



For the Change Makers

Mike Bradshaw

Professor of Global Energy
Westminster Energy Forum
6th December 2023



Managing the 'Messy Mix': Oil & Gas in the Energy Transition

<https://www.wbs.ac.uk/about/person/michael-bradshaw/>

Fatih Birol
Executive
Director,
IEA



Mike Wirth,
CEO,
Chevron



Birol was unapologetic about his longstanding call for new oil and gas investments to end, despite growing animosity from many producers in the sector, from energy executives in the US to the OPEC cartel.

“Looking at the world today or tomorrow, no one can convince me that oil and gas represent safe or secure energy choices for countries and consumers worldwide,”

<https://www.ft.com/content/6ba4c6a2-4a7f-469d-bae3-64bb82eef490>

His blunt response to an International Energy Agency forecast that demand for fossil fuels will peak before 2030 was: “I don’t think they’re remotely right . . . You can build scenarios, but we live in the real world, and have to allocate capital to meet real world demands.”

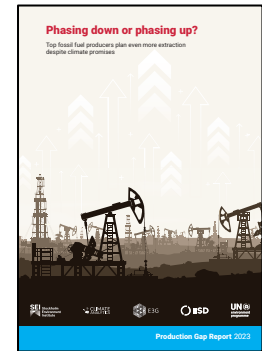
Energy security, energy affordability and lower emissions were “in tension with one another”, Wirth admitted. But he said he was working on the basis that Chevron’s core products will be in demand for decades to come.

<https://www.ft.com/content/1902a8ef-7078-47e2-8a62-b6f0050ed569>

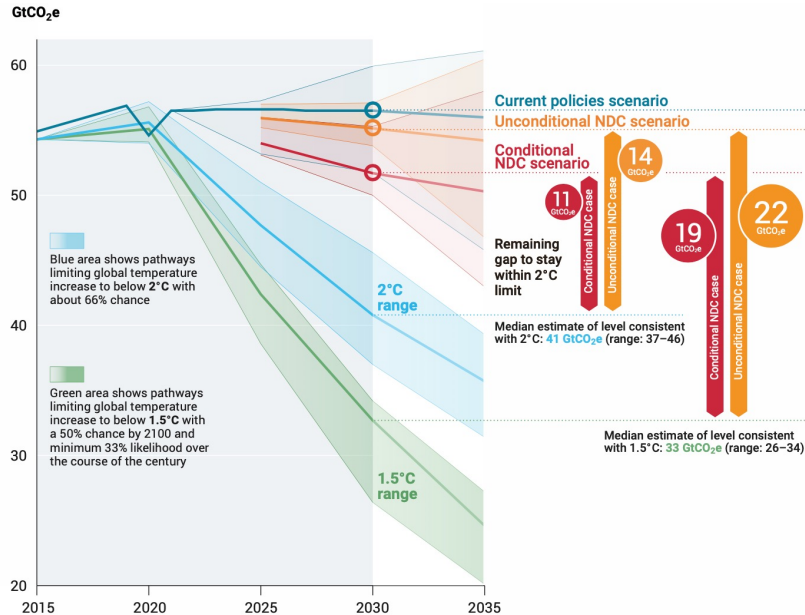


The Carbon Paradox

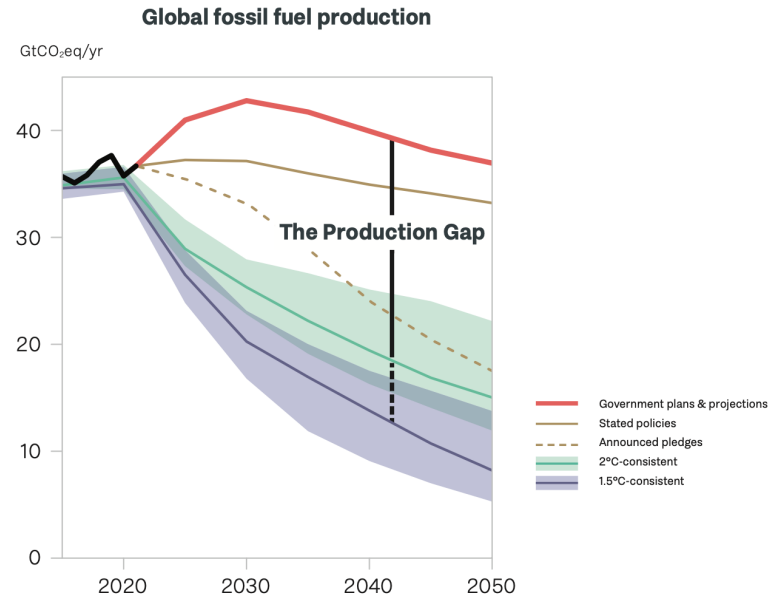
“We cannot address climate catastrophe without tackling its root cause: fossil fuel dependence. COP28 must send a clear signal that the fossil fuel age is out of gas — that its end is inevitable. We need credible commitments to ramp up renewables, phase out fossil fuels, and boost energy efficiency, while ensuring a just, equitable transition” UN Secretary-General António Guterres.

