



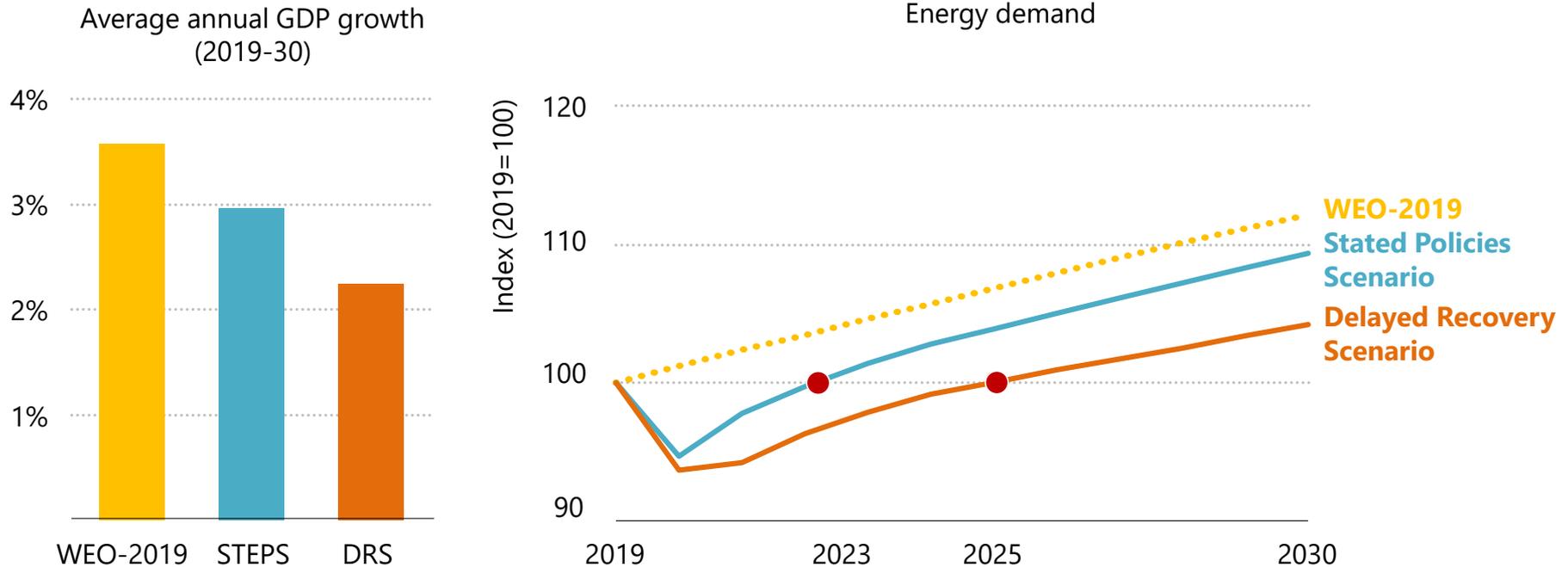
World Energy Outlook 2020

Paris, 13 October 2020

Covid-19 and the energy outlook

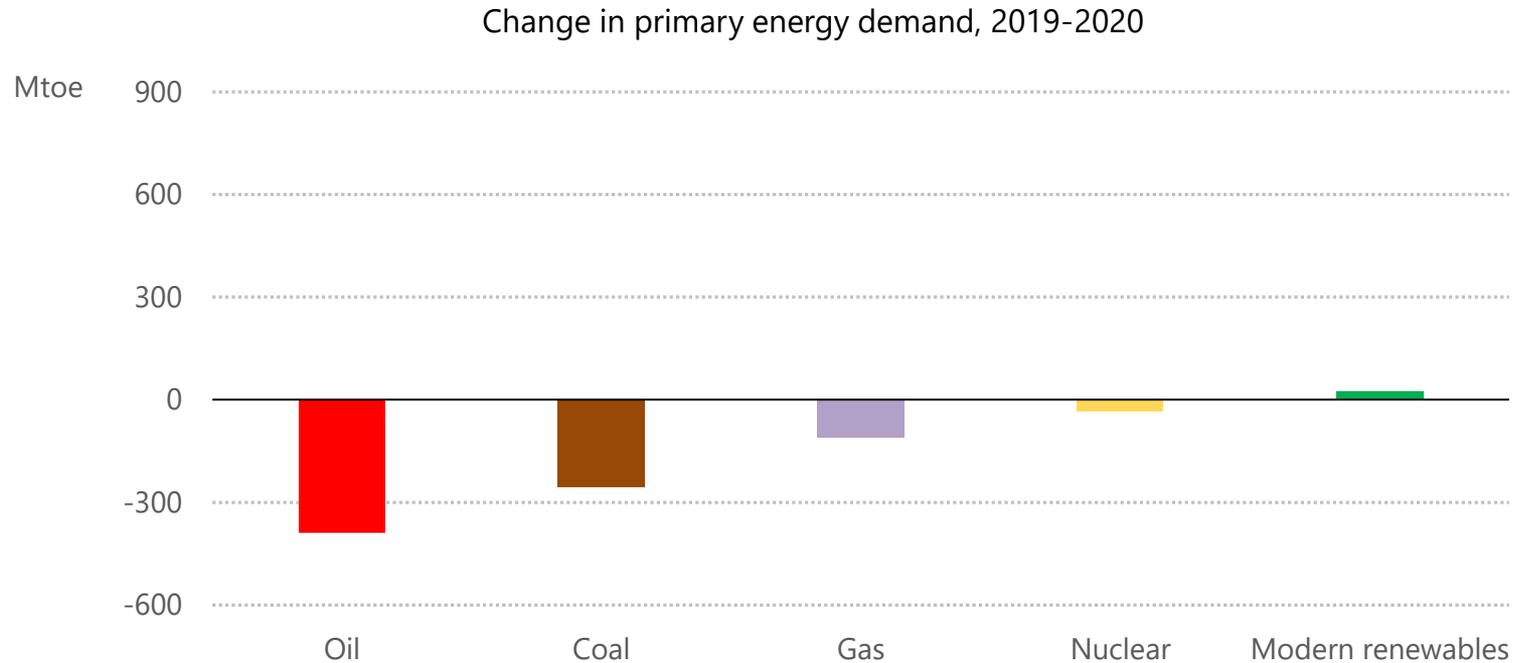
- In an extraordinary year, 2 key questions:
 - How might the pandemic (and its aftermath) **reshape the energy sector**?
 - Does this disruption help, or hinder, the **prospects for rapid clean energy transitions**?
- Focus on pathways out of today's crisis over the next 10 years, amid 2 key uncertainties
 - **Duration and severity of the pandemic** and its economic impacts
