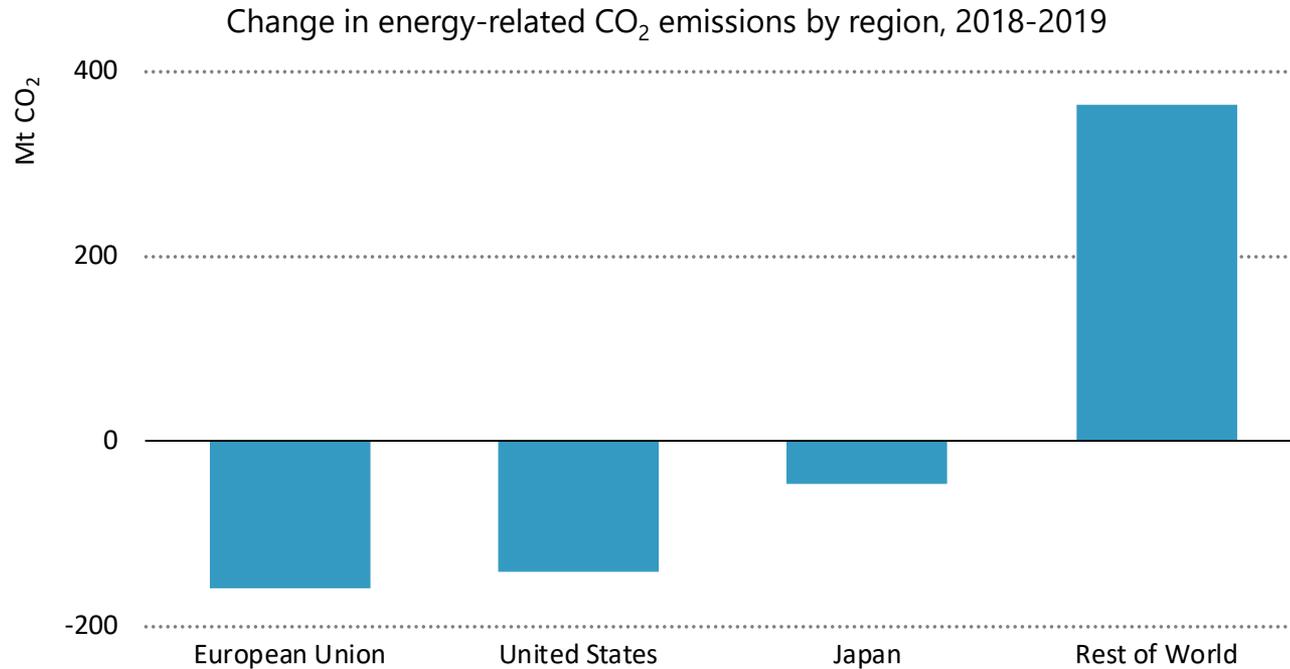
CO₂ emissions flatlined in 2019

Global energy-related CO₂ emissions, 1990-2019



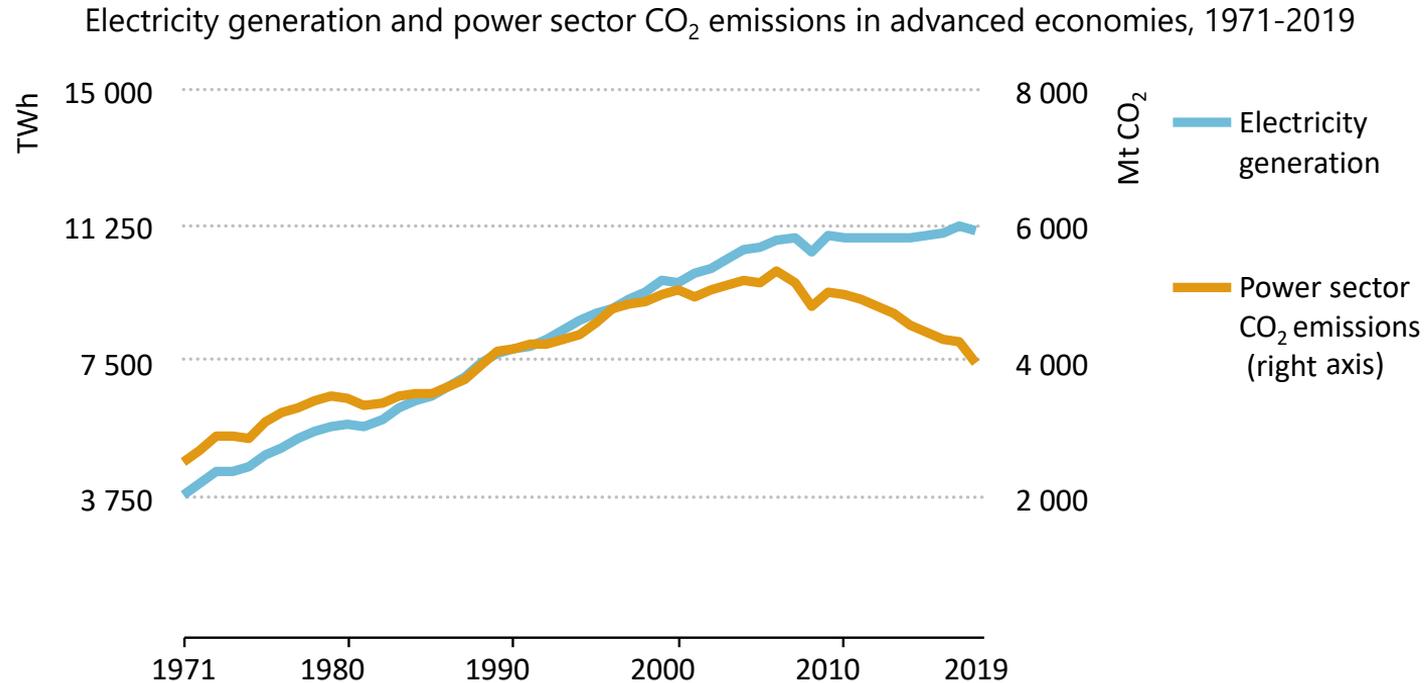
Global CO₂ emissions flattened in 2019 at around 33 Gt, after two years of increases. Lower coal-fired generation in advanced economies and rising output from lower-carbon sources underpinned the decline.