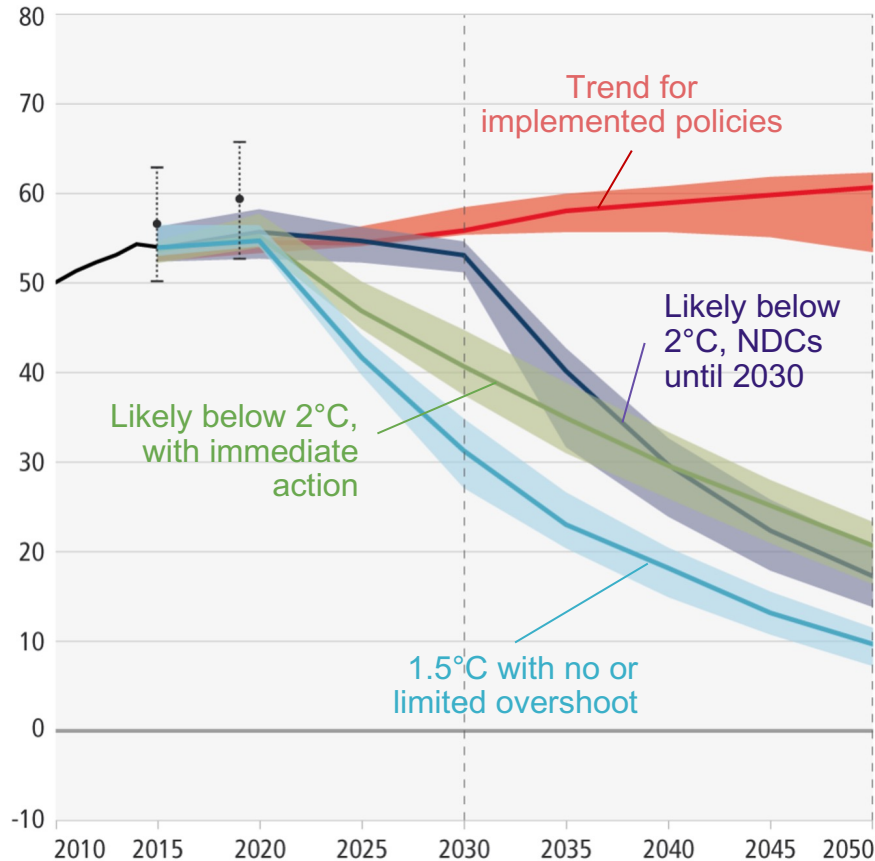


UNEP (2023) [*The Emissions Gap Report 2023*](#)



UNEP et al. (2023) [*The Production Gas Report 2023*](#)





Limiting warming to 1.5 °C

- Global GHG emissions peak before 2025, reduced by 43% by 2030.
- Methane reduced by 34% by 2030

Limiting warming to around 2°C

- Global GHG emissions peak before 2025, reduced by 27% by 2030.

(based on IPCC-assessed scenarios)

<https://www.ipcc.ch/report/sixth-assessment-report-working-group-3/>

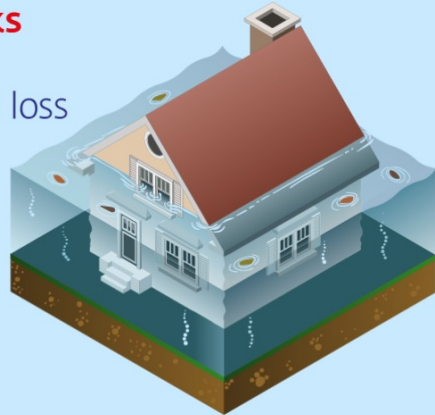
The Financial Risks of Climate Change

Risks of climate change

Climate change poses two types of risk to financial institutions.