 - **Response from energy policy makers** and the sustainability of the recovery
- Scenario-based approach more important than ever, to examine:
 - The **direction we are heading**, depending on the outlook for public health & the economy
 - What would be required to **reach net-zero emissions**

A shock to the energy system



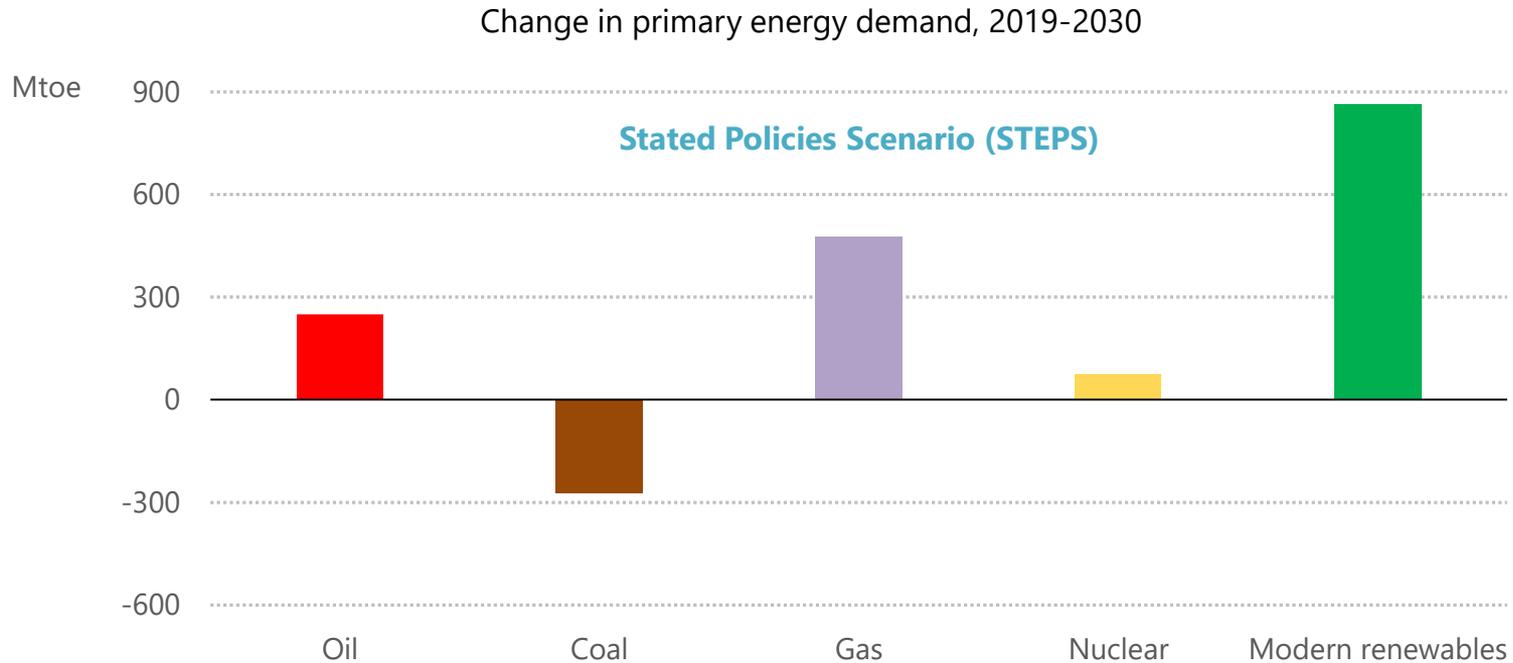
Bringing the pandemic under control in 2021 would allow energy demand to return to pre-crisis levels by early 2023. A longer pandemic would usher in the slowest decade of energy demand growth for a century

