Energy Perspectives 2018

Long-term macro and market outlook

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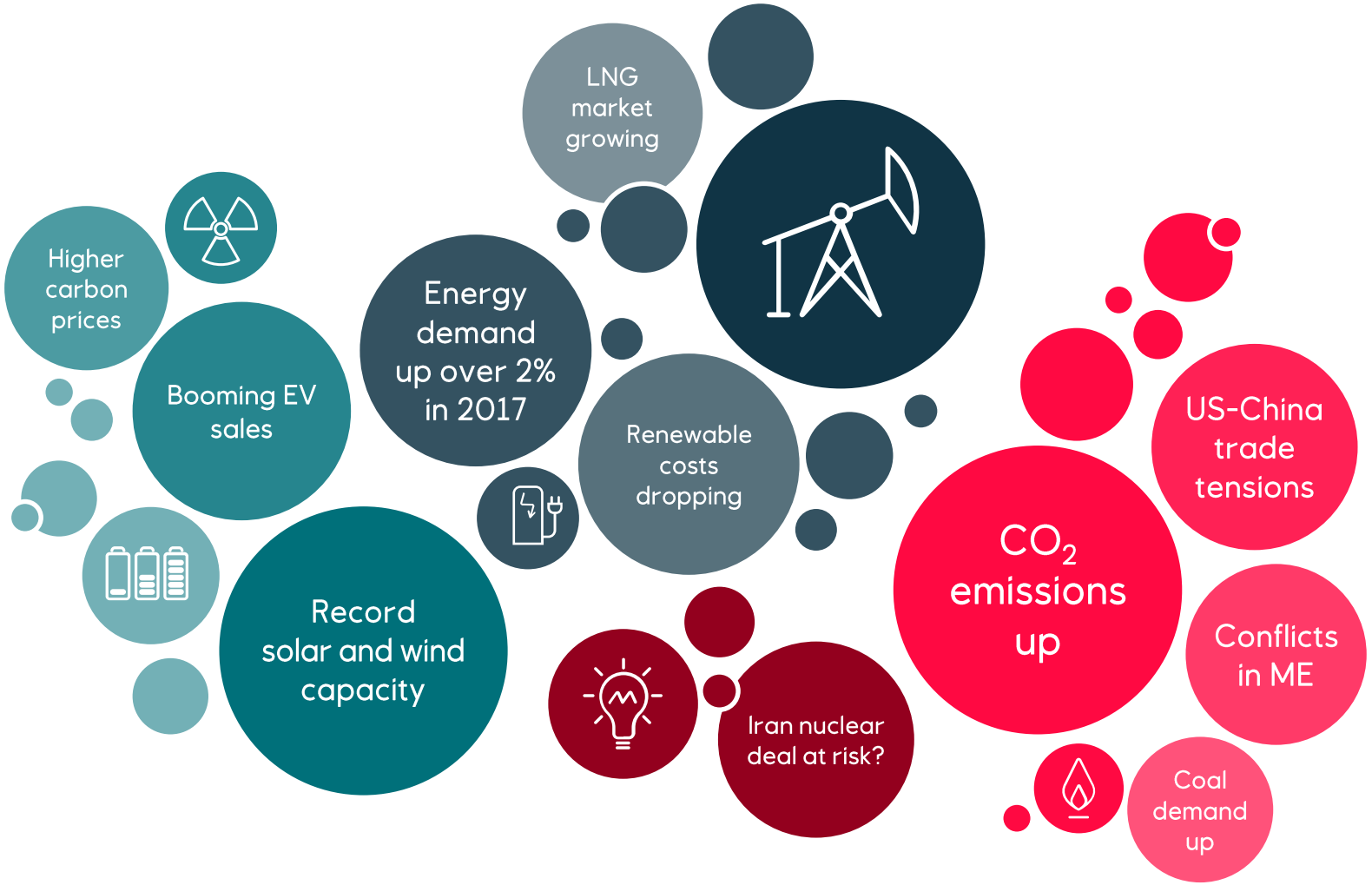
Agenda

- Our scenarios
- Common beliefs
- Results
- Final messages

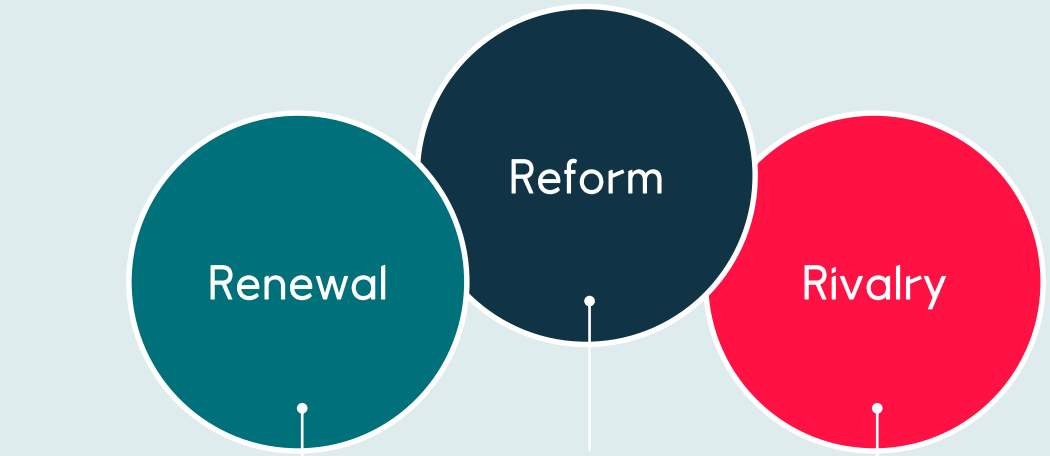
In which direction is the energy world moving?

Recent signposts show diverging paths, in terms of:

- Growth
- Efficiency
- Cooperation
- Technology
- Geopolitics



Scenarios capture different development paths



Renewal

- Policy driven
- Global cooperation
- Fast transition
- 2° target

Reform

- Current trends and policy direction
- Market and Technology driven
- NDCs

Rivalry

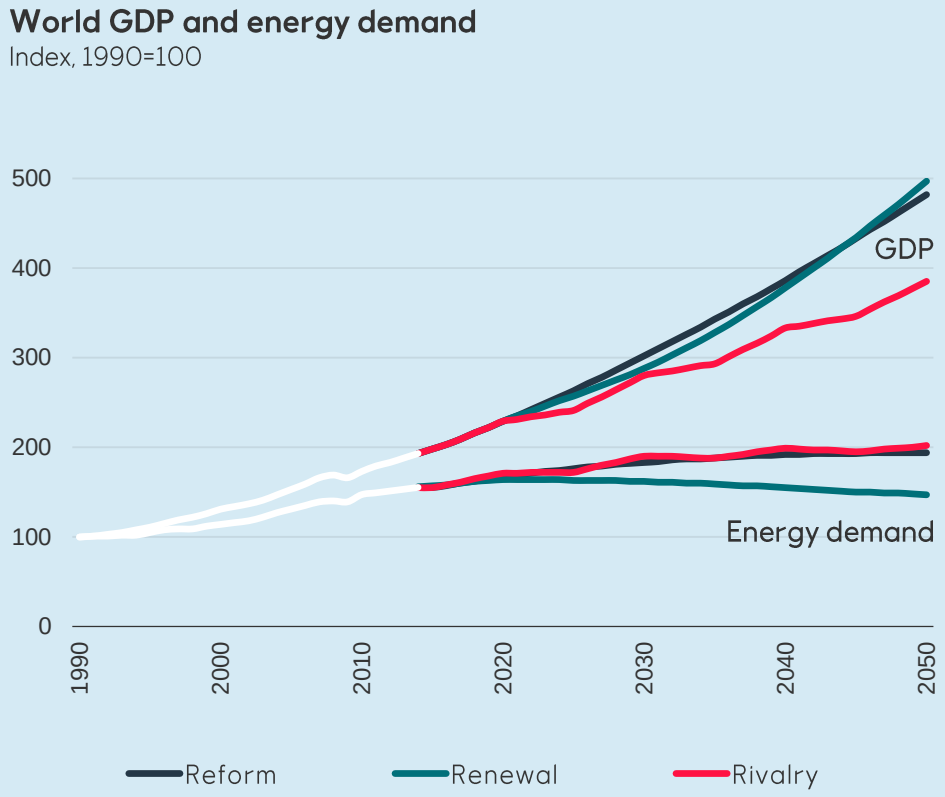
- Geopolitical volatility
- Boom and bust cycles
- Destructive market rule
- Lack of cooperation