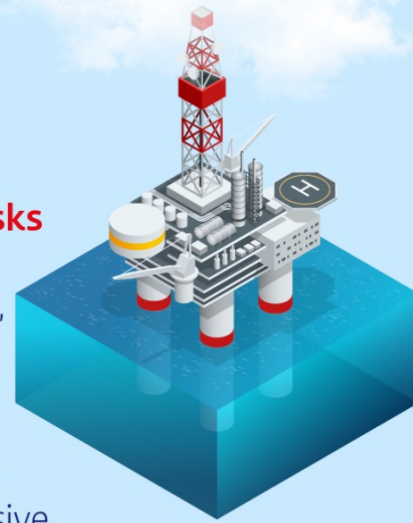
Physical risks

Damage and loss caused by, for example, extreme drought, storm and flooding.



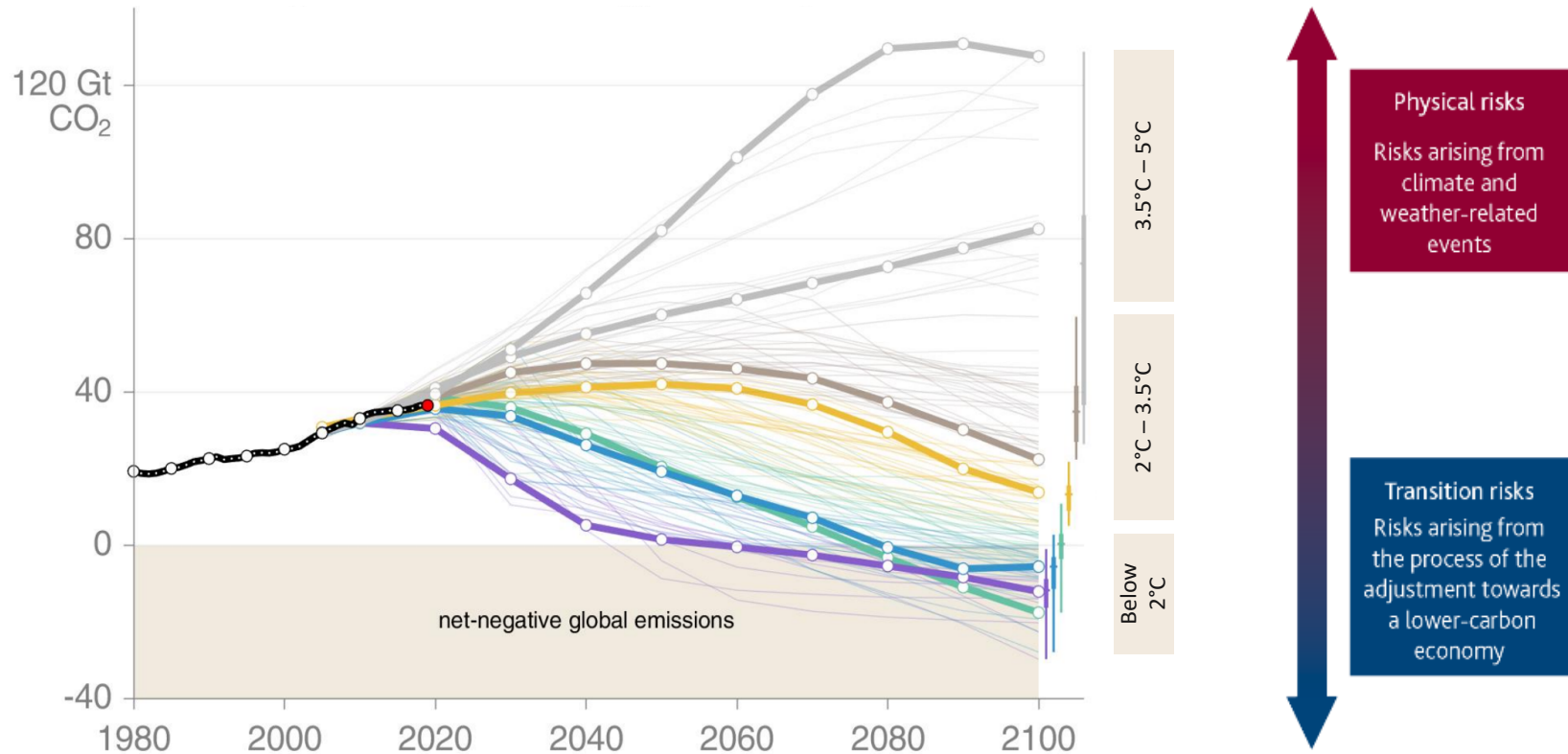
Transition risks

Losses due to, for example, the declining value of investment in carbon-intensive businesses.



