



equinor



Energy Perspectives

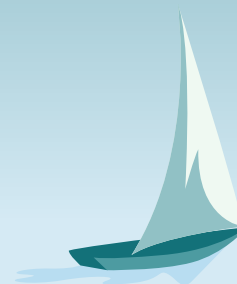
2021

Long-term macro and market outlook

Eirik Wærness

Senior Vice President and Chief Economist

10.06.2021

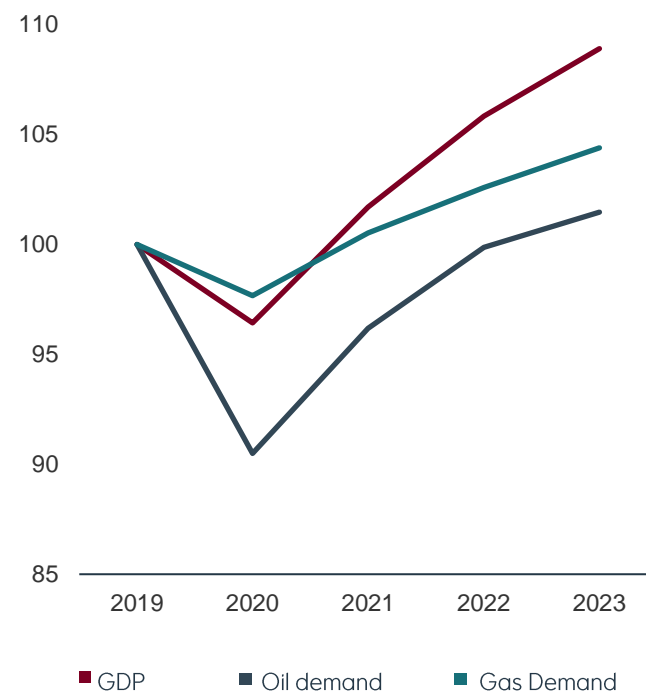


COVID-19: A shock with profound impact

On human beings, societies, economies, and markets

Global GDP, oil and gas demand

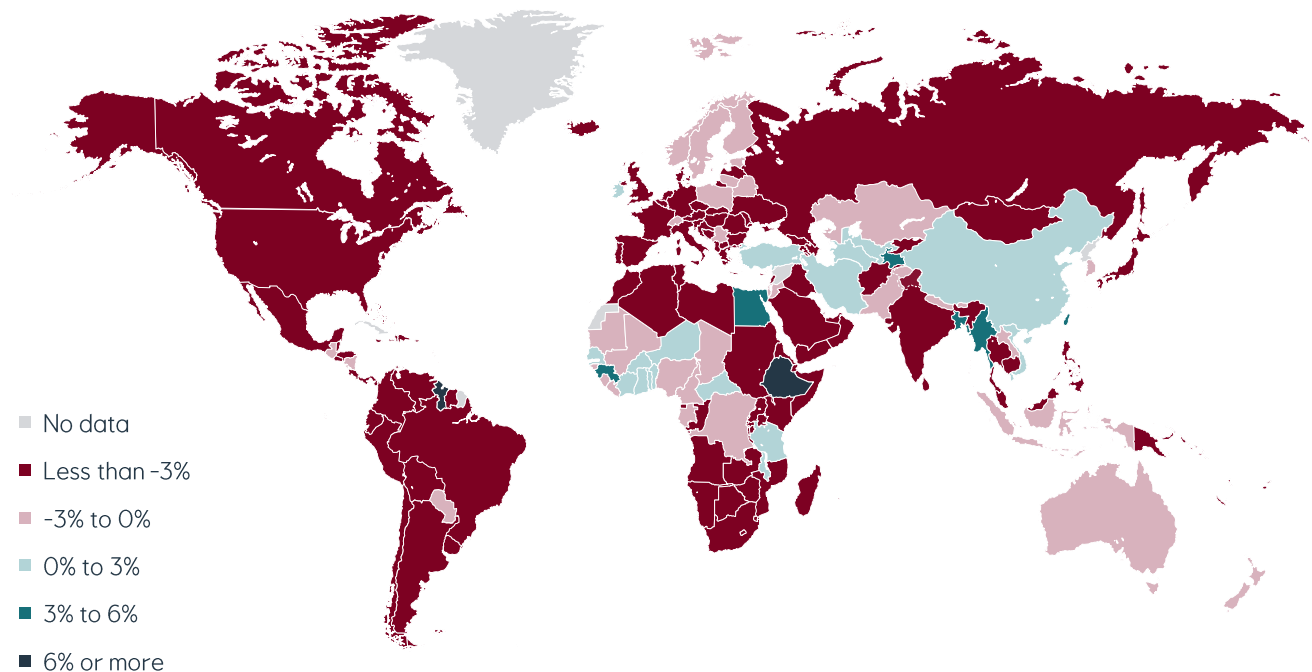
Indexed, 2019 = 100



Source: Equinor

Countries in recession in 2020

Real GDP growth, annual percent change



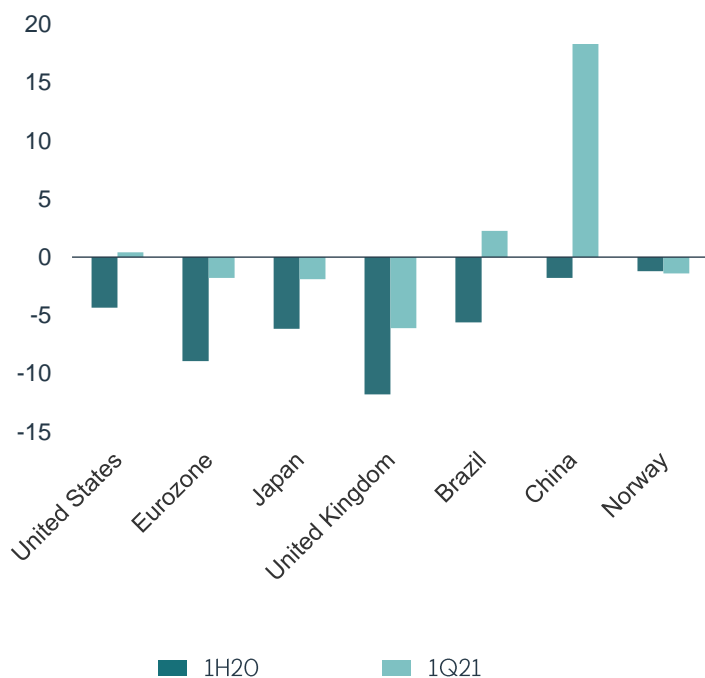
Source: International Monetary Fund

Signs of recovery

Recessions receding, trade levels back, signs of bottlenecks in markets

GDP growth 2020/21

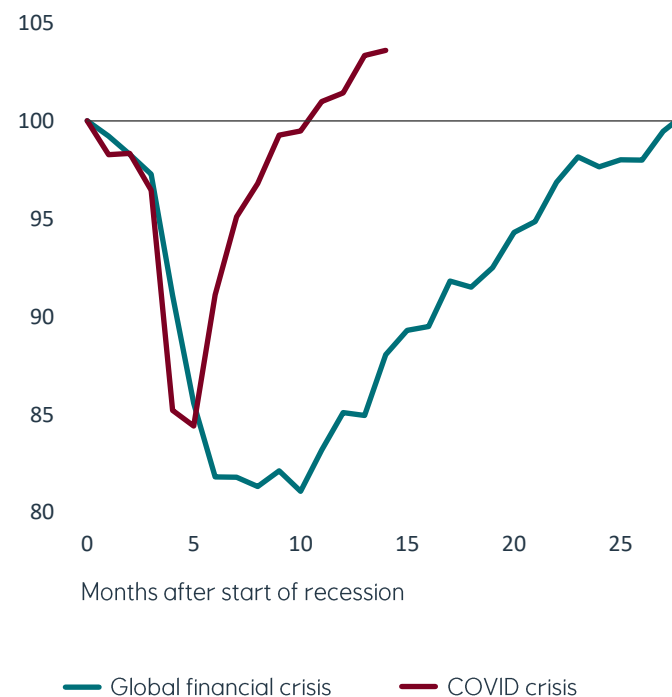
Real % change y/y



Source: Equinor

Global goods trade

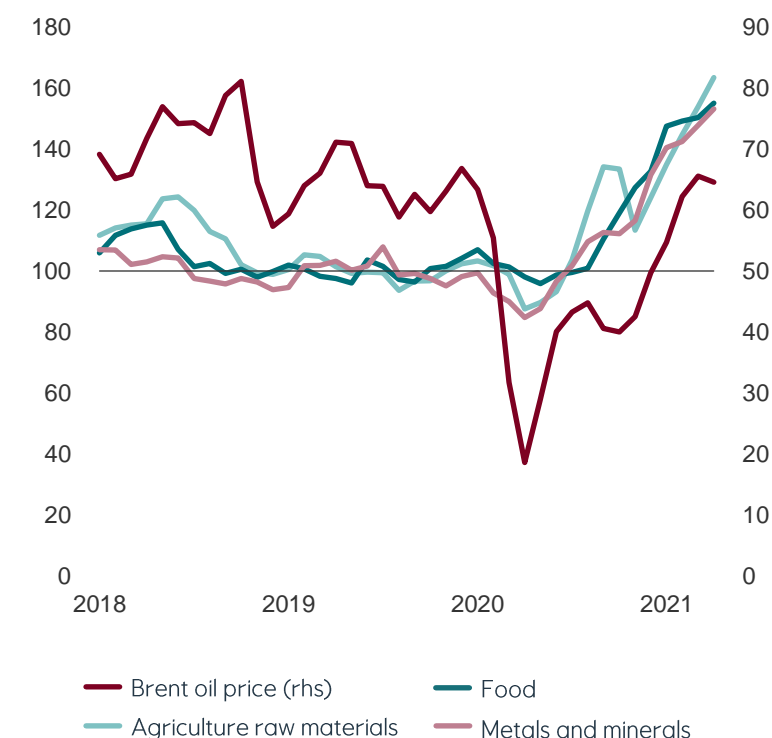
Indexed, July 2008 and December 2019 = 100