Impacts vary widely by fuel & technology



After a 5% drop in energy demand in 2020, renewables lead the rebound while coal never gets back to pre-crisis levels

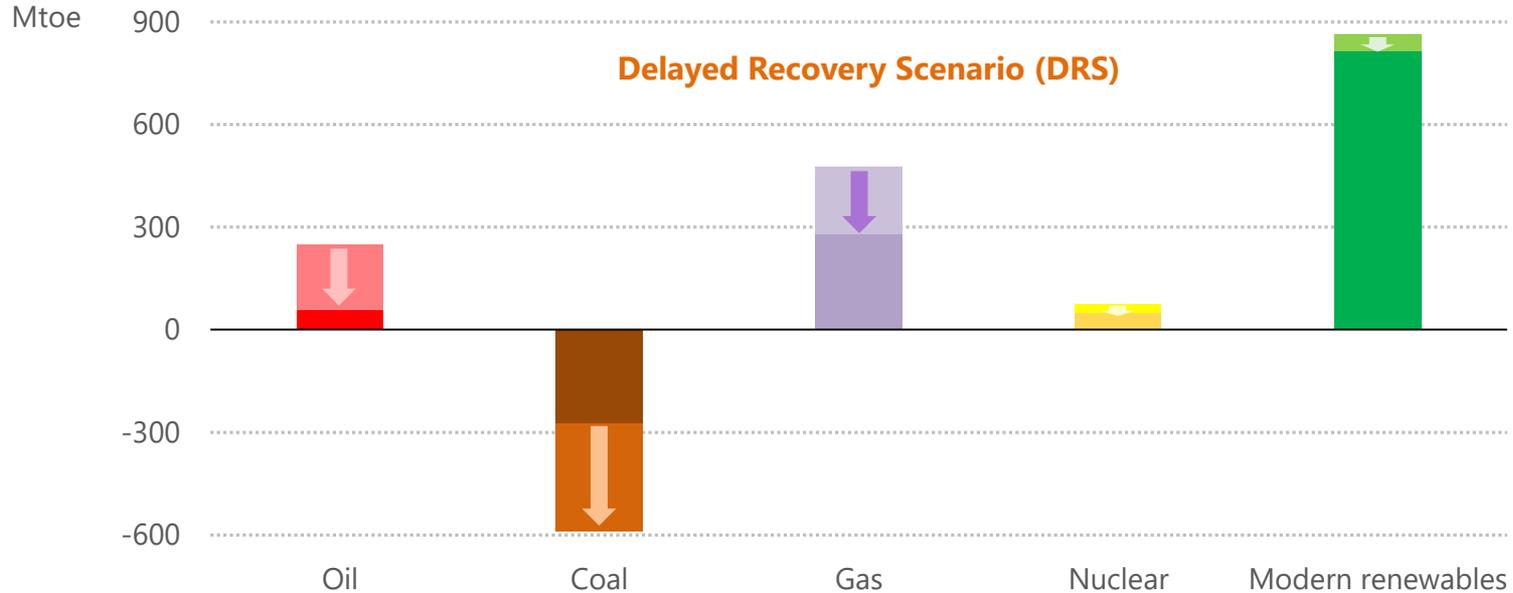
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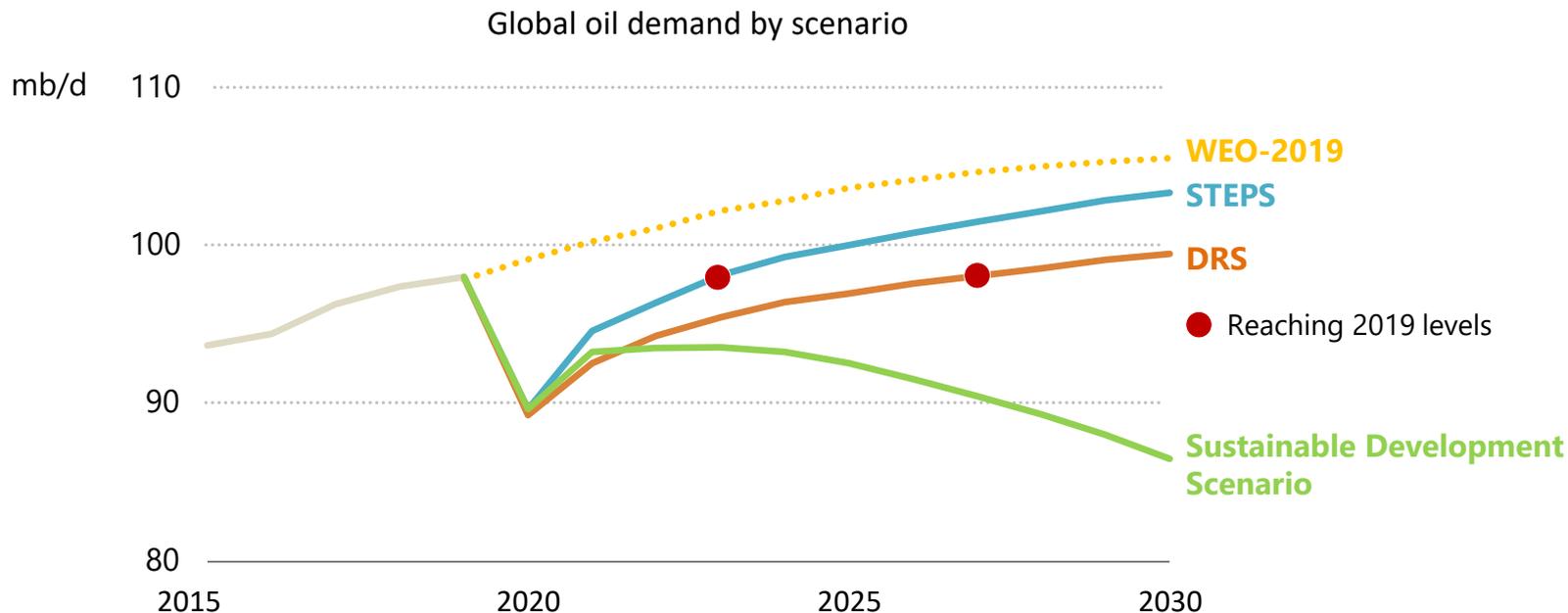
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Change in primary energy demand, 2019-2030



After a 5% drop in energy demand in 2020, renewables lead the rebound while coal never gets back to pre-crisis levels; a delayed recovery puts energy into slow motion, prolonging today's overhang of supply