<https://www.dnb.nl/en/green-economy/climate-change/>

No BAU World!

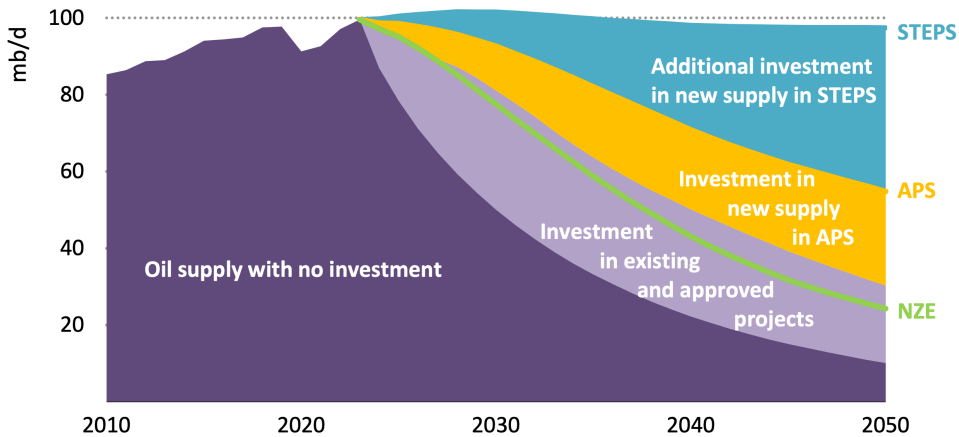


This graph is from a presentation by Theresa L  ber, Head of Climate Hub, Bank of England, Westminster Energy Forum, 21 January 2020. Visit: <https://www.bankofengland.co.uk/climate-change>

What future should the oil & gas industry invest in?

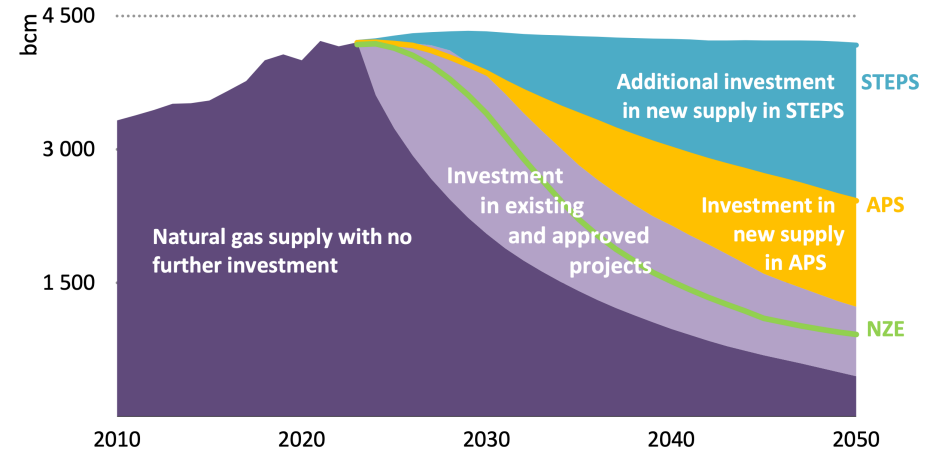
“Producers must choose between contributing to a deepening climate crisis or becoming part of the solution by embracing the shift to clean energy.”

Oil Supply by Scenarios



New conventional oil projects are needed in the APS, but no new projects are approved for development in the NZE Scenario and higher-cost projects are also closed from the 2030s.