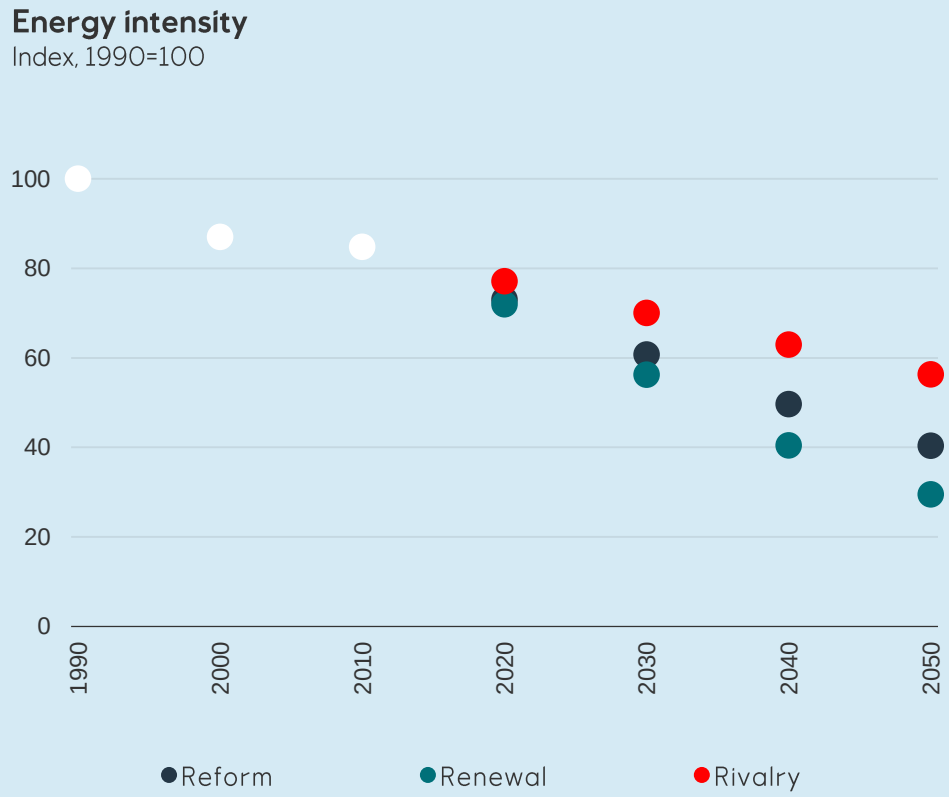
What are common beliefs about the future?

- Global demand for energy dependent goods, services, and activities is growing
- The world is undergoing an energy transition
- Large investments needed in the energy system

How will economic growth and energy demand develop?

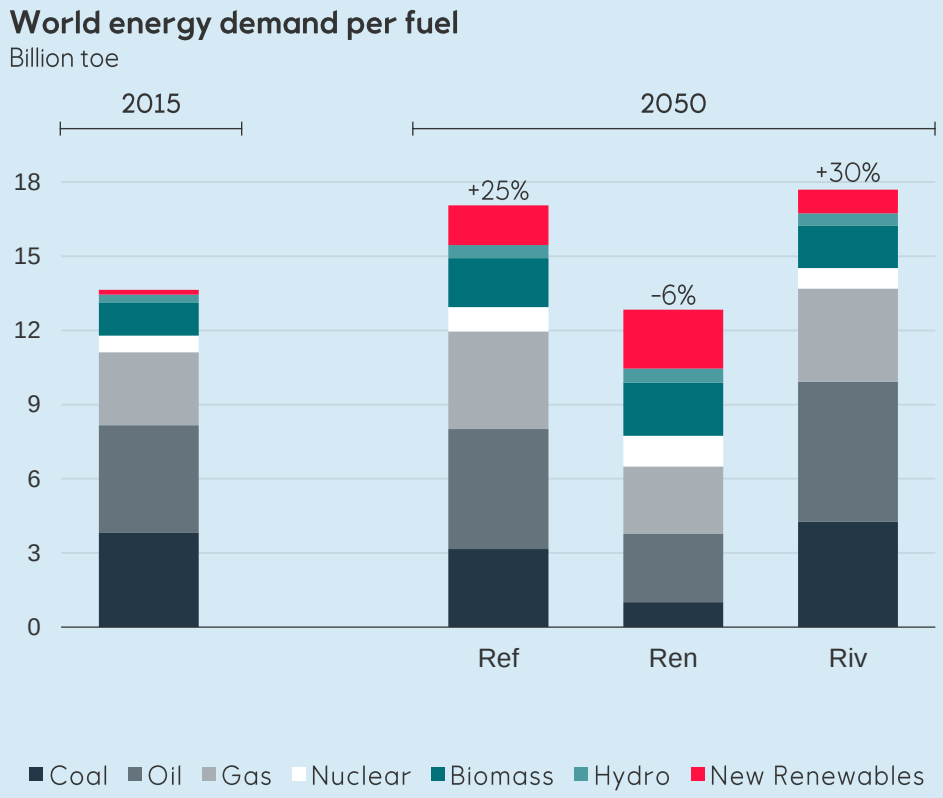
Energy efficiency drives a wedge between economic development and energy demand

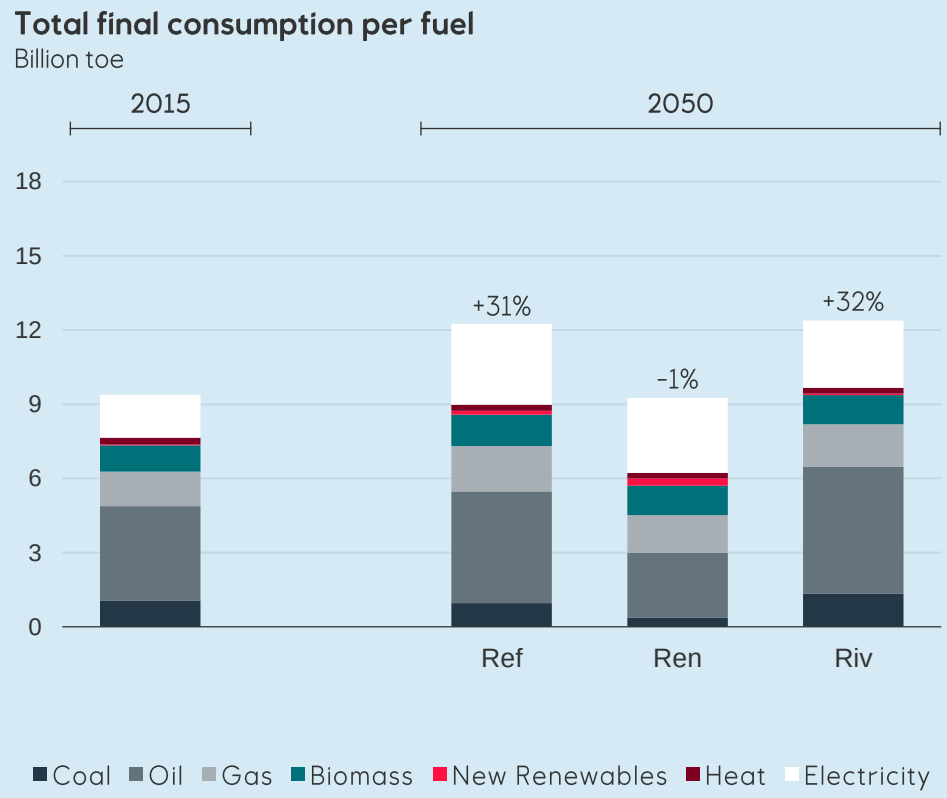




Source: IEA (history), Equinor (projections)