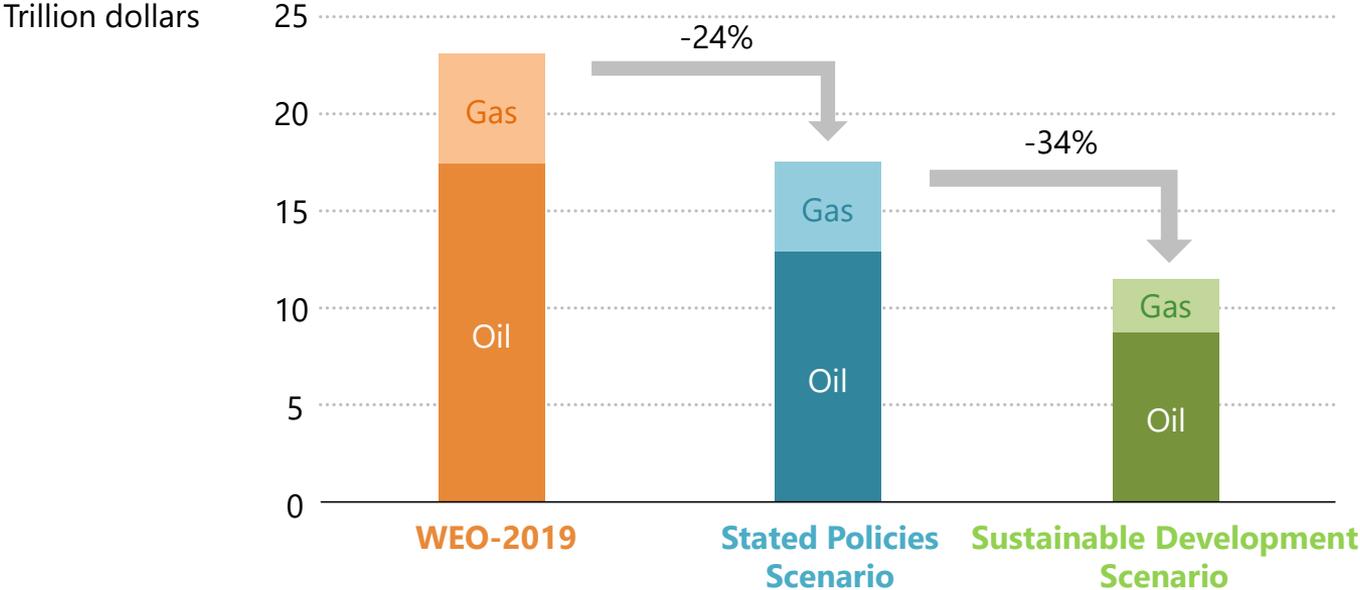
Without a larger shift in policies, no rapid decline in oil



In the STEPS & the DRS, oil demand reaches a plateau in the 2030s as transport fuels are no longer a reliable engine for growth; a stronger push for efficiency, electrification and recycling will be needed for oil use to fall

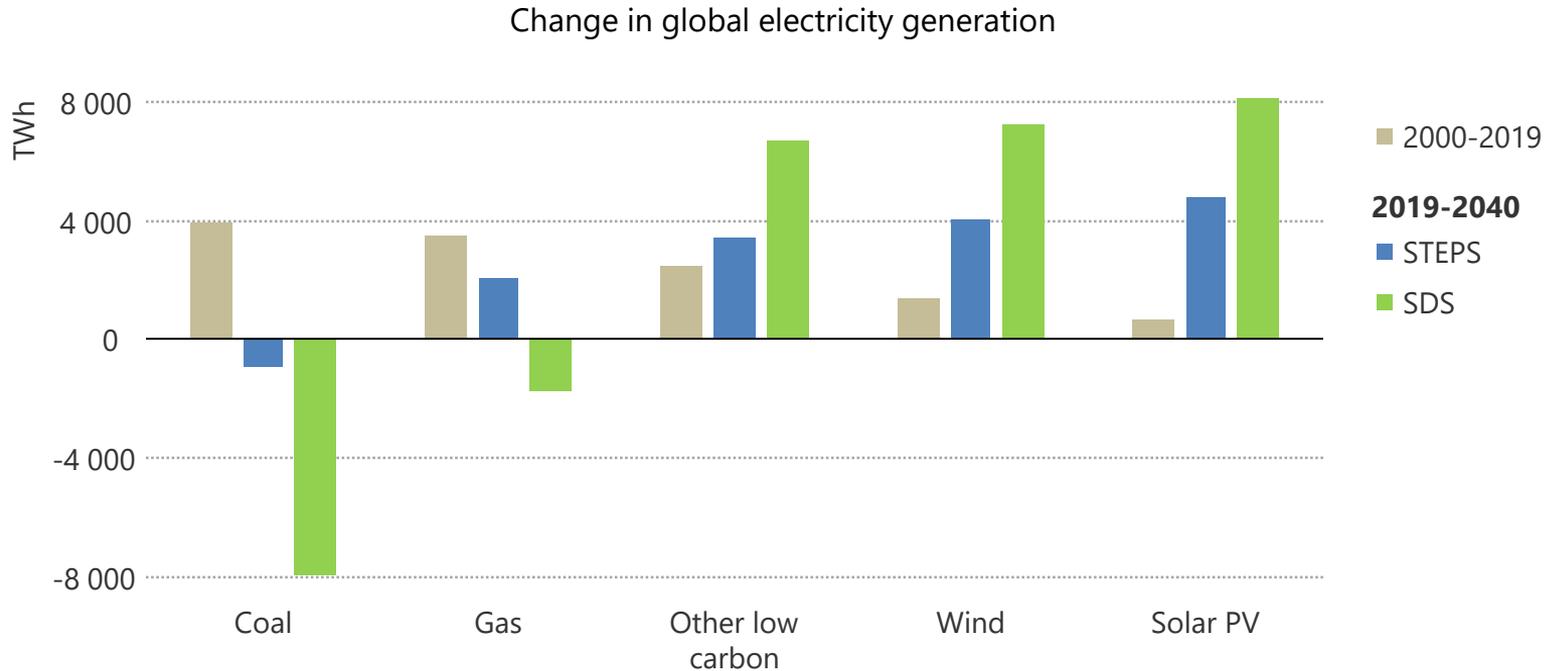
Diversification: the critical watchword for oil and gas producers