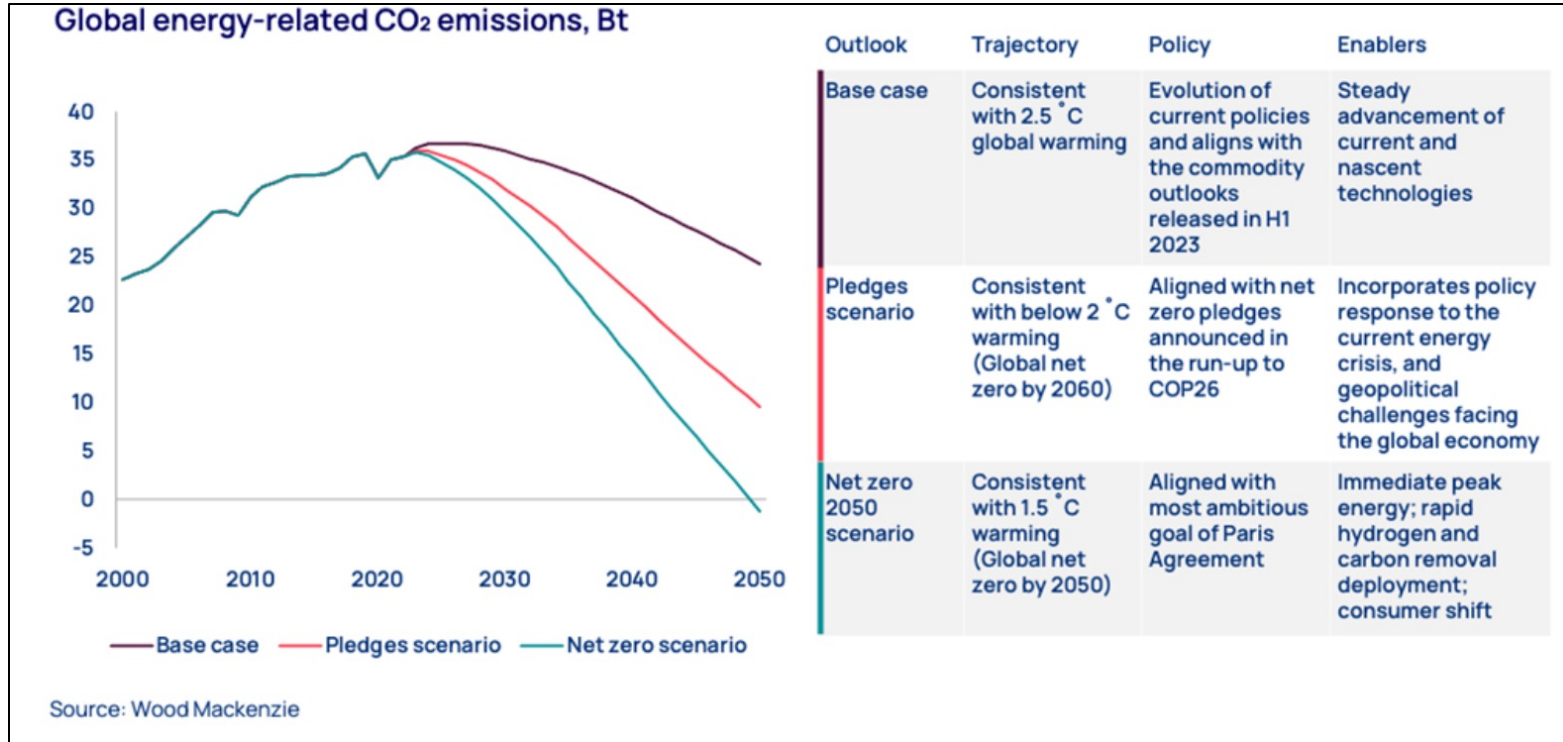
Natural Gas Supply by Scenario



In the NZE Scenario, no new long-lead time gas projects are required, and some production capacity is surplus to demand. In the APS, 1 200 bcm of new production is required in 2050.

IEA (2023) [*The Oil and Gas Industry in Net Zero Transitions*](#)