Source: CPB Netherlands Bureau for Economic Policy Analysis, Refinitiv Datastream

Global commodity prices

Index 2019 = 100 (lhs) and USD/bbl (rhs)

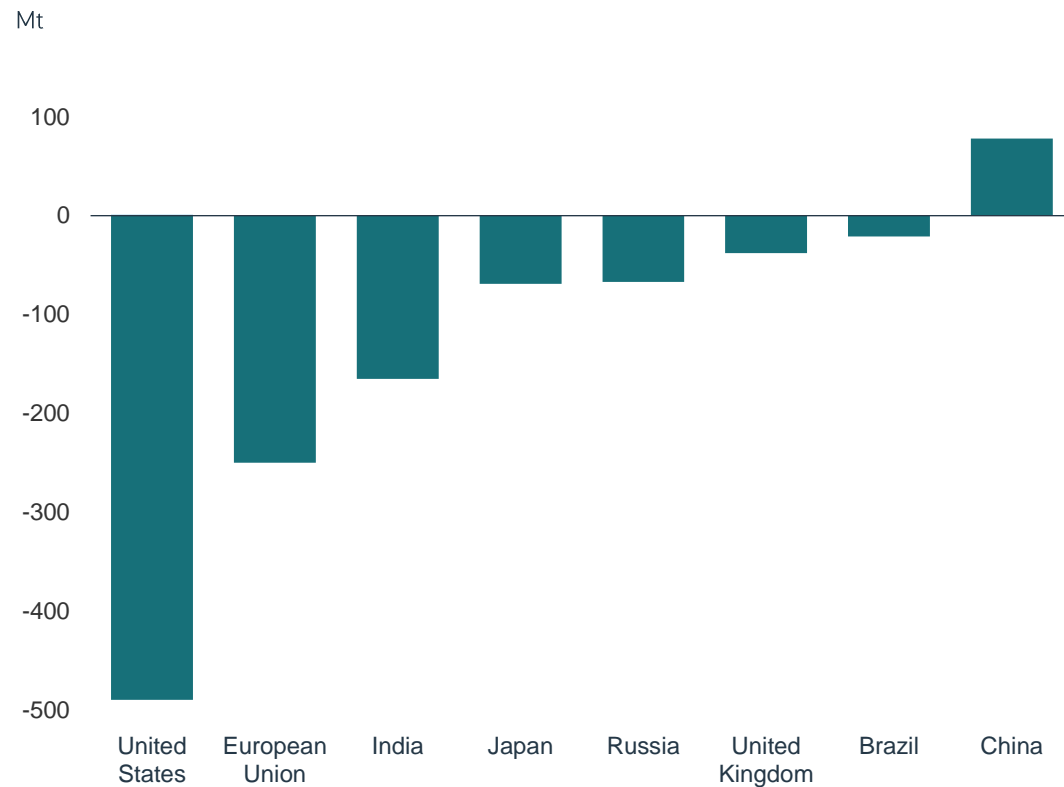


Source: OECD

Energy use is increasing

CO₂ emissions in China have rebounded, with others likely to follow; still potential for further increases

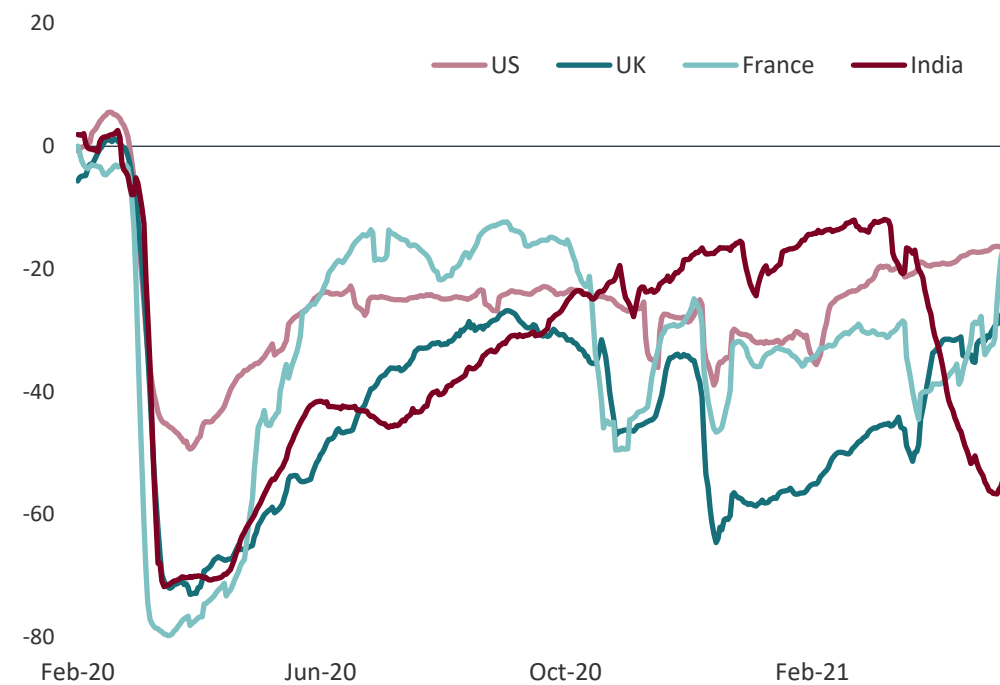
Change in CO₂ emissions 2019-20



Source: IEA

Community movement

% difference from pre-crisis. Average of retail, workspace and transit related movement of people

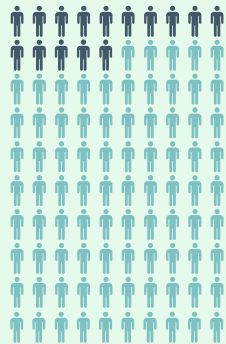
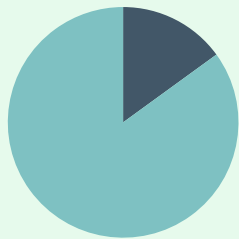


Source: Our world in data

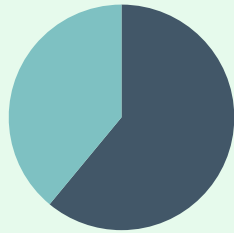
An unbalanced world...

15% of the world's population have nearly 2/3 of the income and use more than 1/3 of the energy

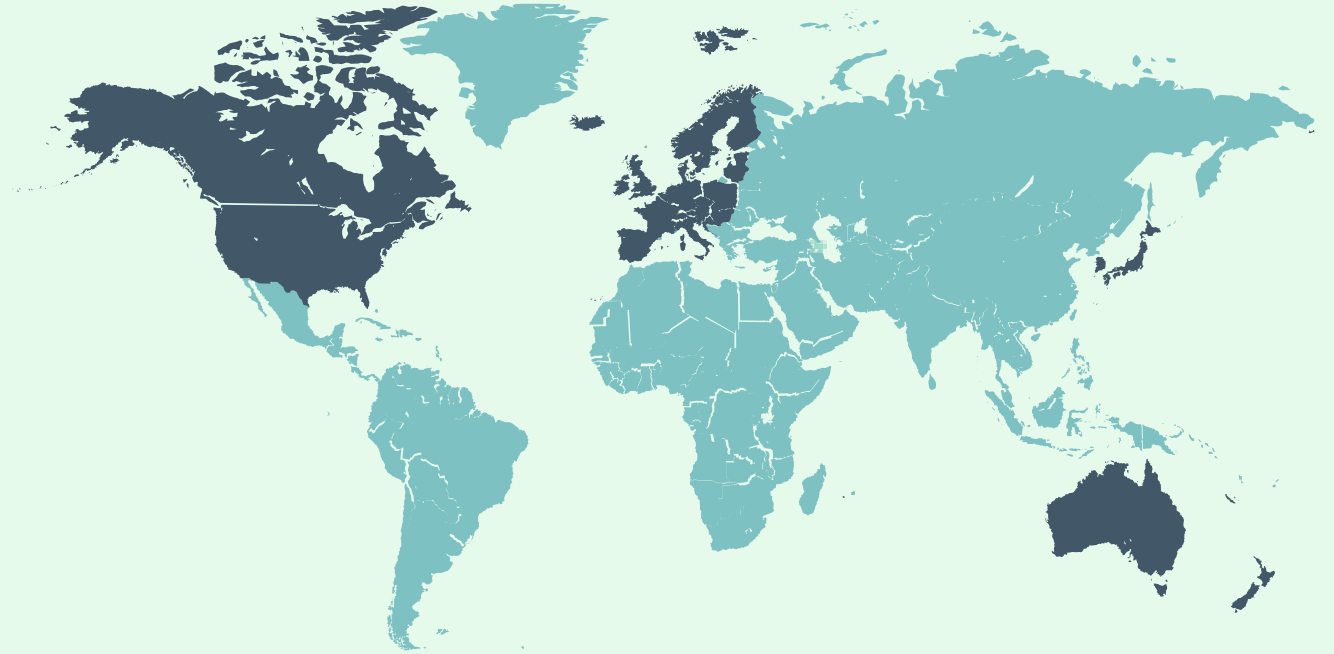
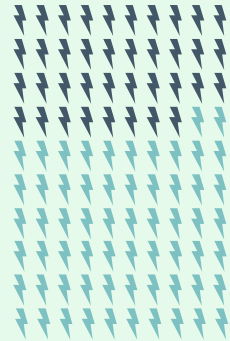
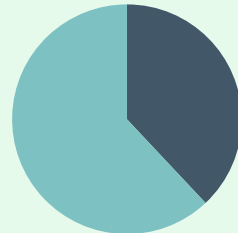
Population