CO₂ emissions in advanced economies declined sharply



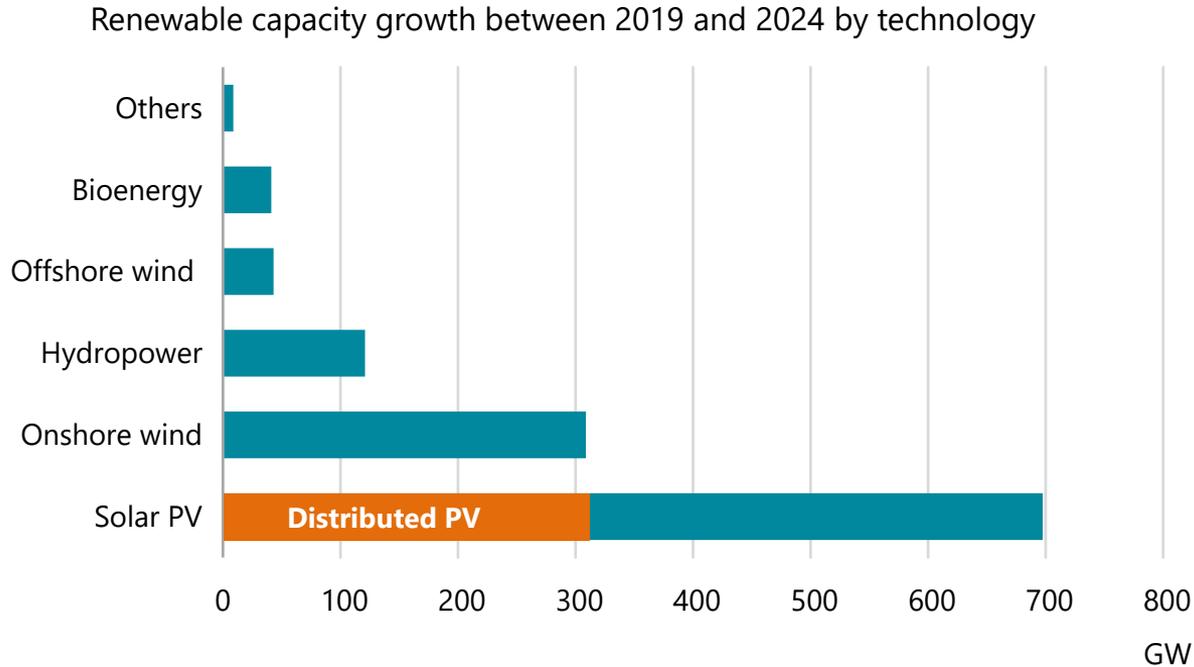
Increasing renewables, coal-to-gas fuel switching, lower demand and higher output from nuclear all contributed to a decline of 370 Mt CO₂ in advanced economies, offsetting continued growth elsewhere.