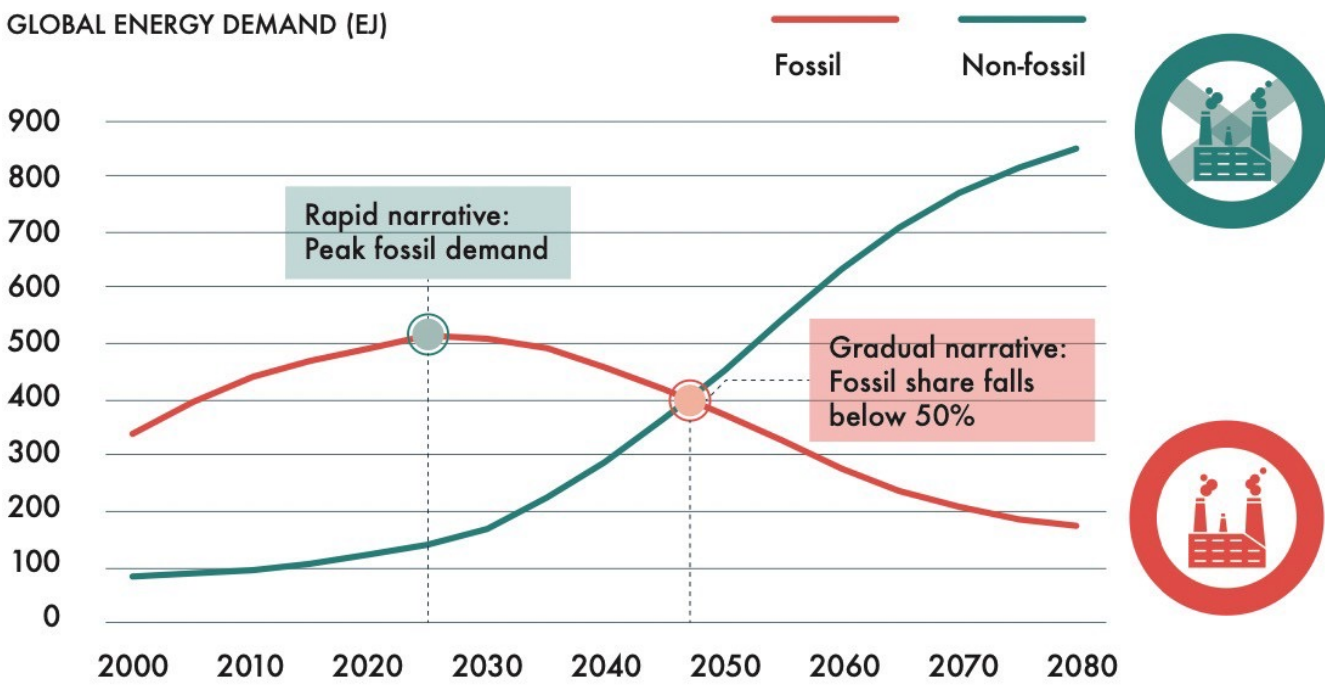
Global Emissions in WoodMac's latest 'Base Case' are on a 2.5°C pathway



https://www.woodmac.com/news/the-edge/cop28-preview--five-things-to-look-for/?utm_campaign=the-edge-newsletter&utm_medium=email

Critical Uncertainty: The Speed of the Energy Transition

WHEN IS THE TRANSITION POINT



Source: Shell Sky scenario

WEF (2019) [The Speed of the Energy Transition](#)

Three Possible Versions of the Future

1. **A Gradual Transition** in which the energy world of tomorrow will look roughly the same as that of today – implying that the global energy system has an inertia incompatible with the Paris Agreement (this is a world of significant and growing physical climate change risk).