GDP



Energy

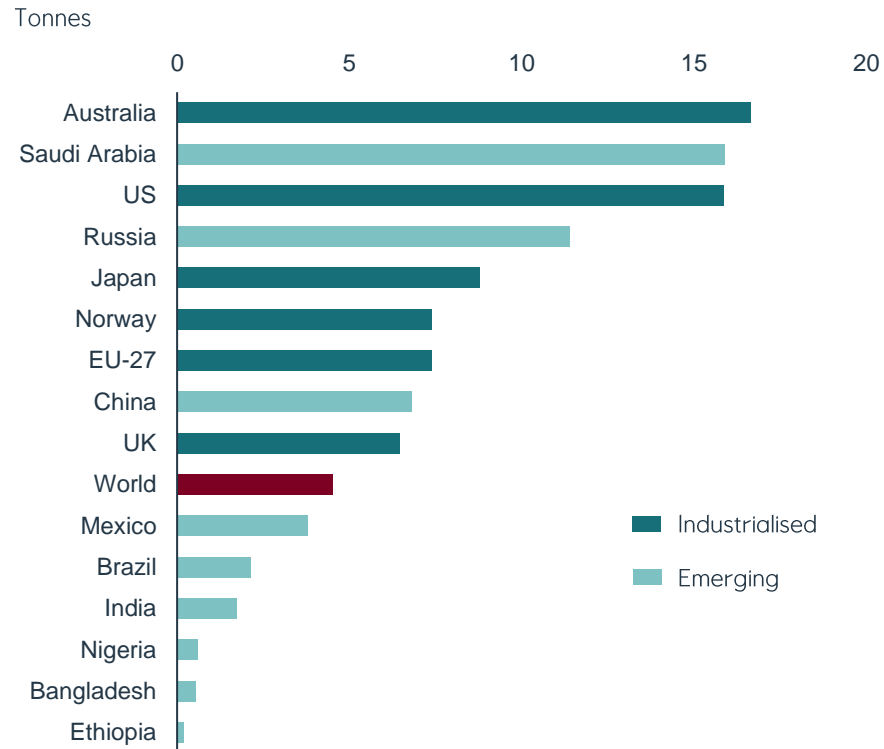


Source: United Nations, IEA, Equinor

An unbalanced world...

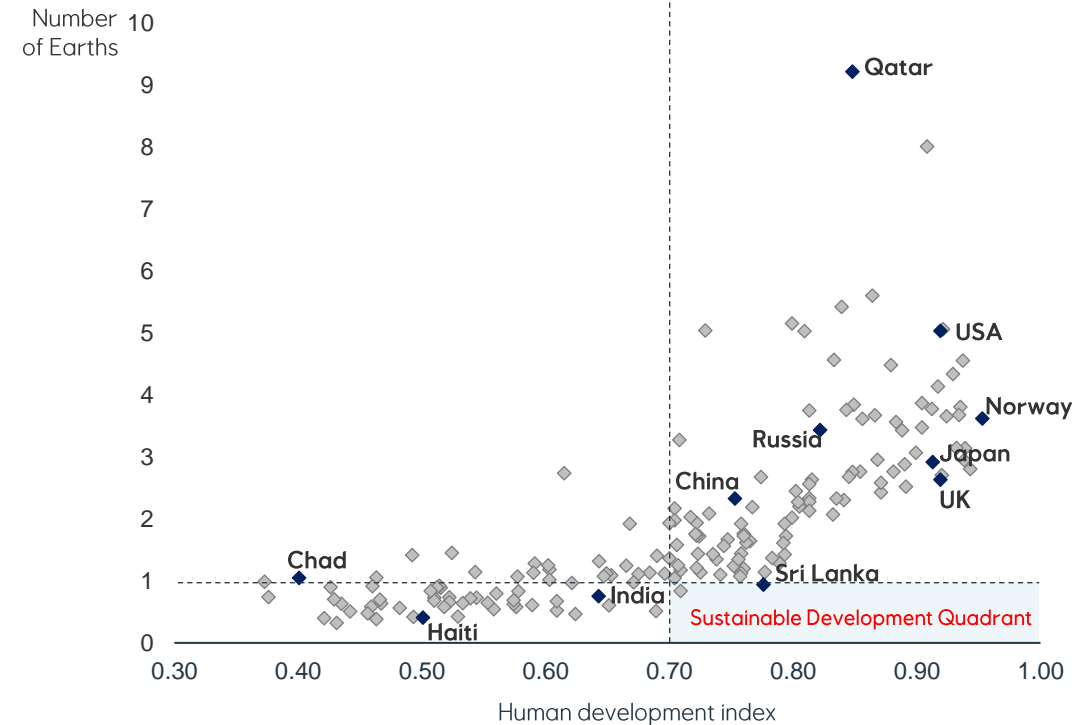
Industrialised countries emitting far more CO₂ per capita than those in the emerging economies; resource use too high

CO₂ emissions per capita in 2018



Source: United Nations

Living within the Earth's resource limits

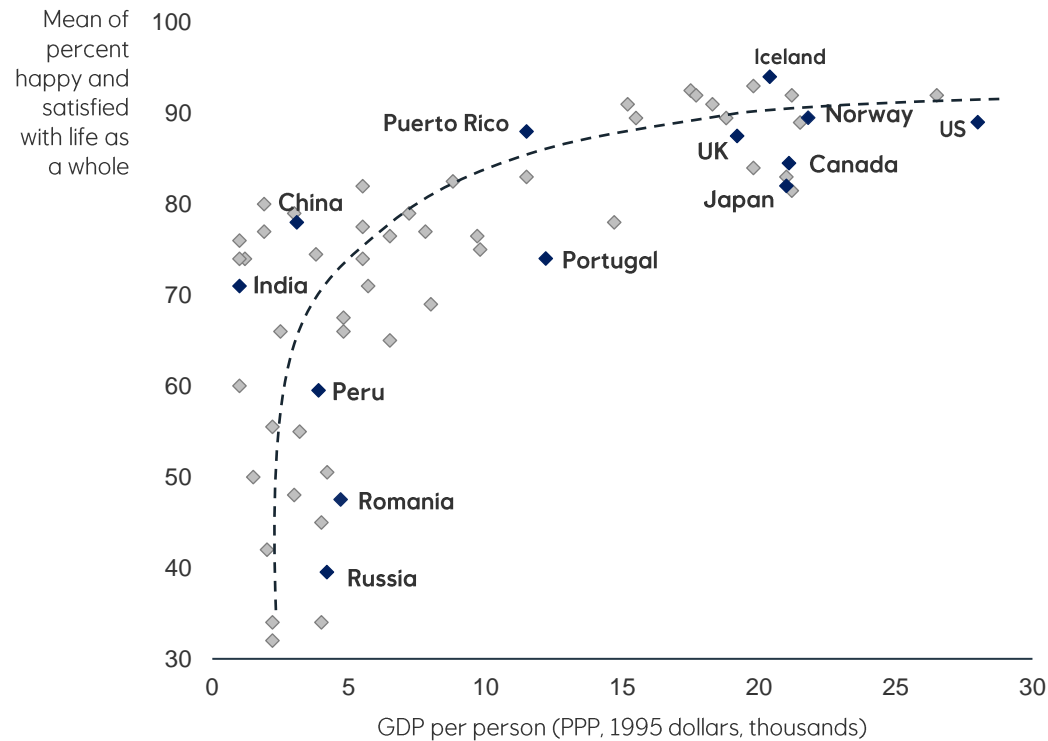


Source: Global Footprint Network

The limits to economic growth and well-being

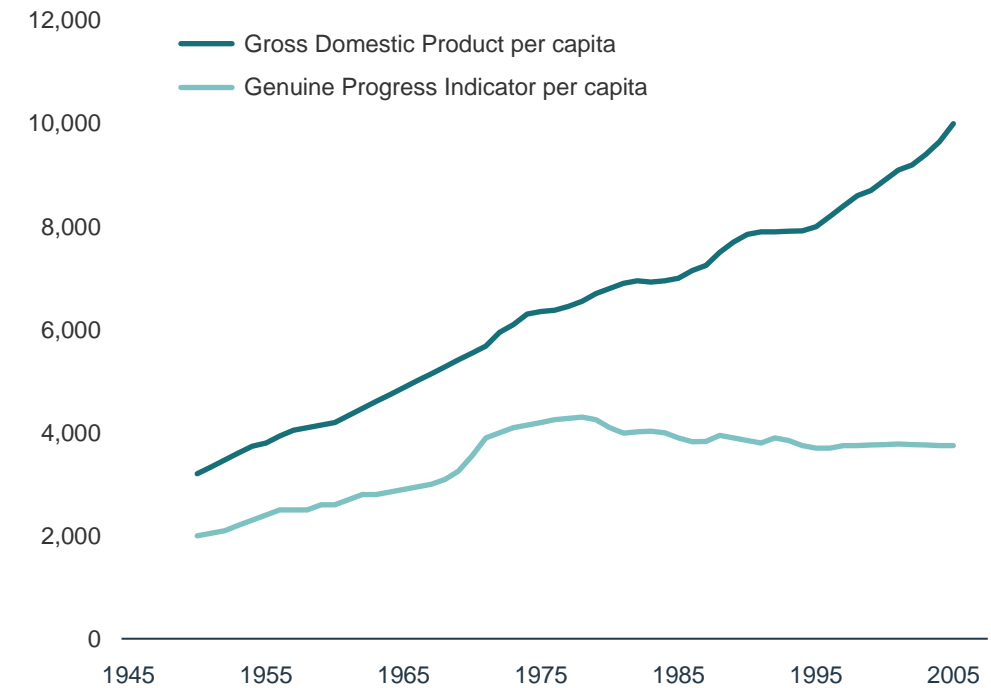
Economic growth brings enormous benefits, but beyond a certain point the improvements in well-being are marginal