Power sector decarbonisation accelerates in advanced economies



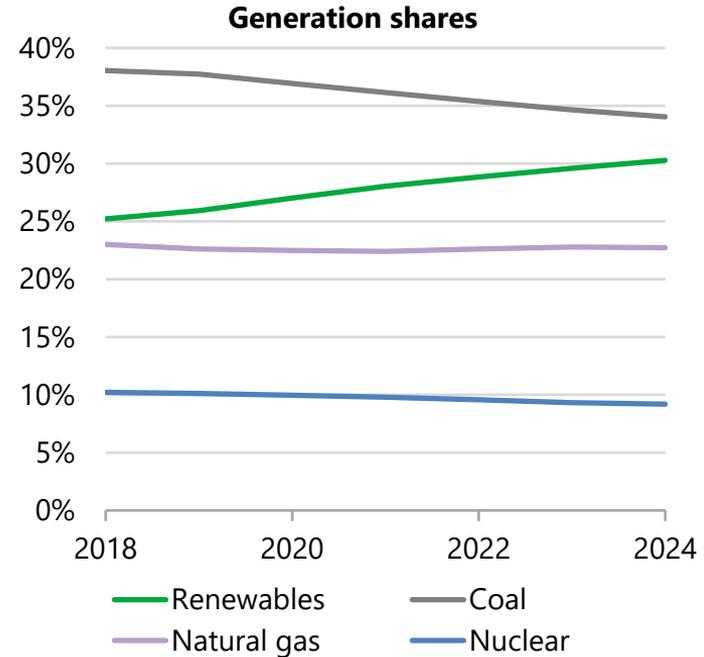
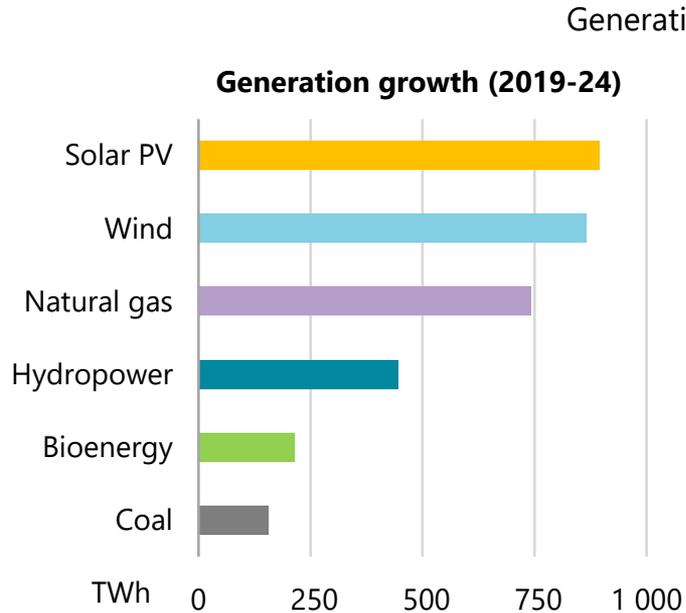
Across advanced economies, emissions from the power sector declined to levels last seen in the late 1980s, when electricity demand was one-third lower than today.