Today's value of oil and gas production to 2040



A lower price and demand outlook, due in the near term to Covid-19, adds to the strains on countries that rely on oil & gas revenues. The pressure for changes in strategies & business models is even stronger in the SDS

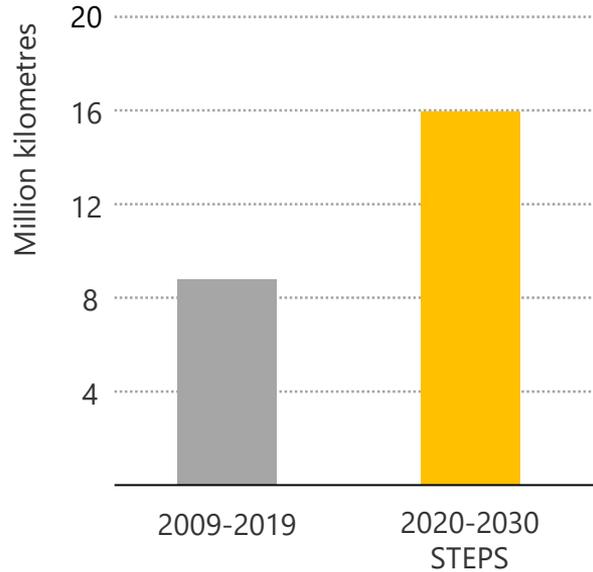
Solar PV is becoming the 'new king' of electricity



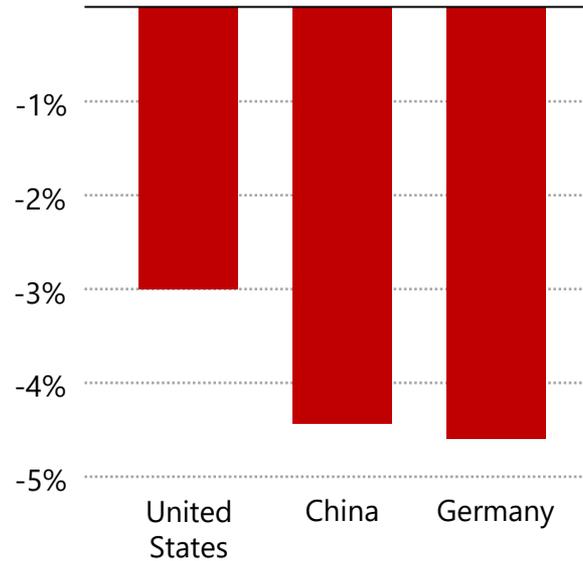
Solar PV is now the cheapest source of electricity in most countries in part due to low cost financing and is set to triple before 2030 under current and proposed policies, with the potential to grow much faster