Happiness and average annual income



GDP per capita and GPI per capita

2005 thousand USD, measured for 17 countries



Source: WorldwatchInstitute

Source: Beyond GDP, Measuring and achieving global genuine progress

In which direction is the energy world moving?

Recent signposts show diverging paths, in terms of:

- Economic growth
- Energy efficiency
- Technology development
- Climate ambitions
- Market regulations
- Geopolitics



- Vaccine nationalism
- Weakening of international institutions
- Uneven recovery between rich and poor economies

- Traditional economic stimulus taking priority in policy
- Solar capacity growth slowing
- Volatility in commodity prices

- Net zero ambitions by governments and companies
- Growing support for CCS and Hydrogen
- USA taking leadership on climate issues

Two scenarios
that capture where
the world could be
heading...



Reform

- Economic growth prioritised
- Market and technology driven
- Current policy momentum

Rivalry

- Focus on energy security
- Geopolitical uncertainty and volatility
- Trade tensions and isolationism



... and a path to a sustainable future

Rebalance

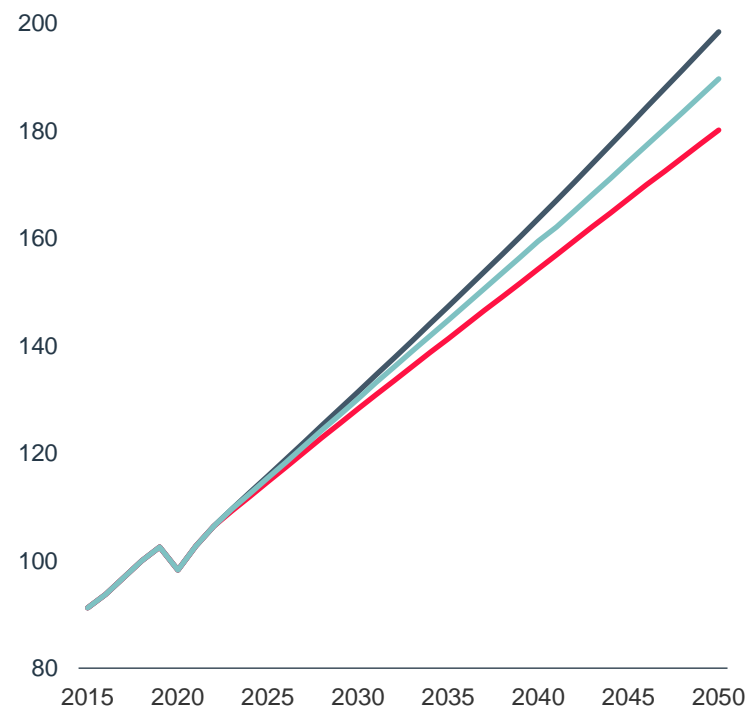
- Immediate and coordinated international action
- Consistent with well below 2°C Paris agreement target
- UN sustainable development goals met

Growing economies, massive improvement in energy efficiency

Only Rebalance delivers a sufficient energy transition and avoids energy addition

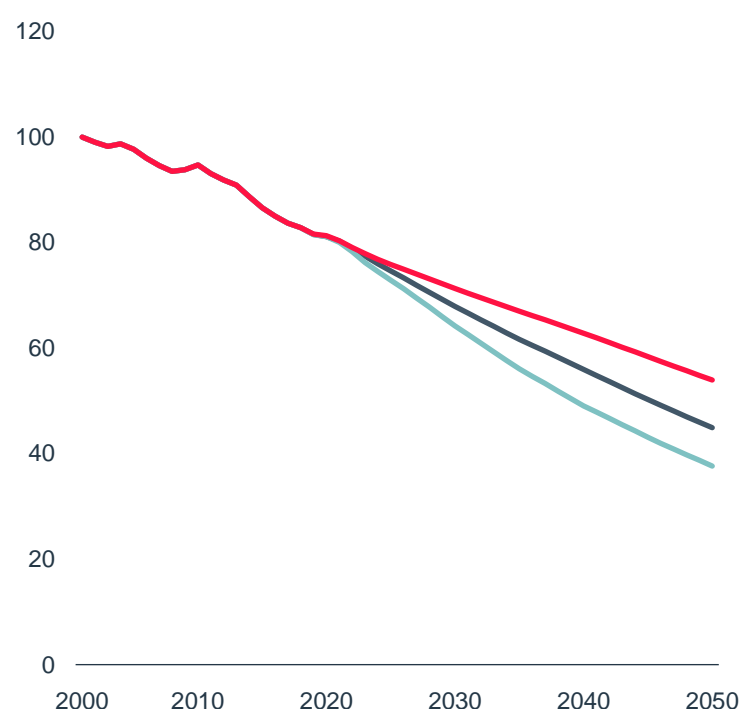
Global GDP

Indexed to 100 in 2018, constant USD



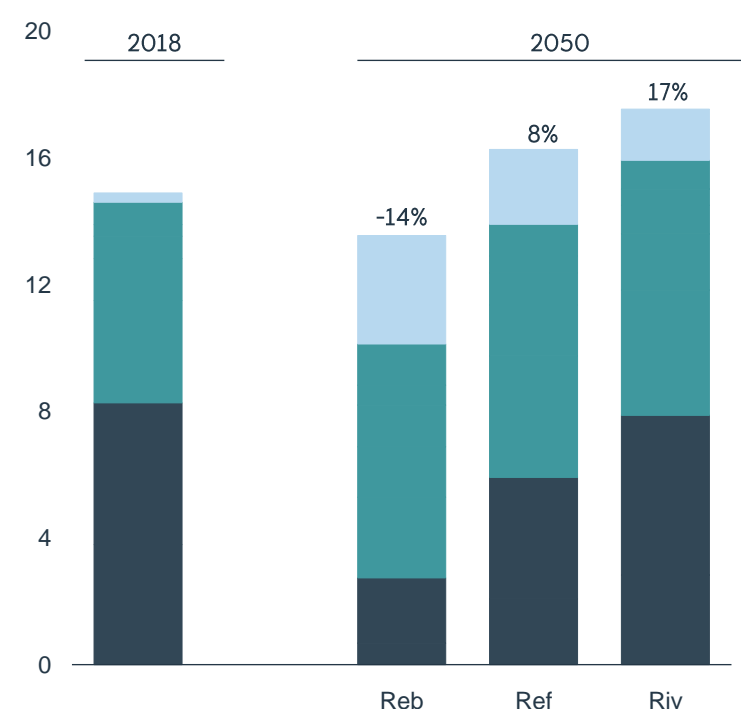
World energy intensity development

Index, 2000=100



Total primary energy demand

Billion toe



Source: Equinor

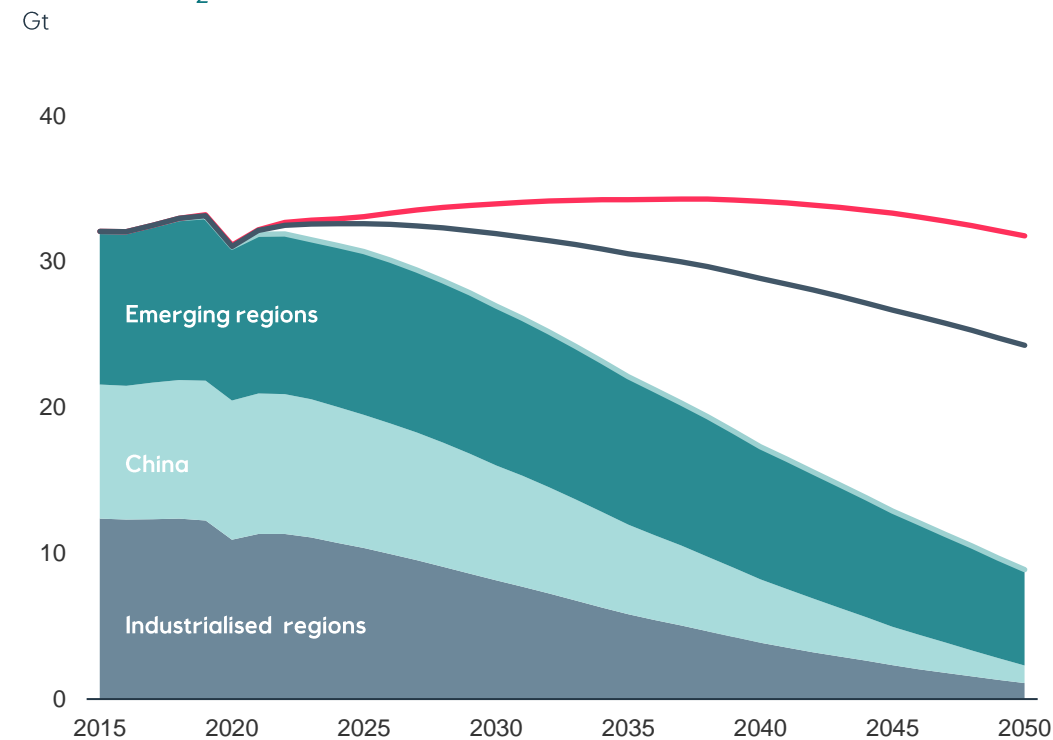
Several pathways for energy-related CO₂ emissions