Solar PV drives strong rebound in renewable capacity expansion



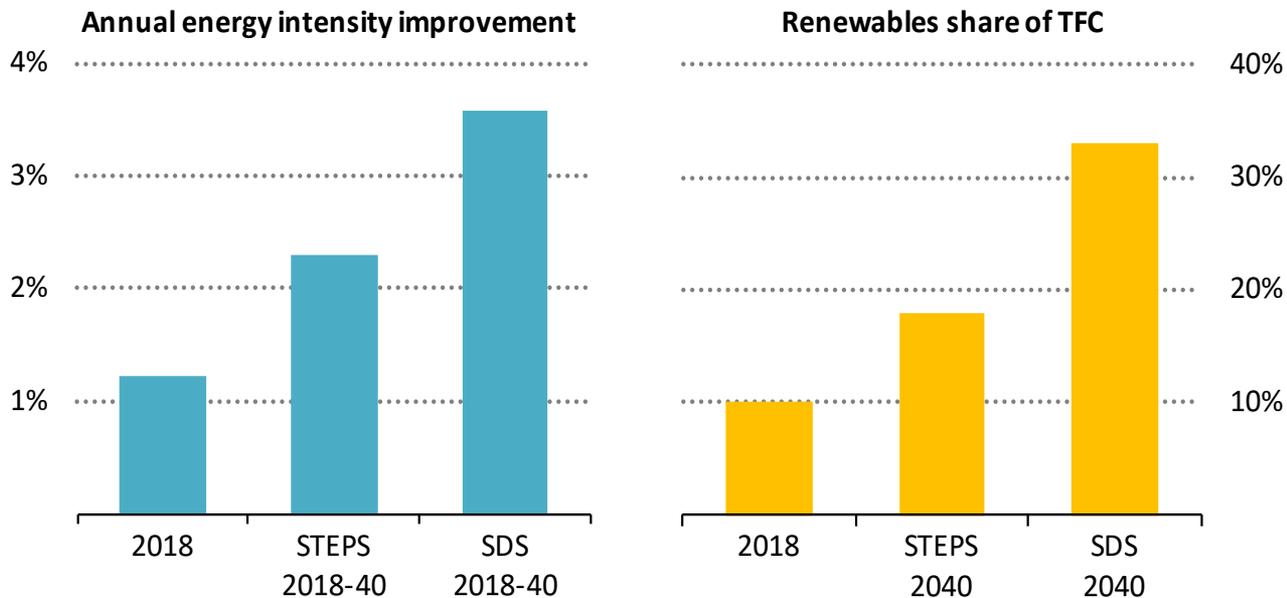
Renewables expand by 50% through 2024, with distributed PV alone growing as much as onshore wind

Are we on track to meet global climate targets?



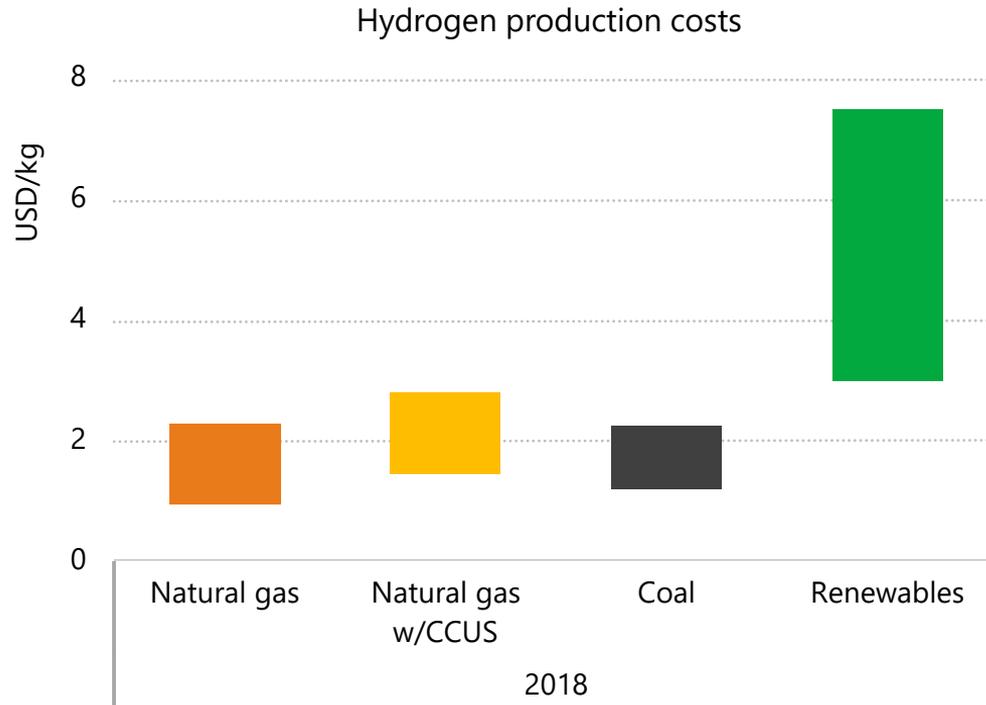
Renewable electricity generation will grow faster than all fuels; however, to be on track with global climate goals, renewables share in generation need to surpass coal before 2024