Significant fuel mix changes in all scenarios





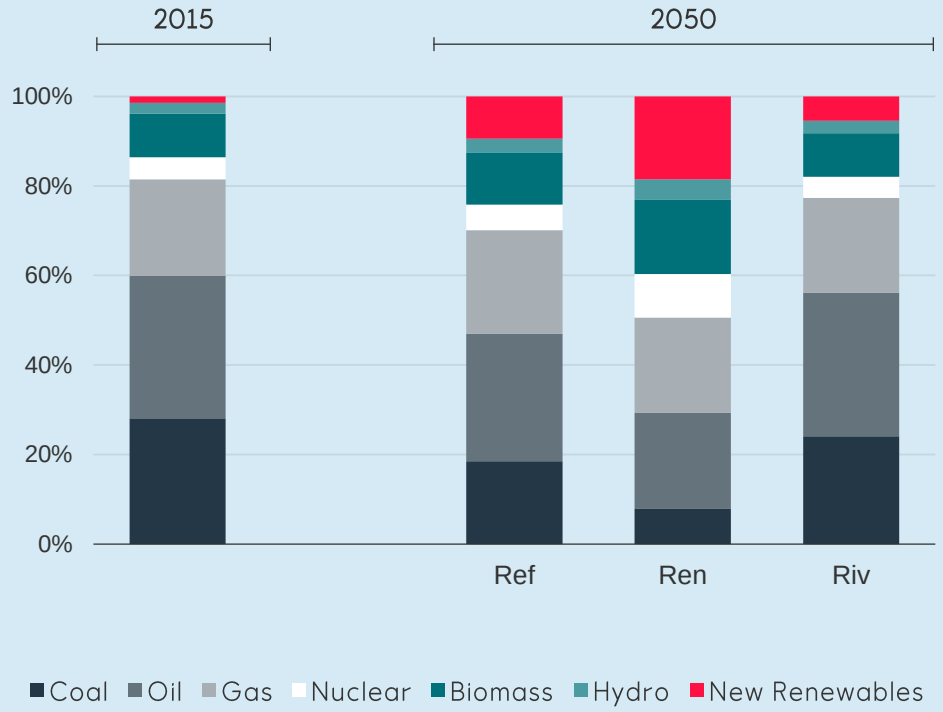
Source: IEA (history), Equinor (projections)

Growth in position of new renewables and electricity across all scenarios

Sufficient speed and scope only in Renewal – fossil fuels keep their share in Rivalry

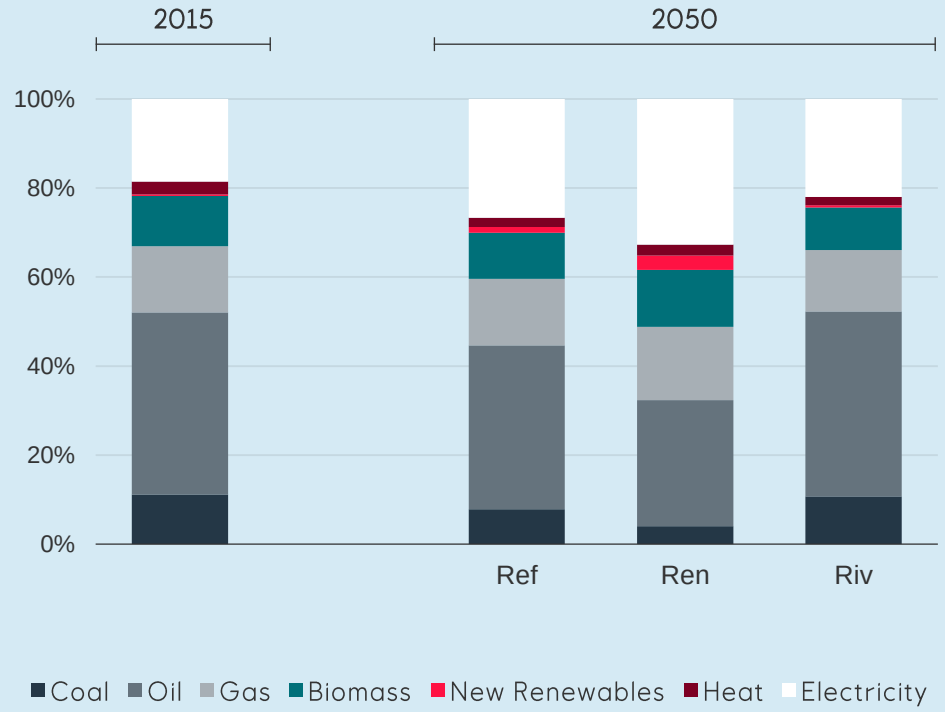
World energy demand per fuel

shares



Total final consumption per fuel

shares



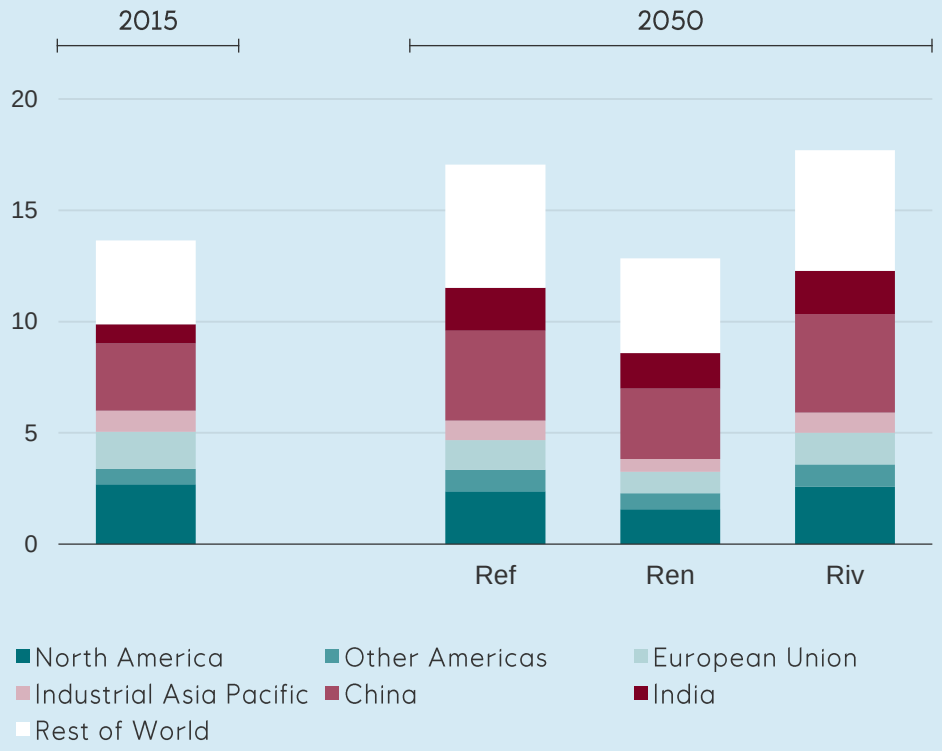
Source: IEA (history), Equinor (projections)

Energy demand and CO_2 emissions develop very differently across scenarios

Demand declining in developed economies – decline in emissions in Renewal driven by energy efficiency and changing fuel mix