Reaching net zero in 30-50 years is a massive challenge and requires policies, behavioural changes, technology and investments

Global CO₂ emissions



Global CO₂ emissions



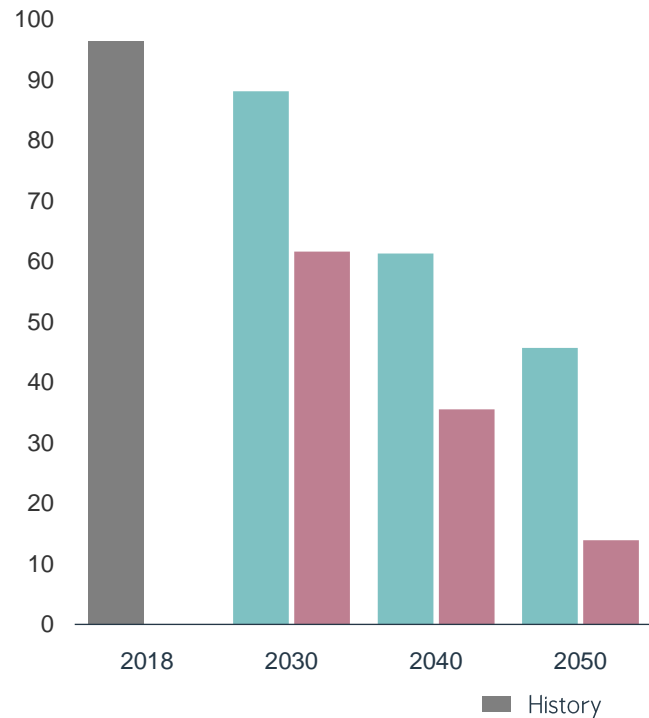
- Reform — Rebalance — Rivalry ···· Rebalance with CCS from NZE
- ◆ IEA STEPS scenario ● IEA SDS scenario ■ IEA NZE scenario

Source: Equinor

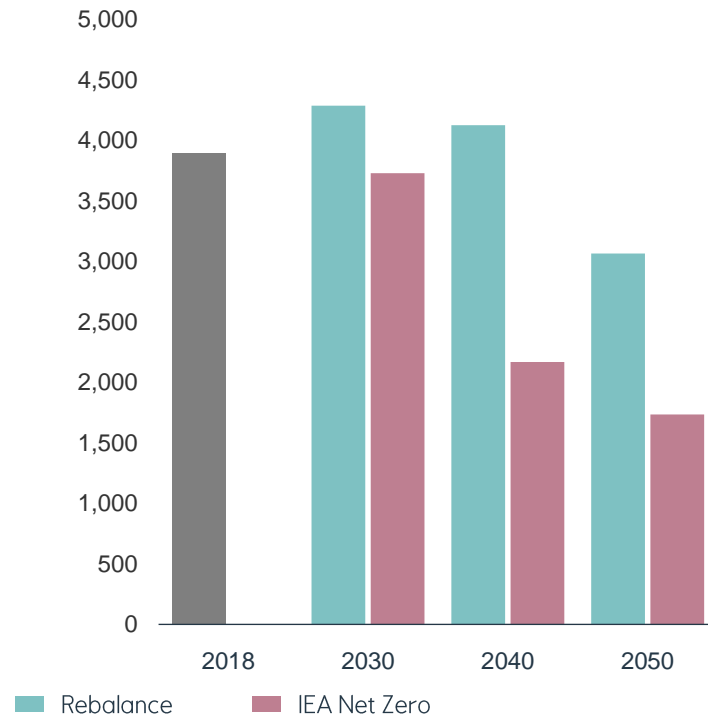
What does it take to get to net zero by 2050?

IEA NZE scenario compared with *Rebalance*

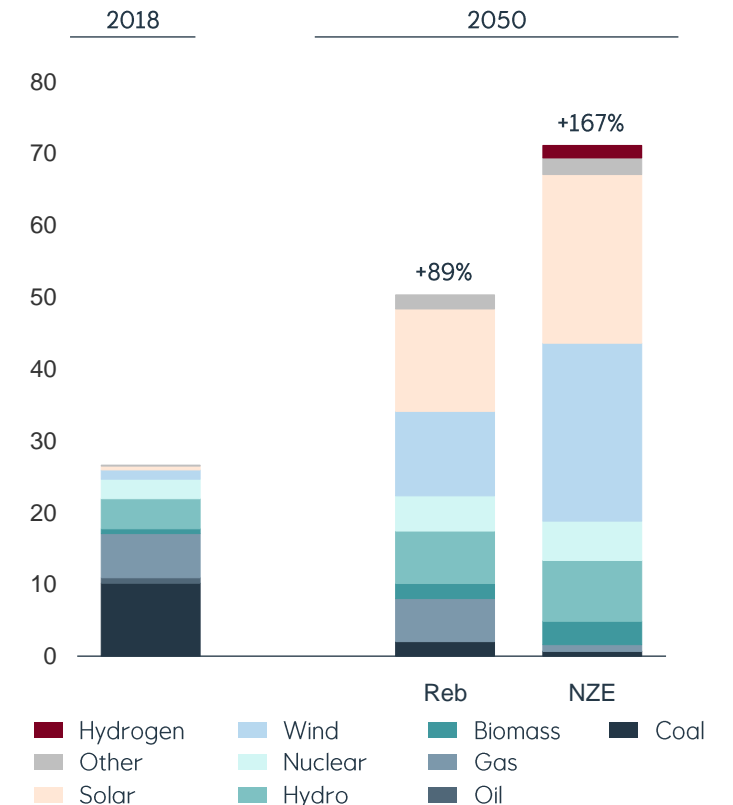
Oil demand
Mbd



Gas demand
Bcm



Electricity generation mix
Thousand TWh

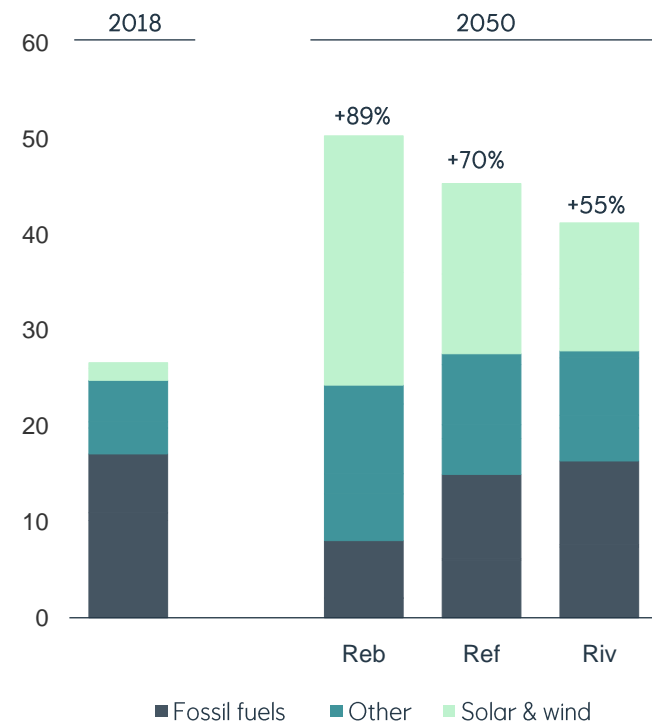


Where are energy markets moving?