Grids are the bedrock of a clean & secure electricity future

Grids expansion

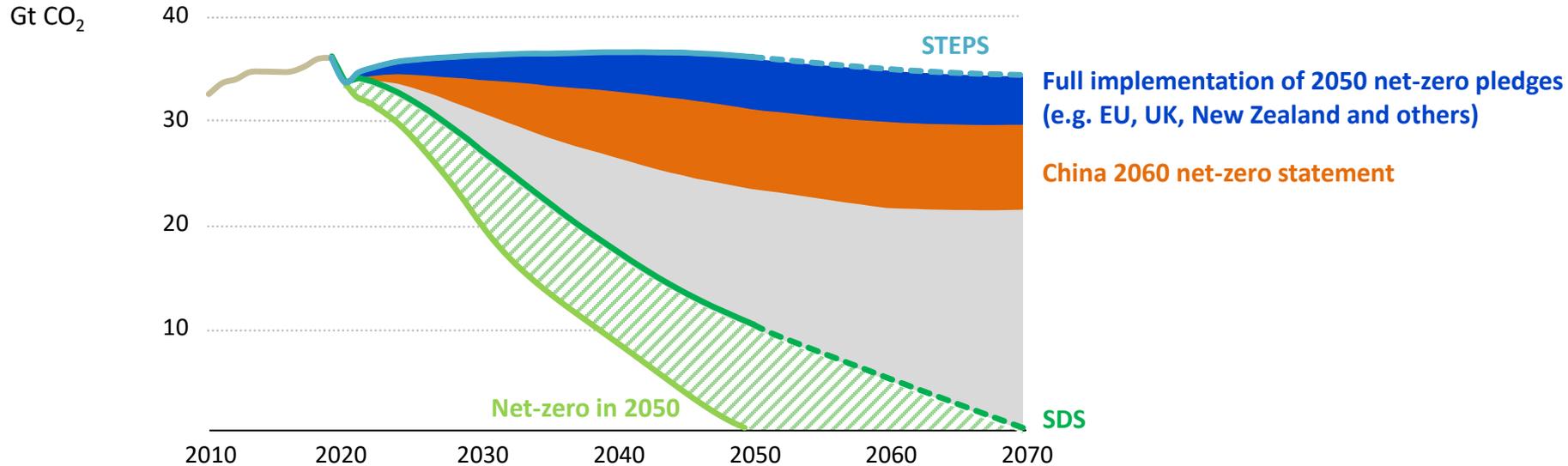


Change in grid operator revenue
First half of 2020



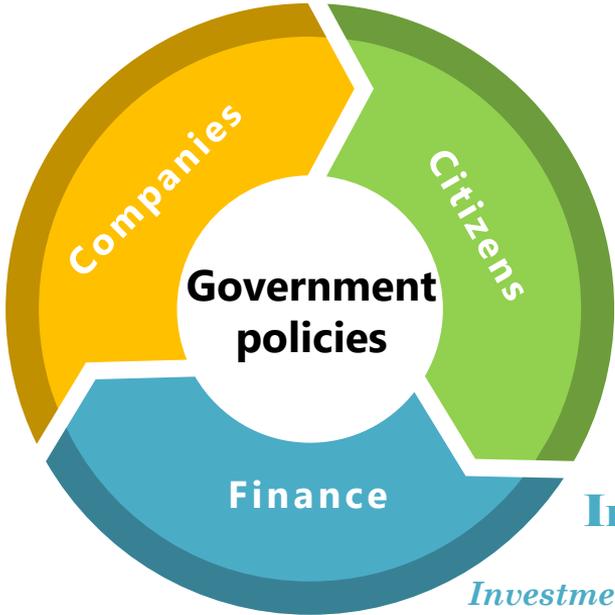
Electricity transformations require a step up in grids expansion to ensure that electricity remains reliable, affordable and secure, however depressed revenues are creating risks for timely investment

The world is still far from putting emissions into decisive decline



Global emissions are set to bounce back more slowly than after the financial crisis of 2008-2009, but the world is still a long way from a sustainable recovery

Net-zero by 2050 demands unprecedented efforts over the next decade



Build wind onshore and offshore *Eliminate flaring* **Improve product efficiency**
Hydrogen Equip with CCUS **Deploy solar**
 Widespread digitalisation **Fuel-cell trucks** *Low-carbon gases*
Innovation **Low-emissions shipping** **Extend and digitalise grids**
batteries & electrolyzers **Modernise hydropower**
 Advanced biofuel production *Expand nuclear power & develop SMRs*

Electric cars *Install batteries and solar at home*
Buy energy efficient appliances **Walk or cycle short trips**
Turn down air conditioning *Fly less often*
Work from home *Upgrade home heating to heat pumps*
Drive more slowly **Increase recycling** **Retrofit homes**

Clean electricity investment
Invest in innovation *Align portfolios with low-emissions activities*
Develop new financial tools to unlock private capital
Investment guidelines **Improve bankability of efficiency investments**
Manage risks for new technologies *Increase investment in renewables*

Net zero energy emissions in 2050 would require a set of dramatic additional actions over the next 10 years. Energy companies, citizens and investors all need to be on board – with unprecedented contributions to make