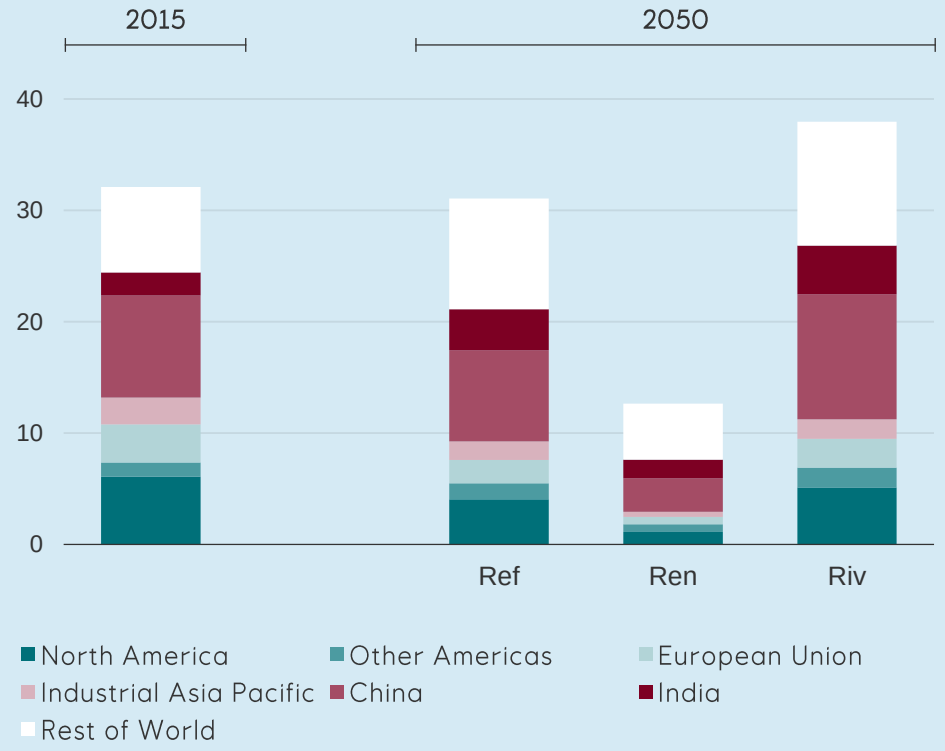
World energy demand per region

Billion toe



Energy-related CO_2 emissions per region

Billion tons



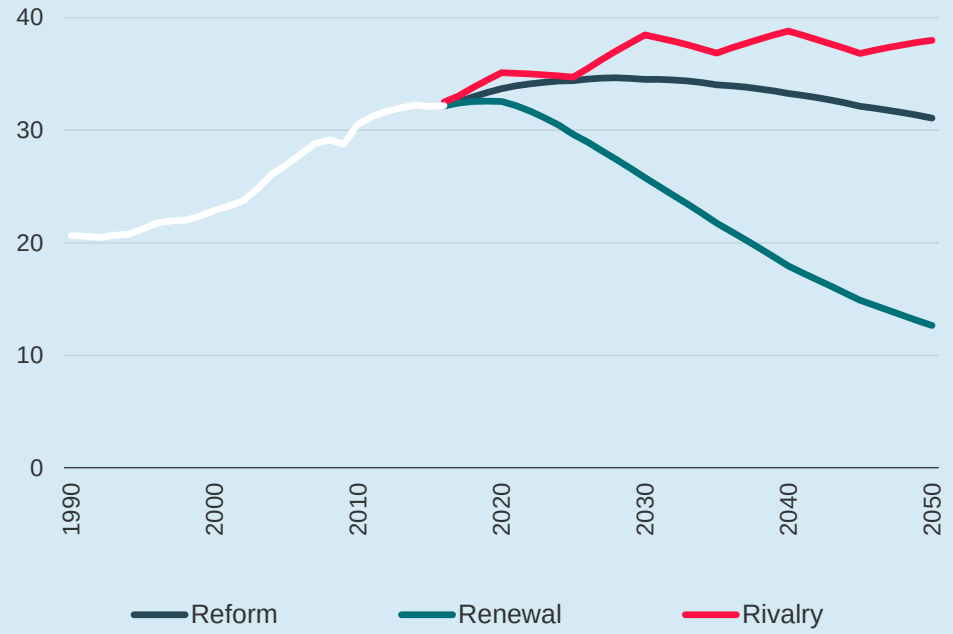
Source: IEA (history), Equinor (projections)

Will the energy transition affect CO_2 emissions?

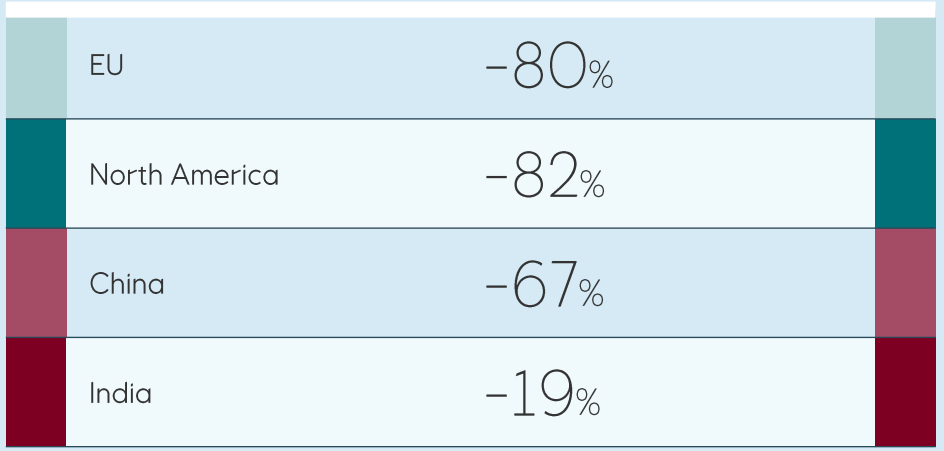
Yes, but only Renewal shows a sustainable development – and there is an urgent need for action

World energy-related CO_2 emissions

Billion tons



CO_2 emission reductions 2015-2050 in Renewal



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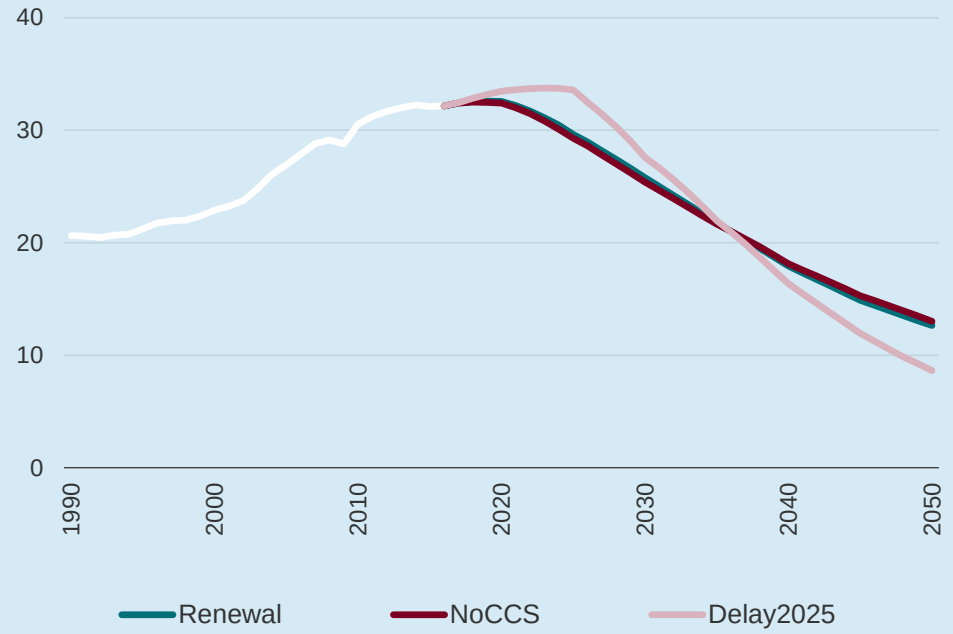
Billion tons