Electrification is the key element of the energy transition, and a major factor in efficiency improvements

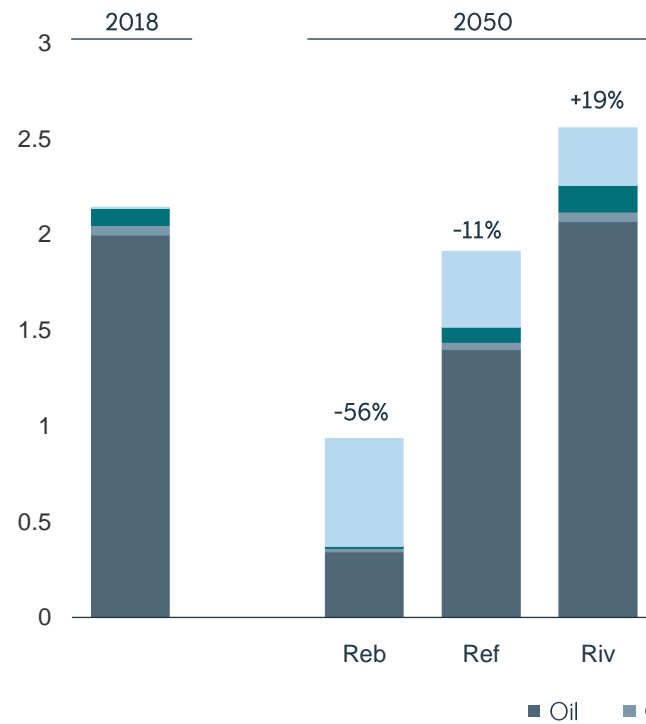
Electricity generation

Thousand TWh



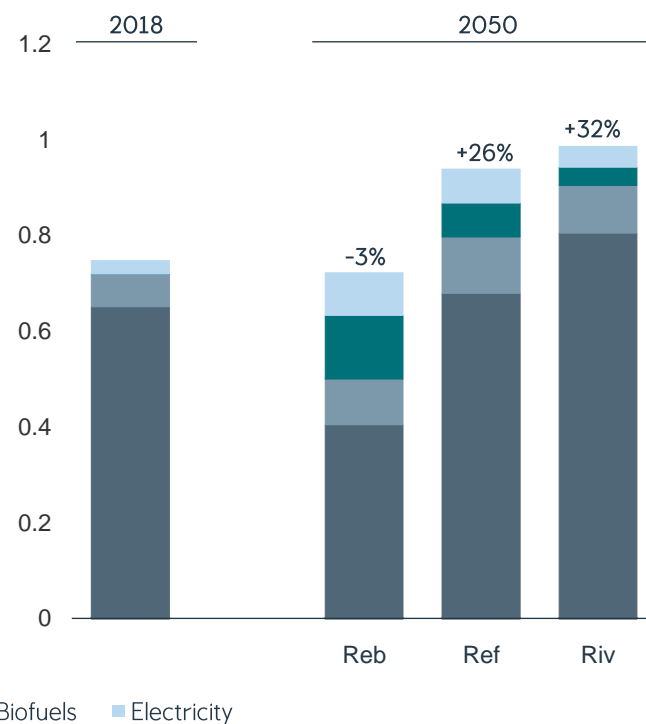
Road transport fuel demand

Billion toe



Non-road transport fuel demand

Billion toe



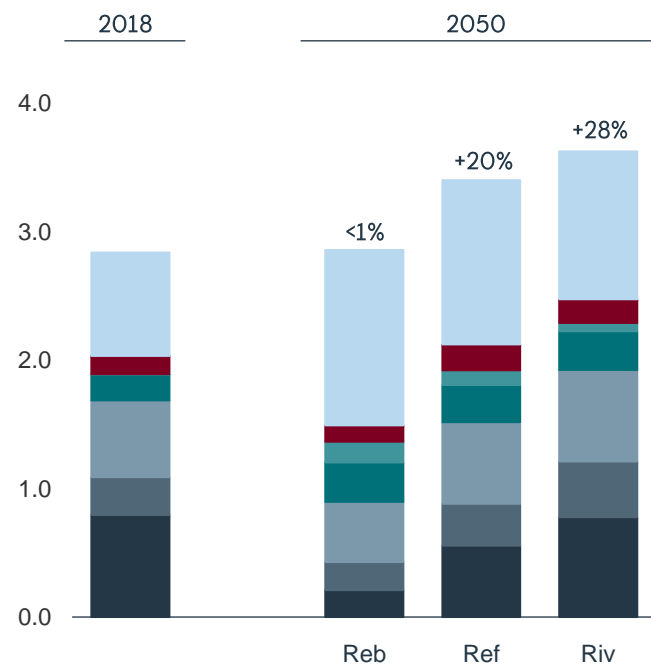
Source: IEA, Equinor

Transition moving too slowly in some sectors

No silver bullet; efficiency and electrification are the primary measures

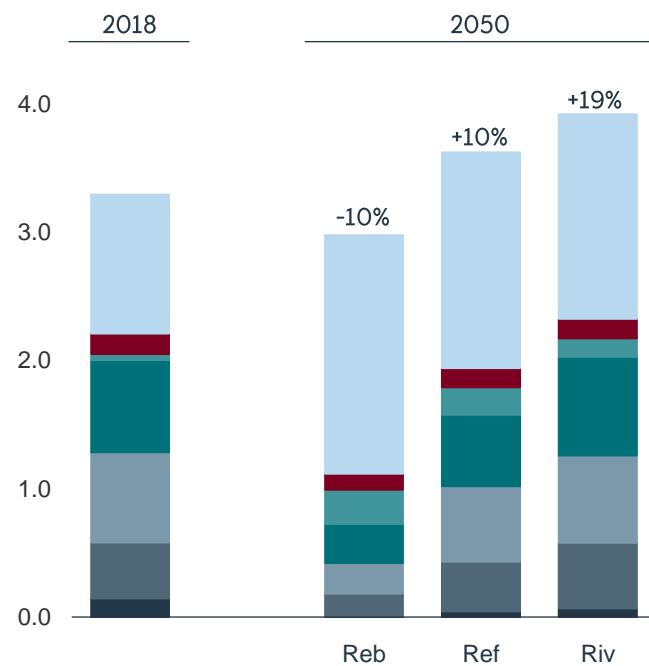
Industrial demand

Billion toe



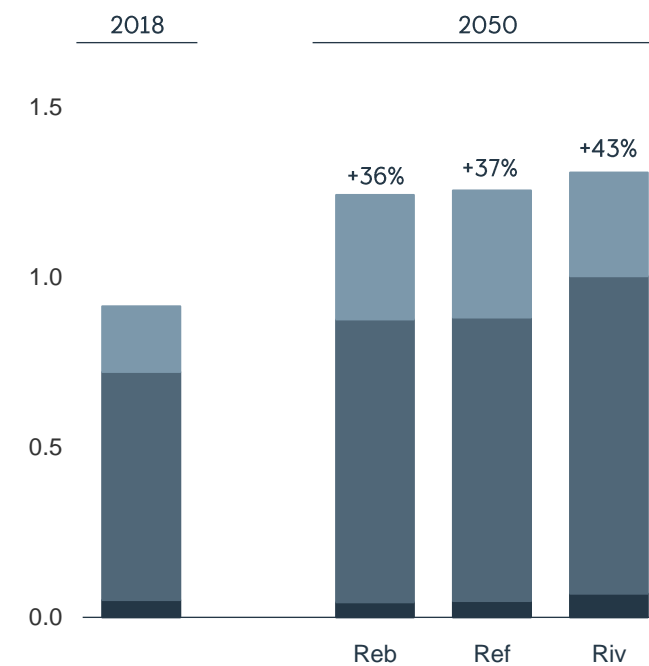
Buildings demand

Billion toe



Non-Energy demand

Billion toe



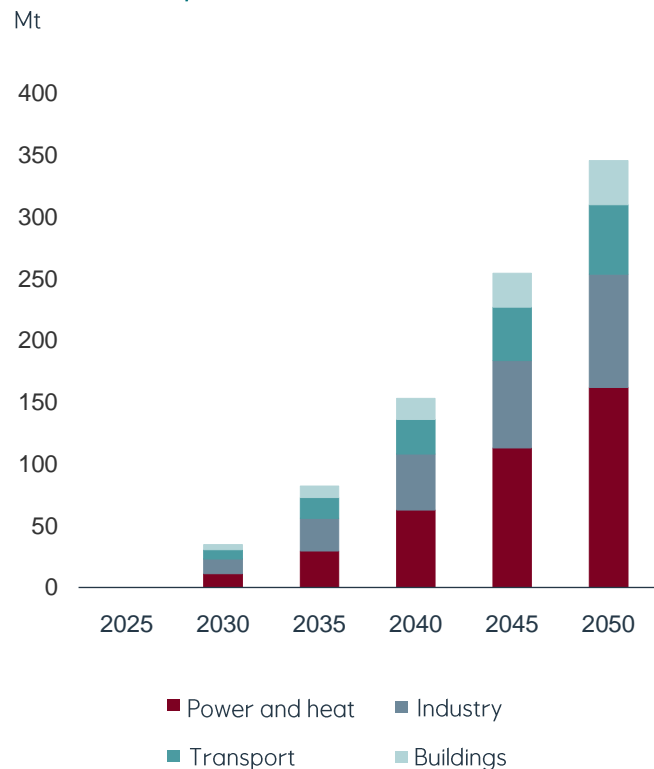
■ Coal ■ Oil ■ Gas ■ Biomass ■ New Renewables ■ Heat ■ Electricity

Source: IEA, Equinor

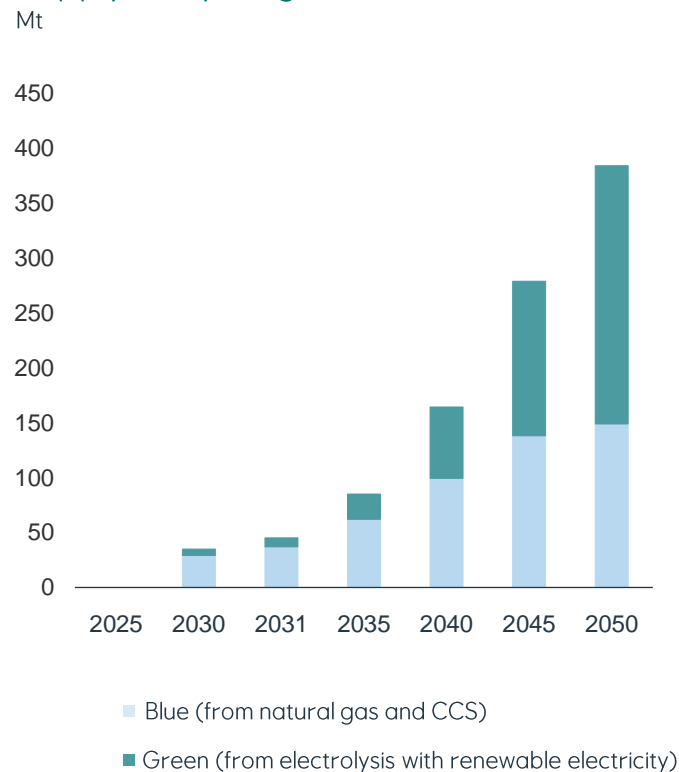
The impact of adding hydrogen to Rebalance