Net-zero by 2050 demands unprecedented efforts over the next decade



Hydrogen



Electric cars

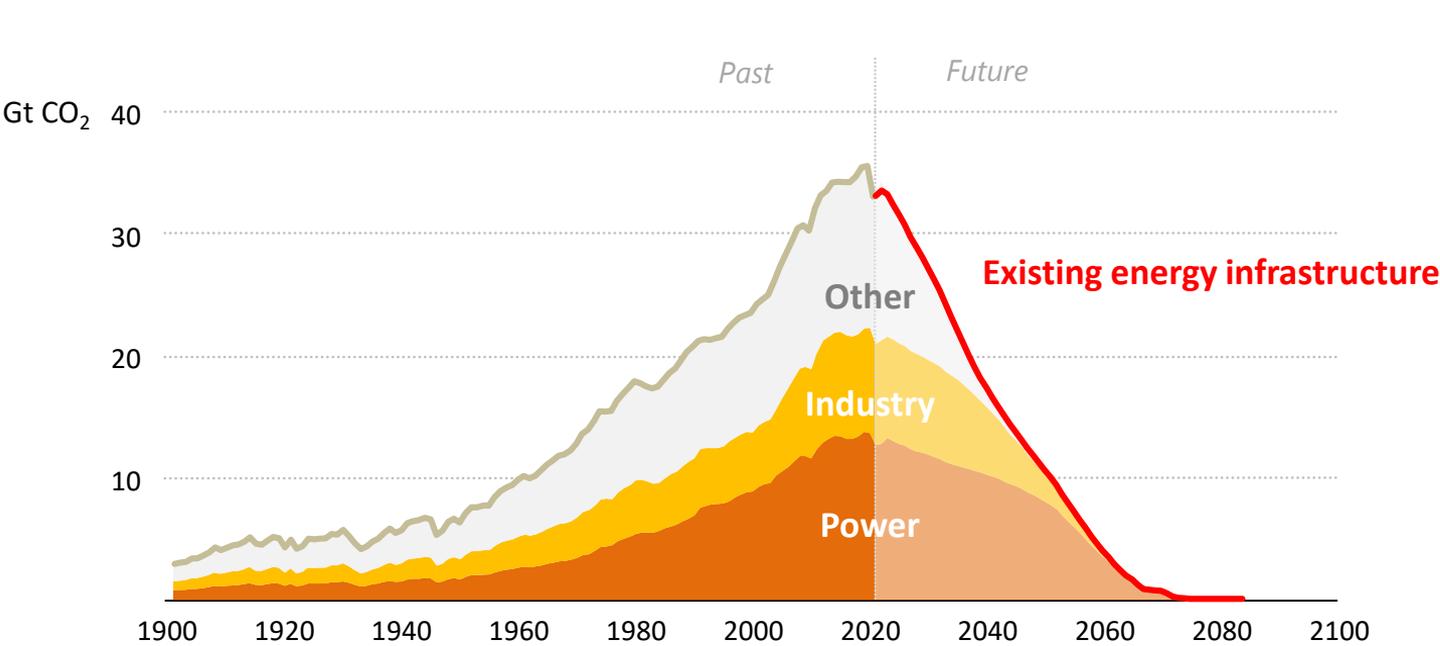


Clean electricity investment

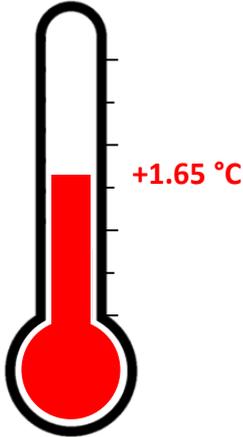


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Existing infrastructure alone could lead to a temperature rise of 1.65 °C



Global average temperature increase



Using existing energy infrastructure as in the past would “lock in” emissions for decades to come; the associated 1.65 °C global average temperature increase would put all climate goals out of reach

Conclusions

- The pandemic will leave lasting scars, but it is still open whether it represents a setback for a more secure and sustainable energy system, or a catalyst that accelerates the pace of change
- Renewables have taken off, with solar leading the way. But a slowdown in improving access to electricity and a risk of under-investment in grids are warning signs for the future
- The crisis has squeezed oil and gas revenues and investment, forcing producers to reassess their strategies to align with technology and policy shifts
- Getting to net zero means ramping up clean technology deployment while continuing to reduce costs, especially through innovation for hydrogen and other low-carbon fuels, battery storage & CCUS
- There are no short cuts; only profound changes, guided by good policies, can deliver a better energy future. This is a choice – for citizens, investors, companies, but most of all for governments