Greater renewables use necessary beyond electricity in an SDS



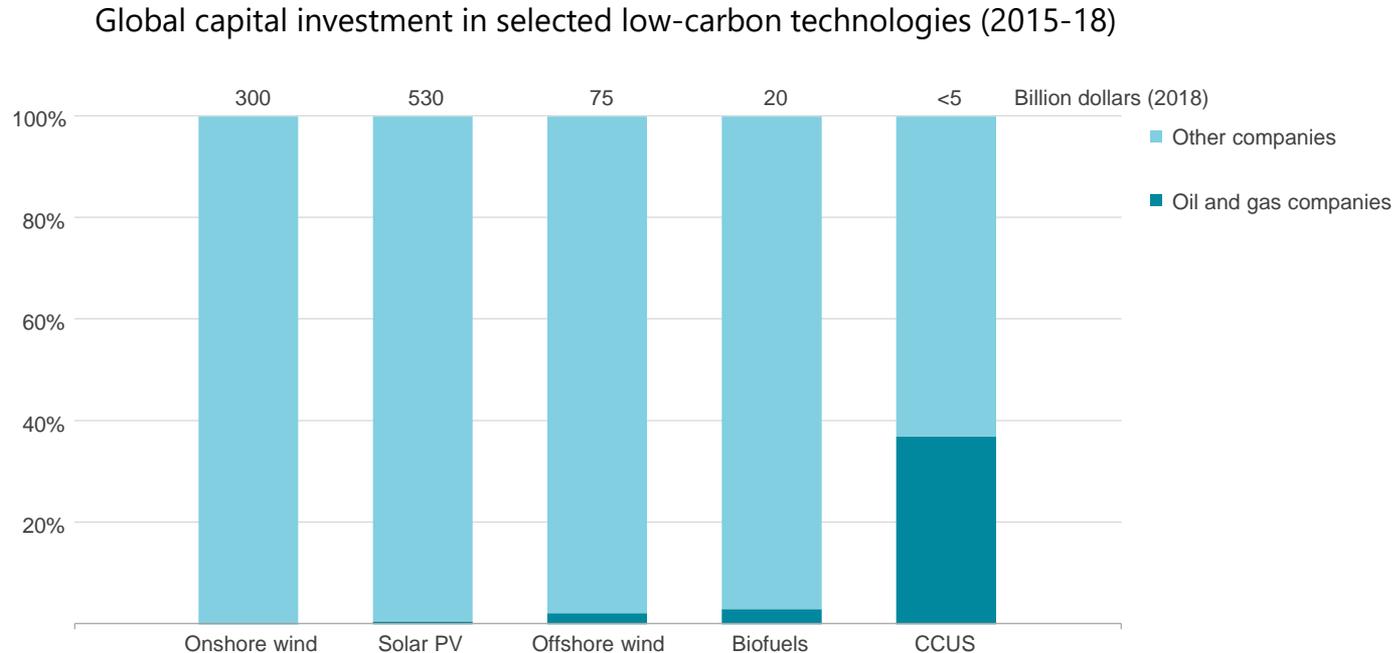
A significant step up in effort is required if the world is to achieve the targets set out in the Sustainable Development Goals