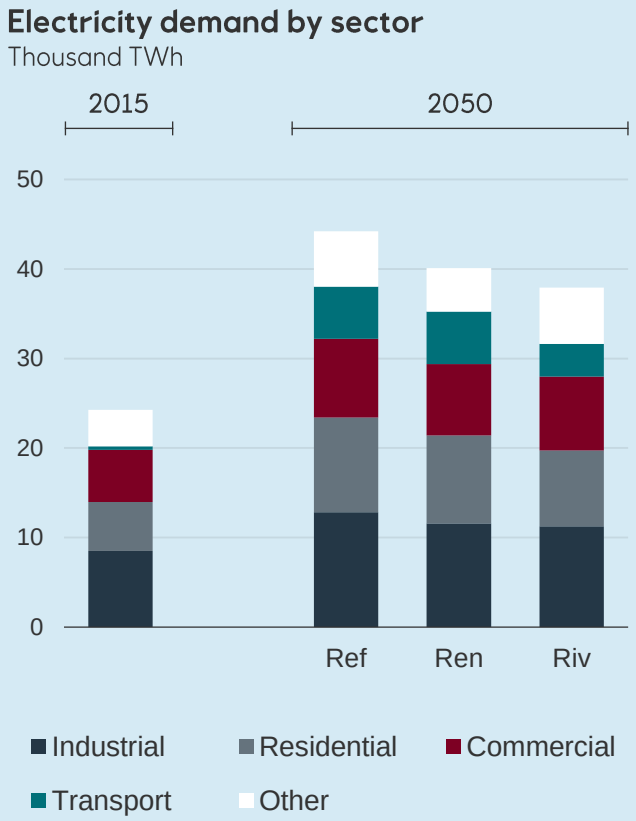
Year 2050

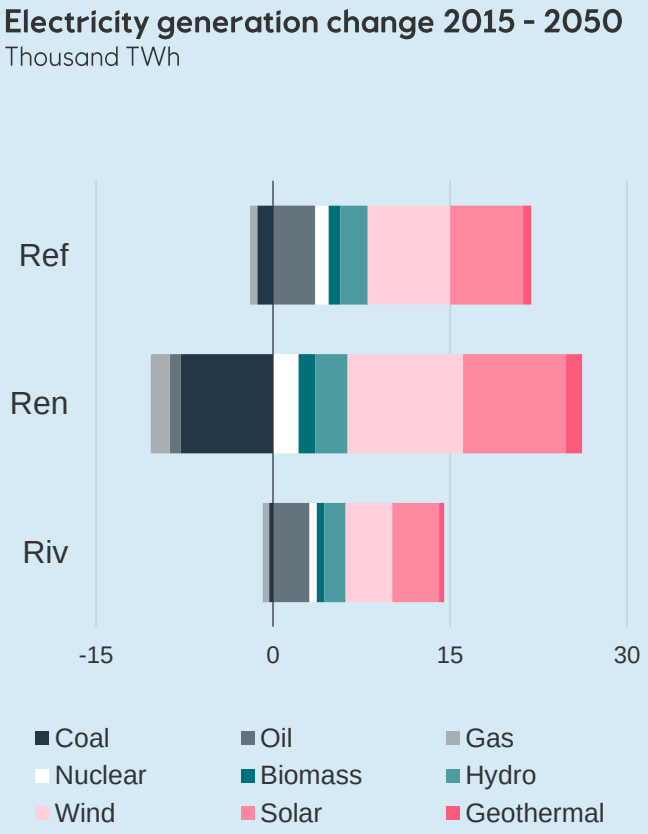
	Renewal	No CCS	Delay 2025
Net CO_2 emissions - Gt	13	13	9
Annual growth TPED 2025-50	-0.5%	-0.5%	-1.3%
Oil demand - mbd	59	59	51
Gas demand - bcm	3300	3100	3000
Coal demand - mtoe	1000	850	200
Solar/wind generation - TWh	19 600	21 300	21 300
Solar/wind share	49%	54%	57%

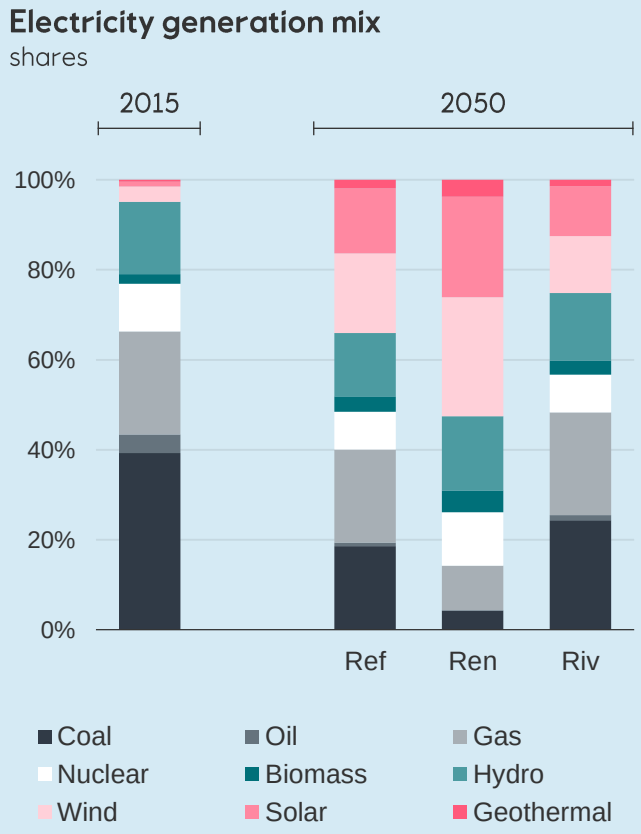
Source: IEA (history), Equinor (projections)