H₂ could be an important part of the transition to a net zero economy

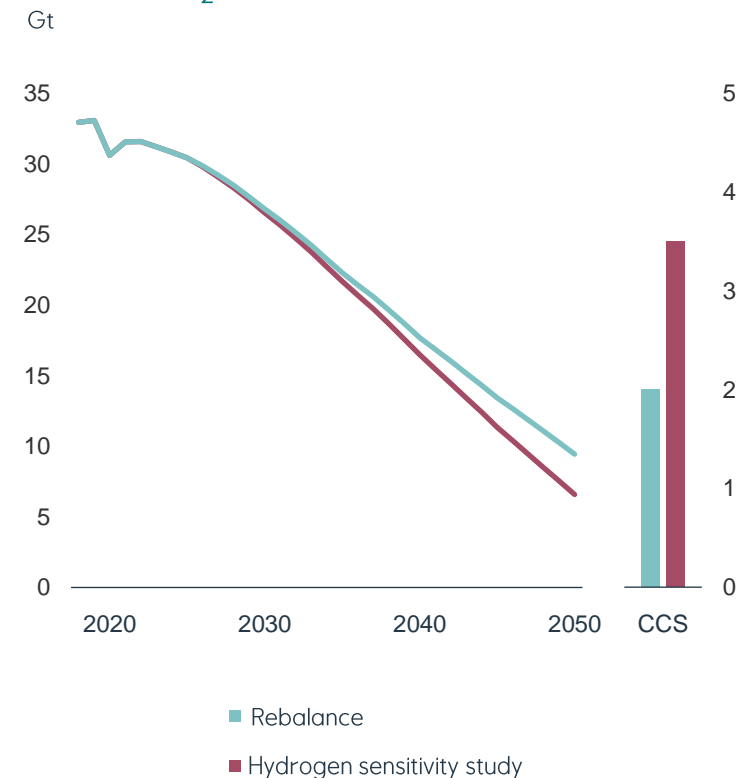
Demand by sector



Supply of Hydrogen



Global CO₂ emissions and CCS



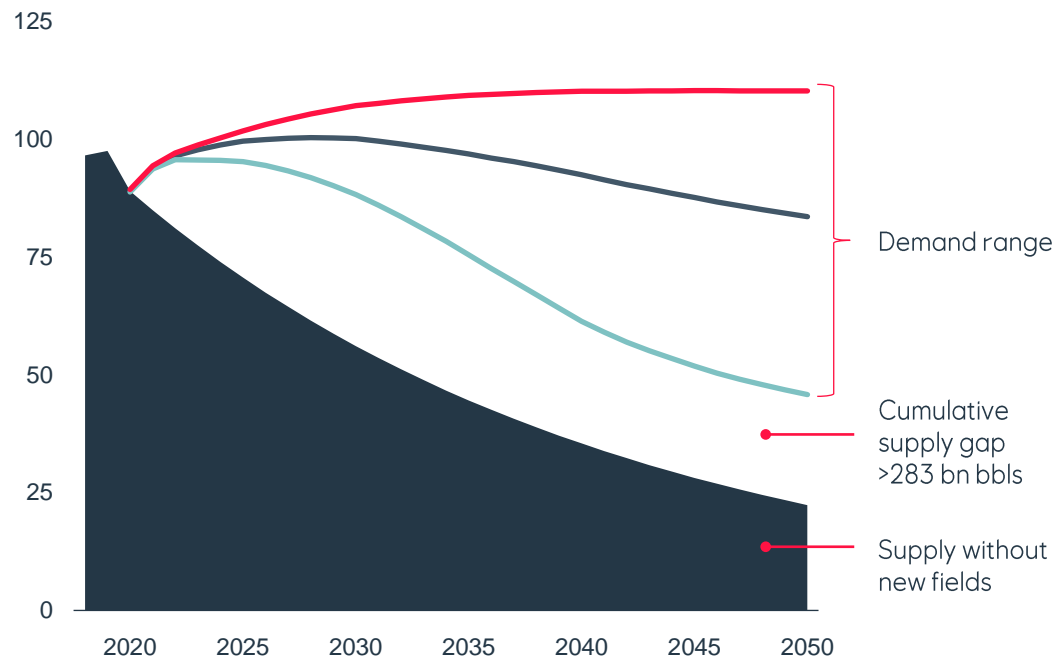
Source: Equinor

Wide outcome space for oil and gas demand

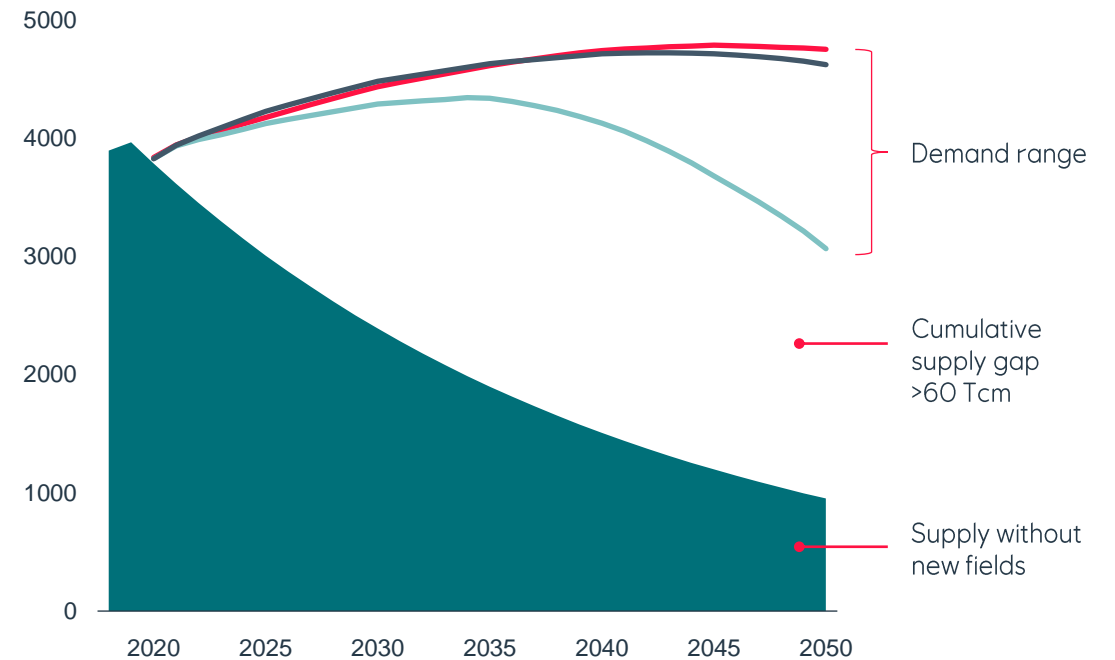
Large oil and gas investments in all scenarios, although significantly less in Rebalance



Oil demand and supply from existing fields
Mbd



Gas demand and supply from existing fields
Bcm



— Reform — Rebalance — Rivalry ■ Oil ■ Gas

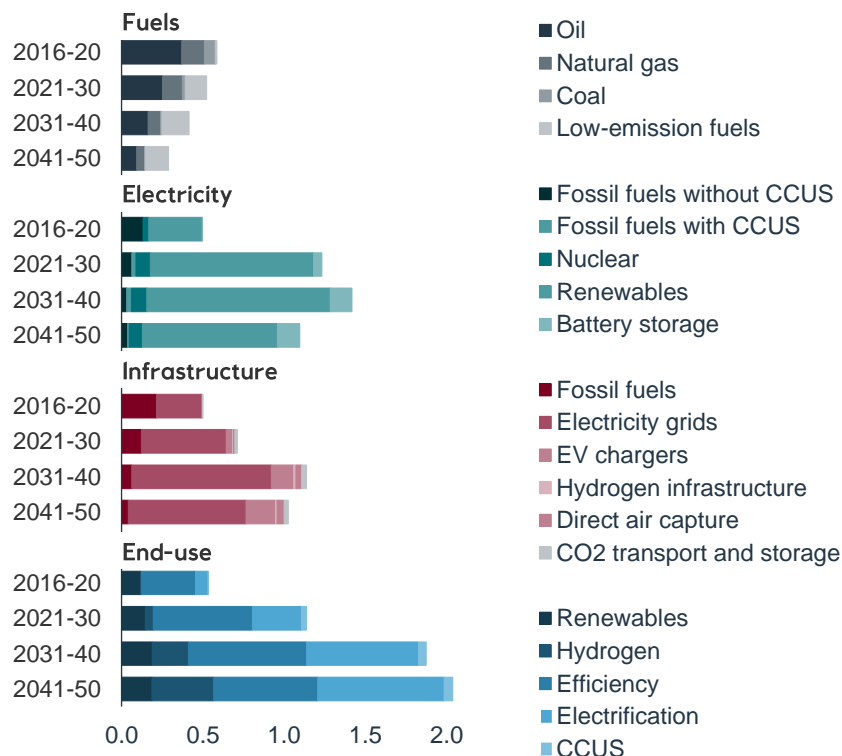
Source: IEA, Equinor

Investments in the IEA's Net Zero scenario

Gradually less investments in fossil fuels, massive growth elsewhere, with opportunities for incumbent players in oil and gas