Renewable hydrogen costs are set to decline



Today, hydrogen is produced from fossil fuels, but declining costs of PV & wind increasingly make them a low-cost source for hydrogen in many regions including Latin America, Africa, Middle East, India & Australia

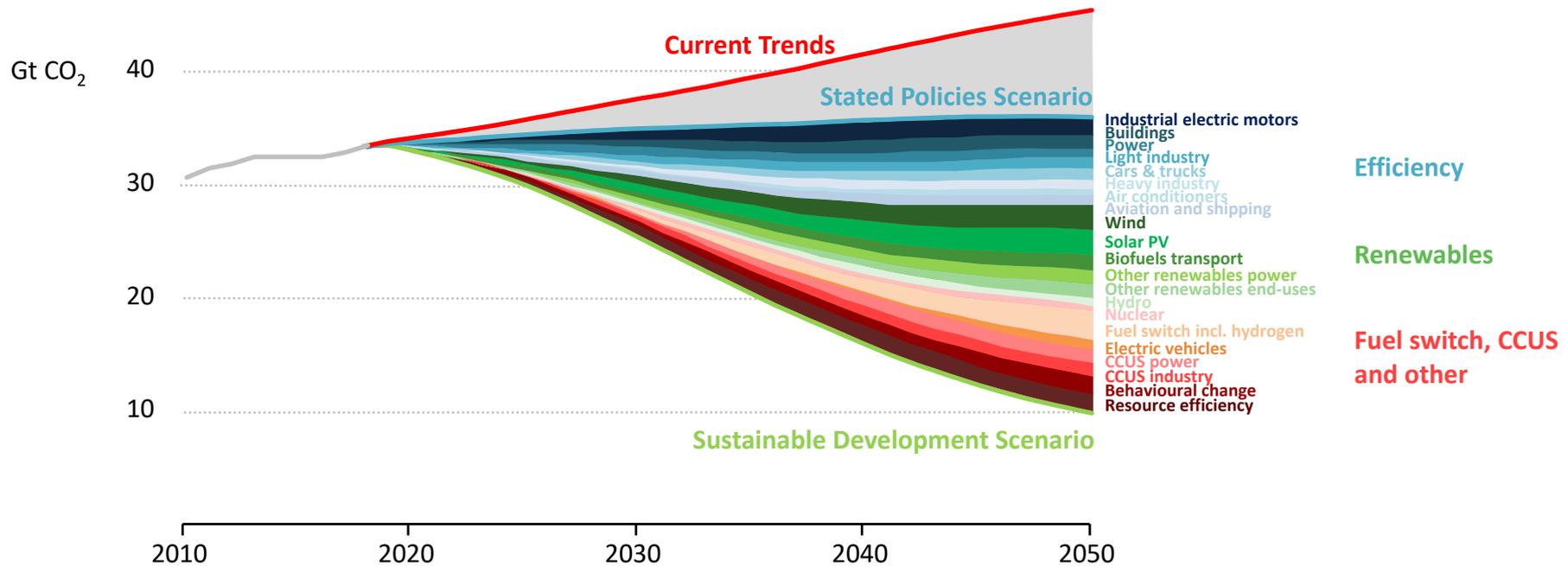
The industry will be key for some clean technologies to mature



The resources and skills of the industry can play a central role in helping to tackle emissions from some of the hardest-to-abate sectors, including CCUS, low-carbon hydrogen, biofuels, and offshore wind.

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

Conclusions

- The levelling off of emissions in 2019 is a welcome surprise, but efforts will need to be redoubled to ensure this is replicated and improved upon in the future.
- The decarbonisation of the power sector holds lessons for other emitters; greater renewables deployment and increased efficiency are needed beyond electricity generation.
- Further strong growth in renewable electricity is almost inevitable as costs continue to fall. The case for renewable hydrogen is becoming more compelling.
- We are not on track to meet our climate commitments. There is no single pathway or solution; getting towards a Paris-compliant emissions trajectory will require a suite of technologies and fuels.
- In recognition of this, the IEA will host a Clean Energy Transitions Summit on July 9th. The aim is to build momentum and accelerate the pace of change in an ambitious and real-world manner

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