Strong electricity demand growth in all scenarios

Generation mix develops very differently; solar and wind growing strongly



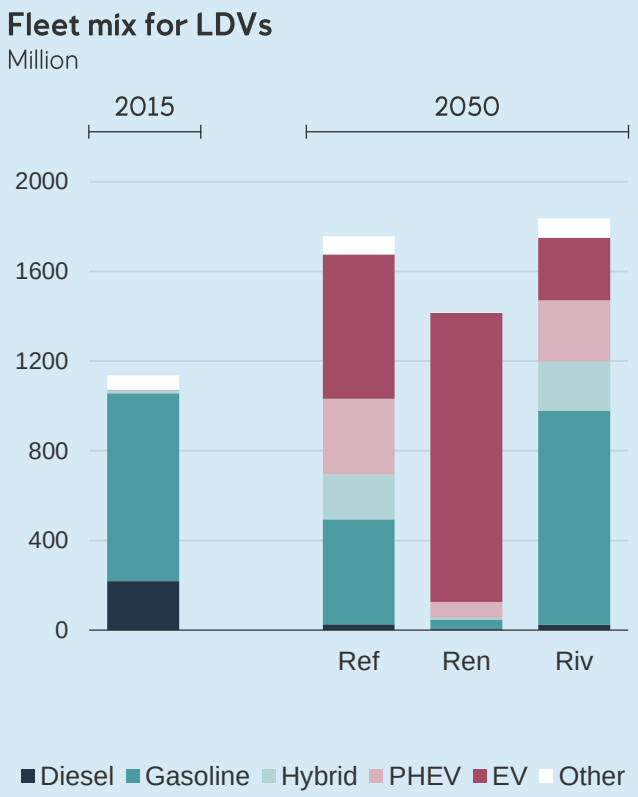


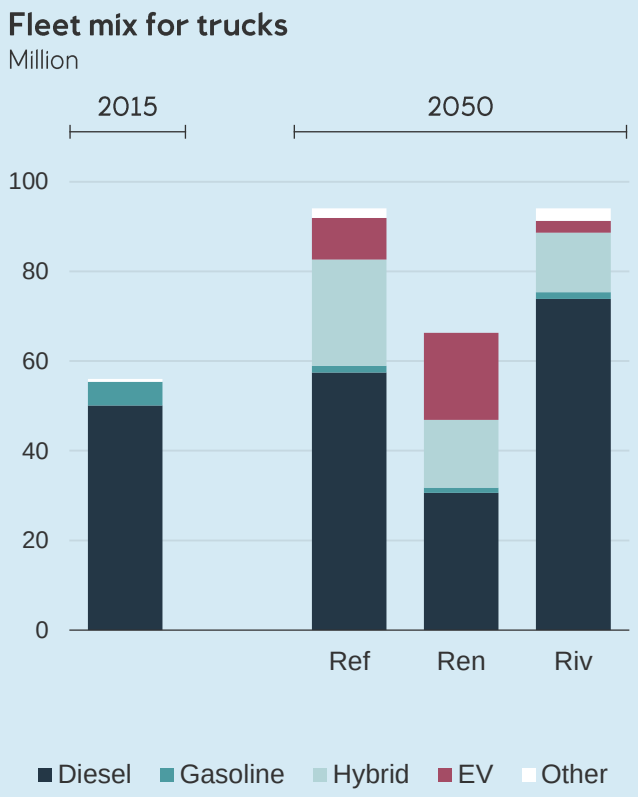


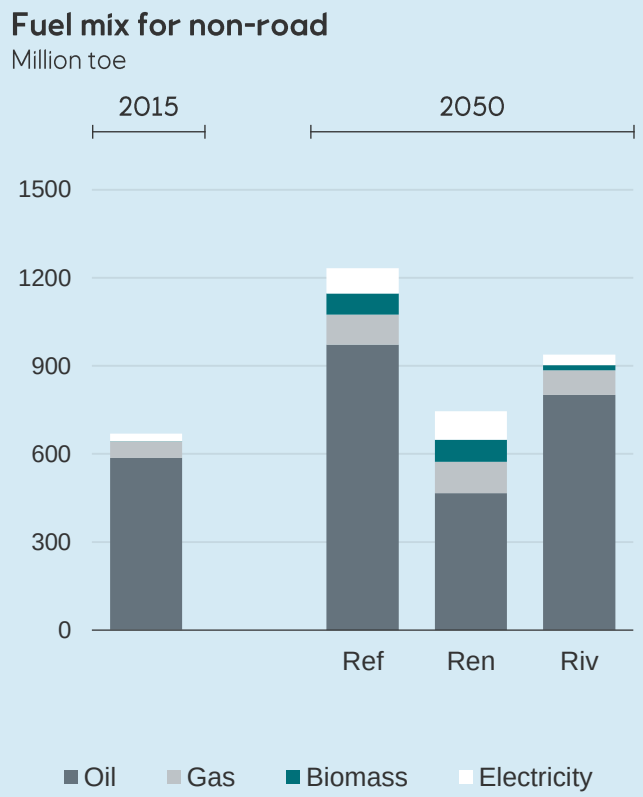
Source: IEA (history), Equinor (projections)

Massive changes in road transport – efficiency and fuel mix

But less certain what is the alternative to oil in shipping and aviation



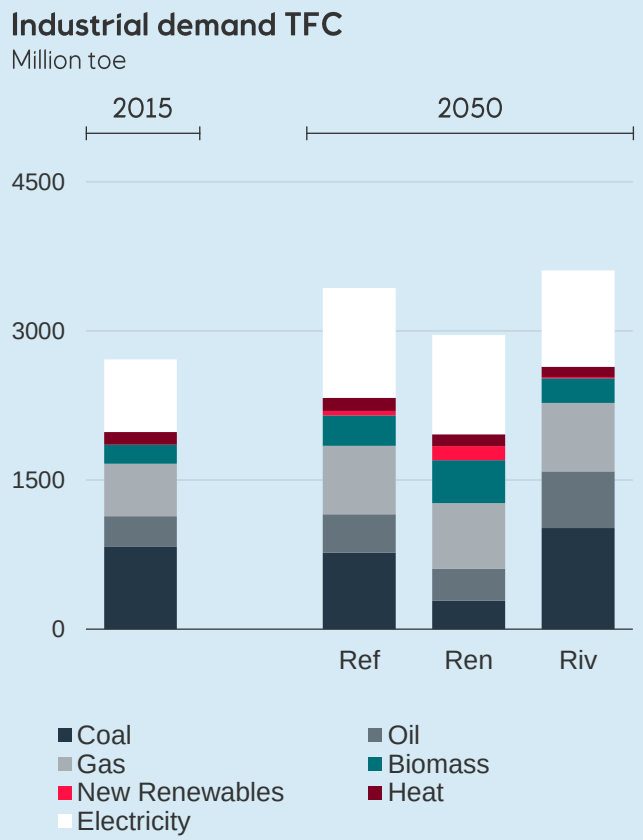


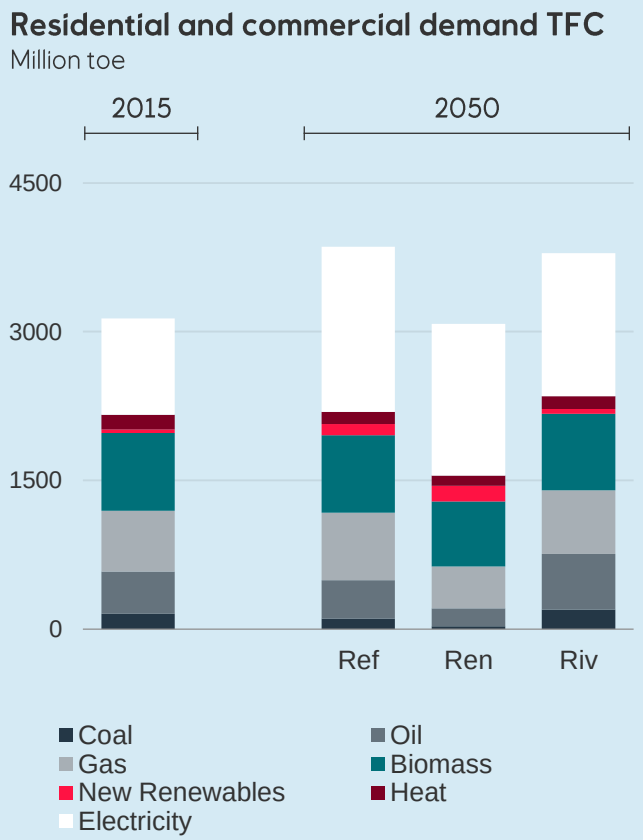


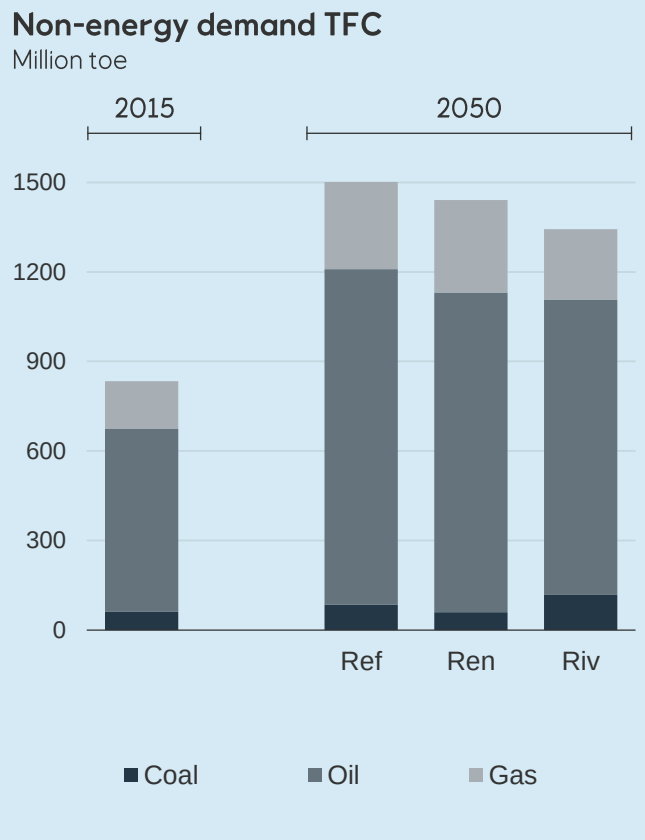
Source: IEA (history), Equinor (projections)