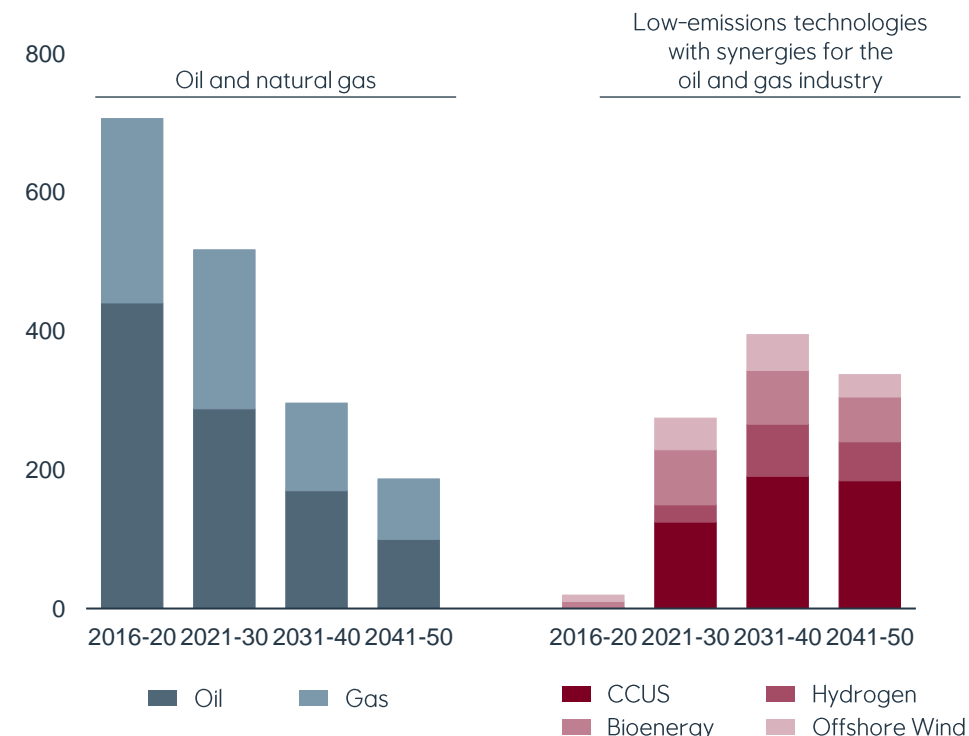
Global average annual investments

Trillion USD (2019)



Average annual investment needs

Billion USD (2019)



Source: International Energy Agency (2021), Net Zero by 2050, IEA

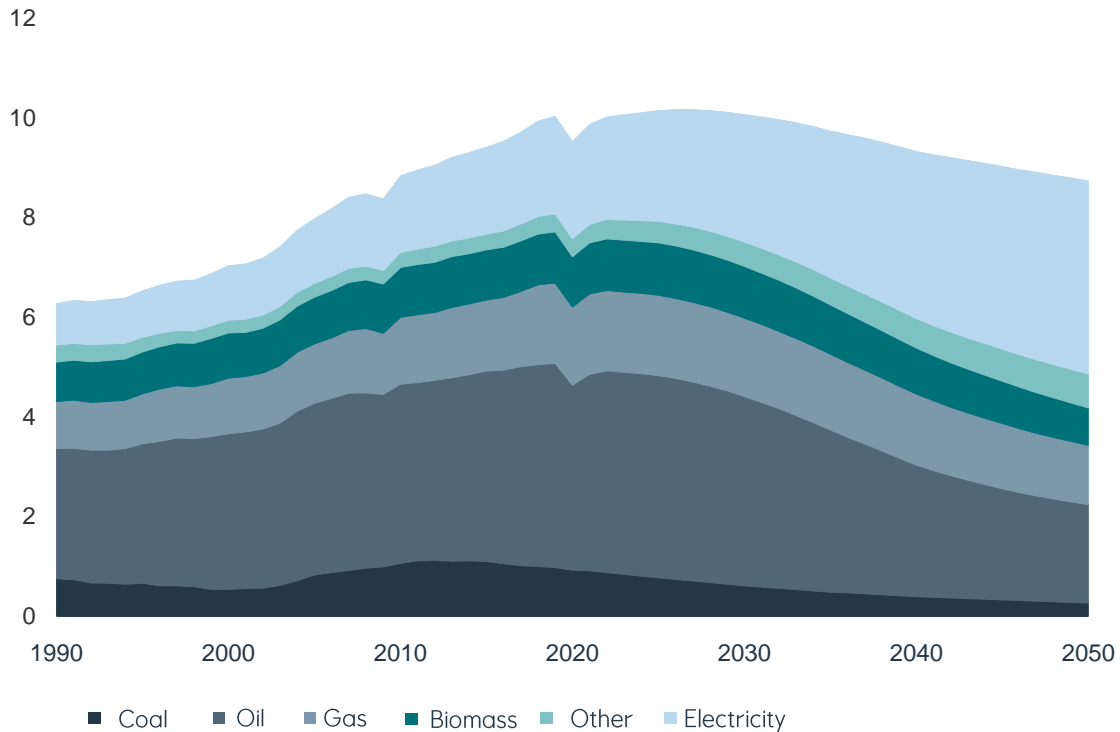
Source: International Energy Agency (2021), Net Zero by 2050, IEA

What does the energy transition hold?

Continued growth and little change in fuel mix over preceding 30 years, then rapid change in Rebalance

Total final consumption

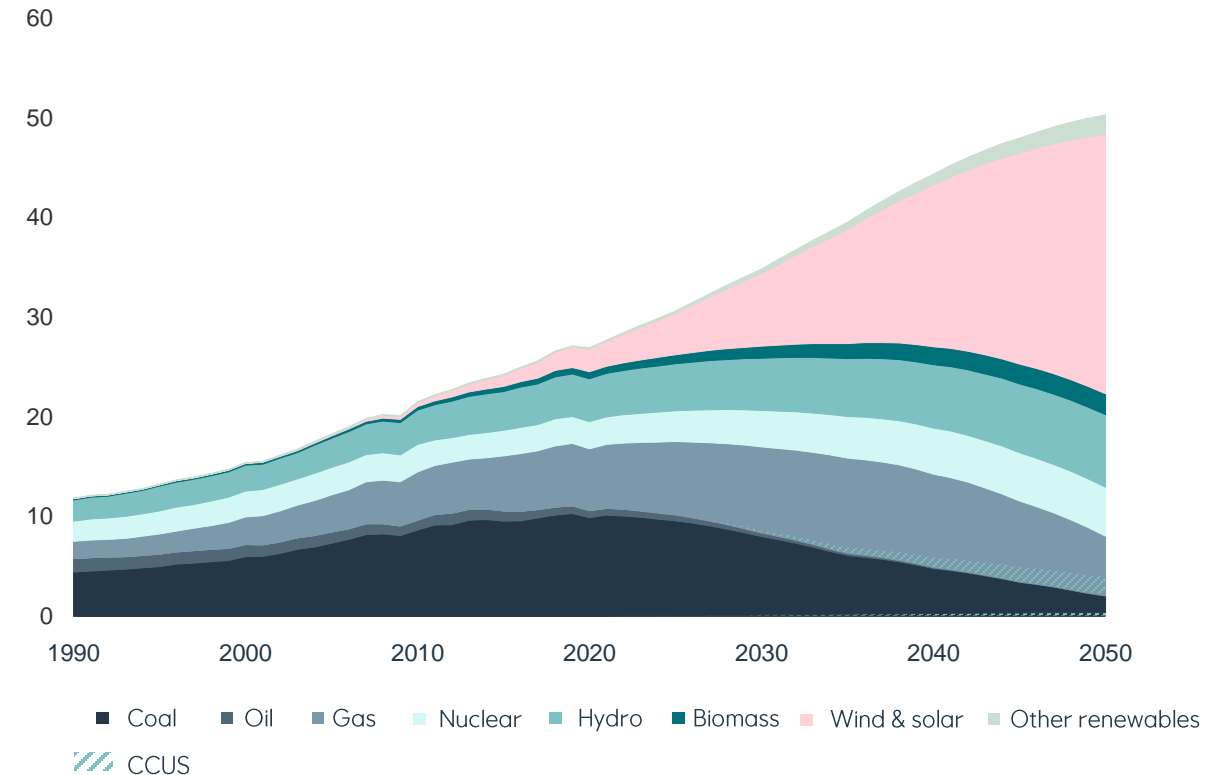
Thousand Mtoe



Source: IEA, Equinor

Power generation

Thousand TWh

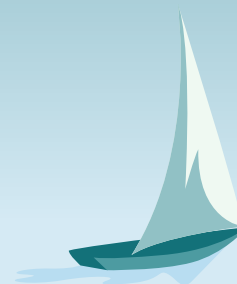




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