Transition moving slower in other sectors

No silver bullet, efficiency and electrification the primary measures





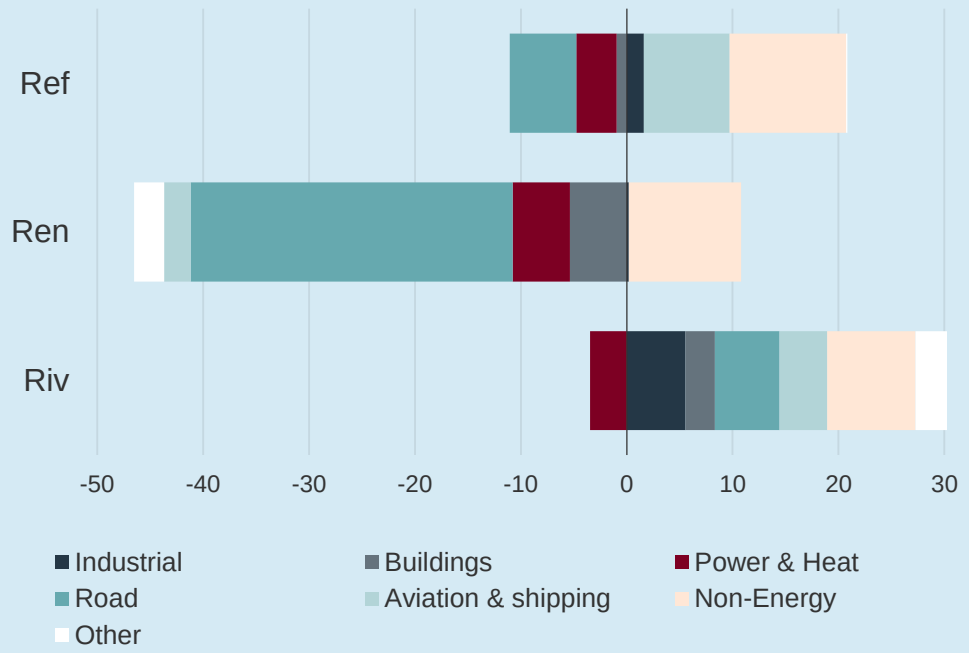


Source: IEA (history), Equinor (projections)

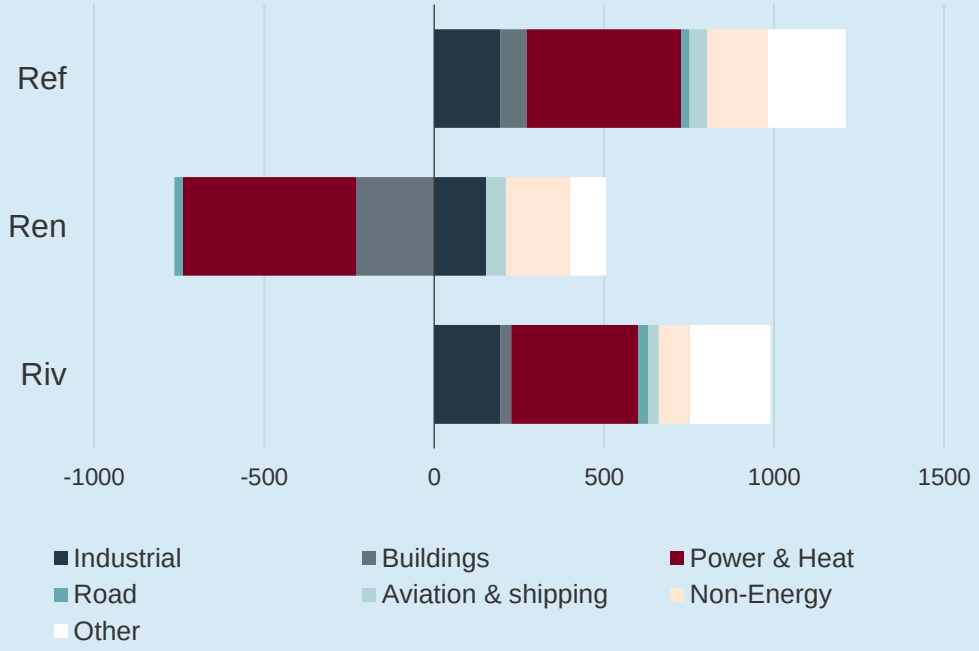
Growth or decline in oil and gas demand growth determined by scenario

Transport key sector for oil, and power for gas; non-energy demand important for both – growth irrespective of scenario

Change in oil demand by sector 2015-2050
mbd



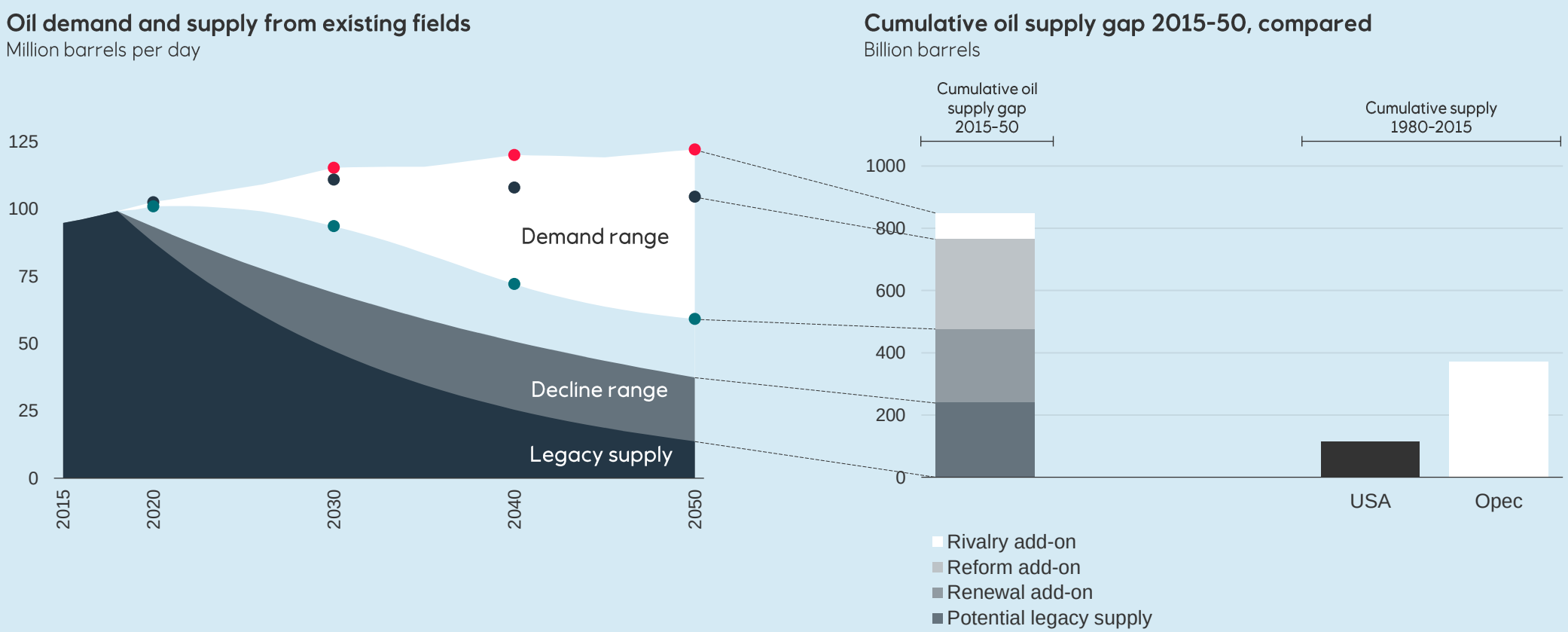
Change in gas demand by sector 2015-2050
bcm



Source: IEA (history), Equinor (projections)

What is the need for new oil investments?

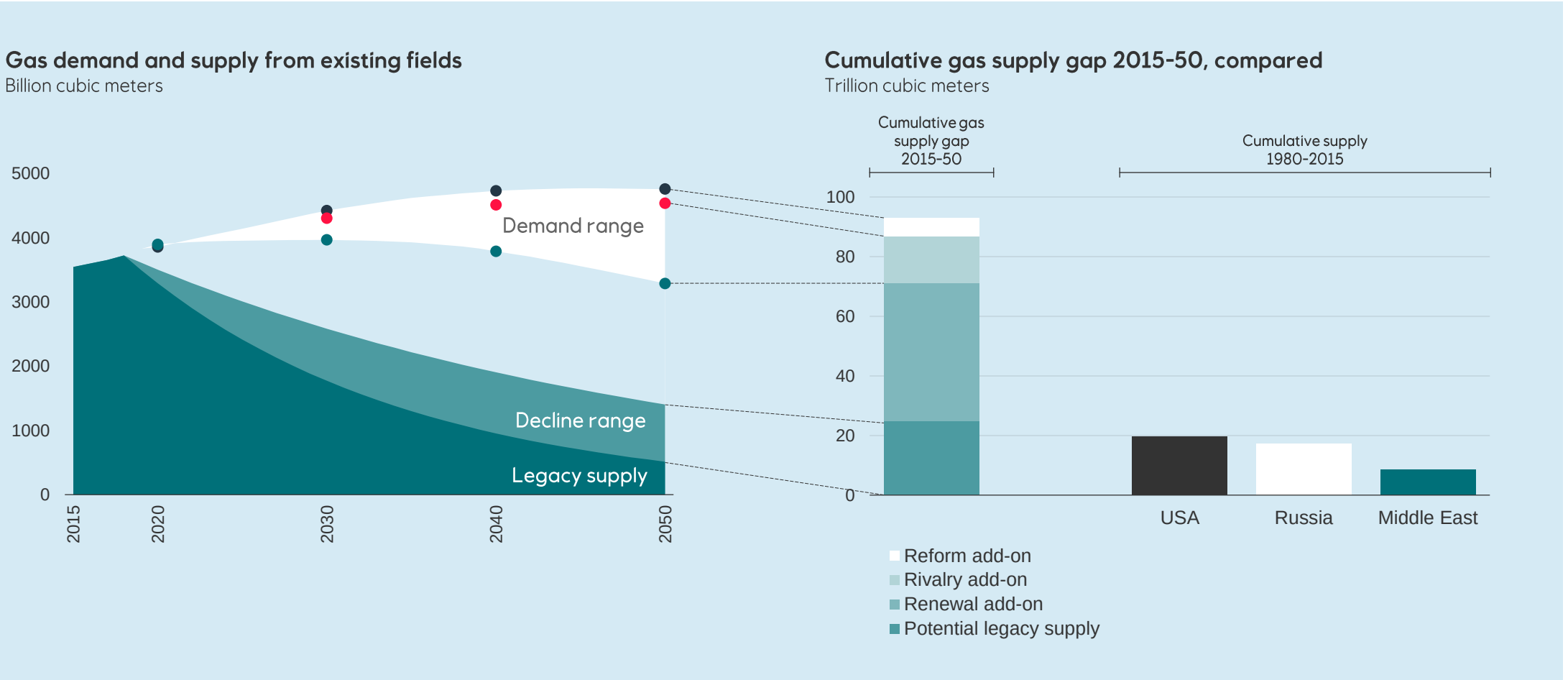
Large investments in all scenarios, although significantly less in Renewal



Source: IEA and BP (history), Equinor (projections)

And what about new gas supply?

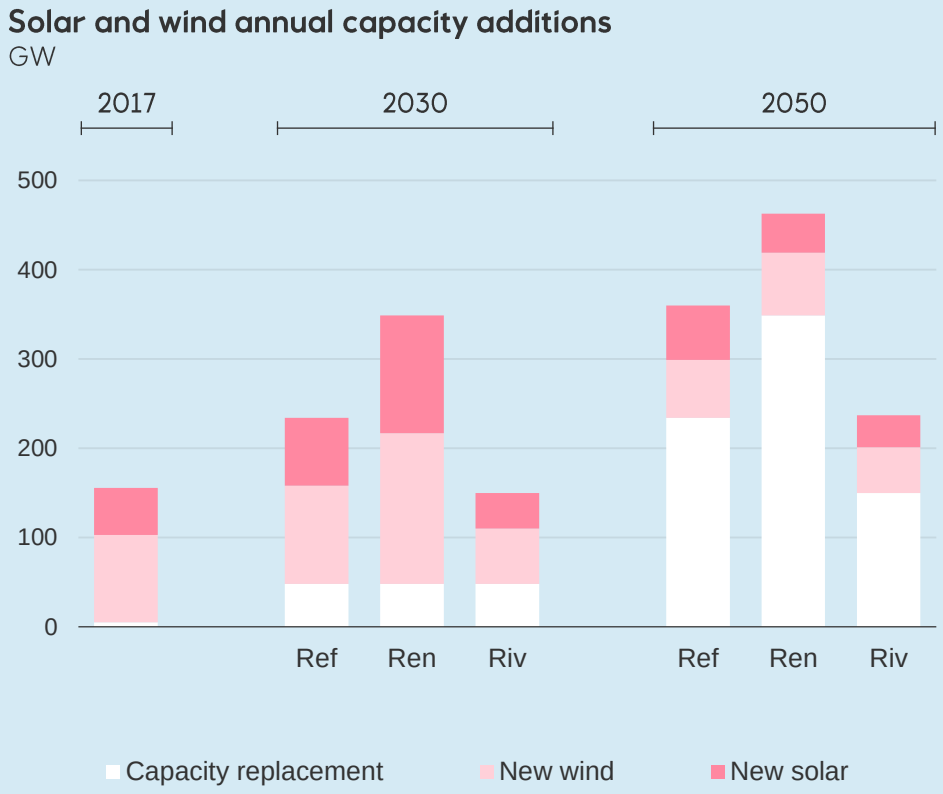
Large investments in all scenarios, although significantly less in Renewal

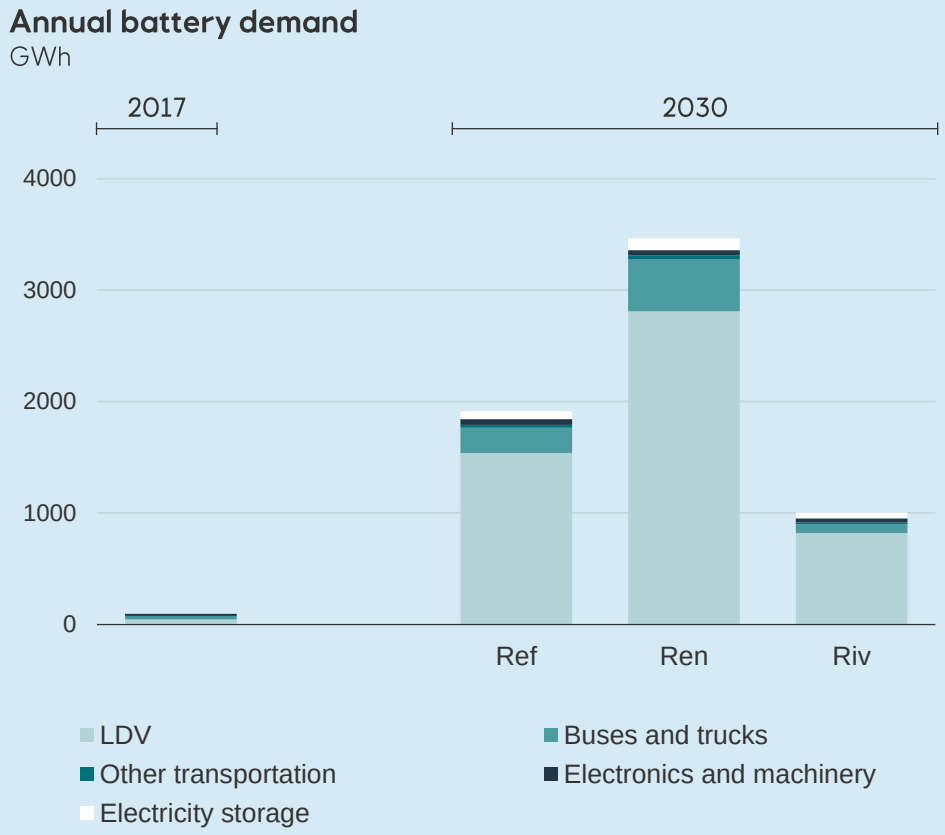


Source: IEA and BP (history), Equinor (projections)

Enormous investments needed in solar, wind and batteries

Large investments to grow and maintain solar/wind capacity; battery market to expand by 10 to 35 times by 2030





Source: Various sources (history), Equinor (projections)

What does Energy Perspectives say about the common beliefs?

- It is not a given that global energy demand will continue to grow
- The energy transition is currently limited to two sectors and moves too slowly
- All scenarios call for large investments in new supply capacity in the energy system

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Eirik Wærness
Senior vice president and Chief economist