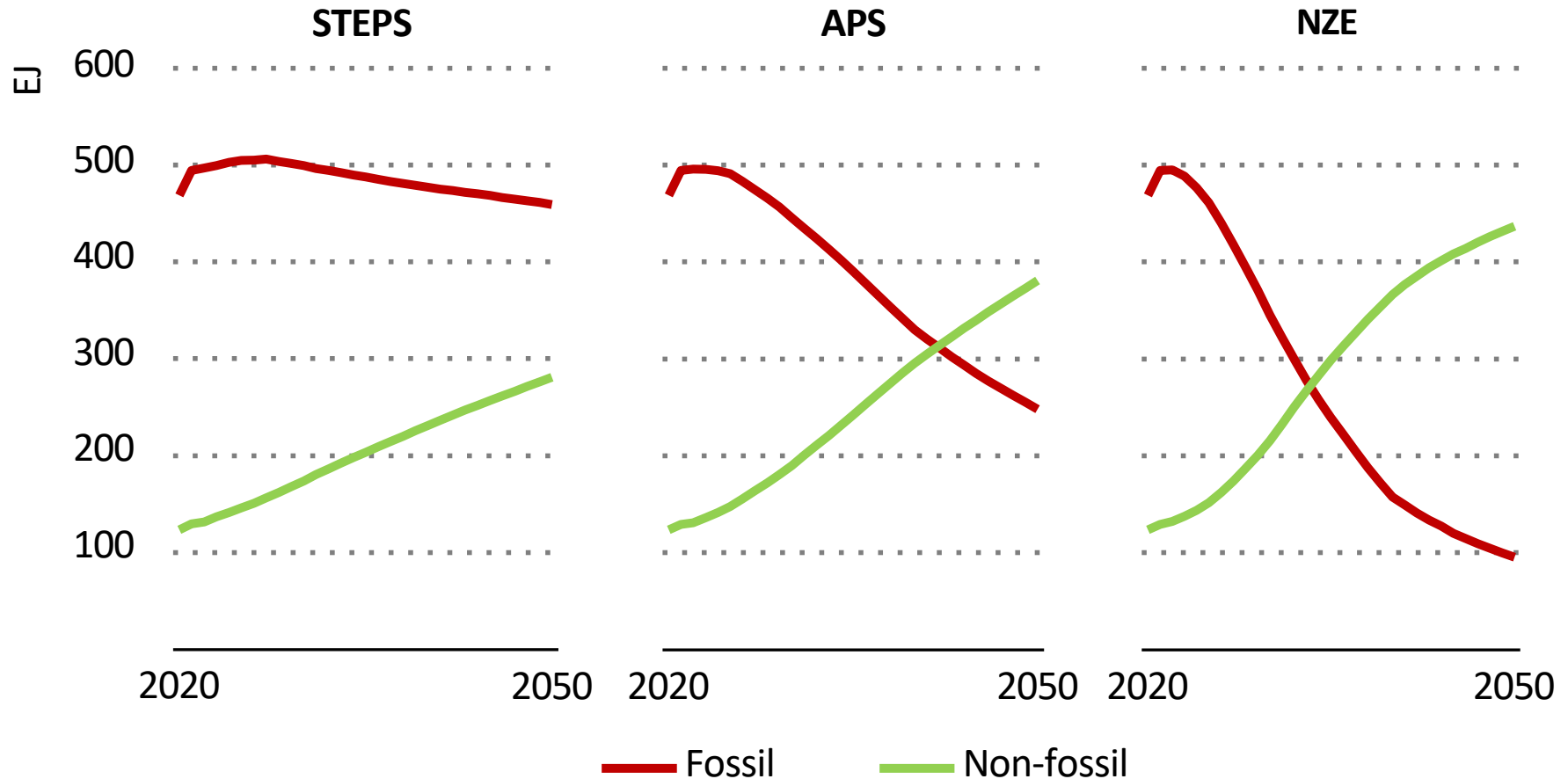
Or

2. **A Rapid Transition** whereby current and new clean energy technologies are rapidly supplying all the growth in energy demand and together with new policies will reshape markets, business models and patterns of consumption leading to a peak in fossil fuel demand during the 2020s putting the world on a Net-Zero path (this is a world of significant and growing transition risk).

Or

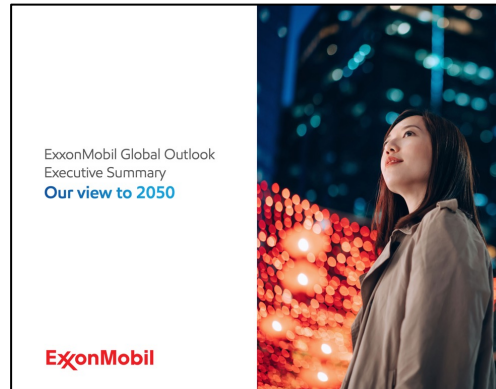
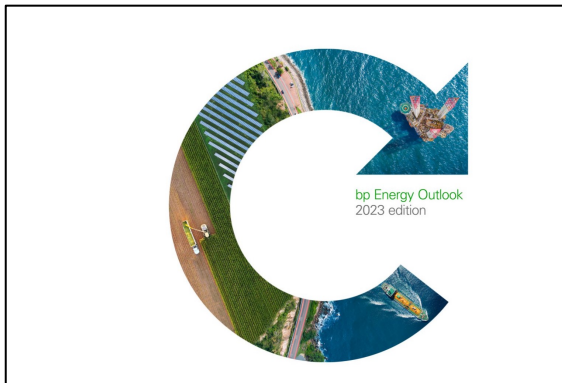
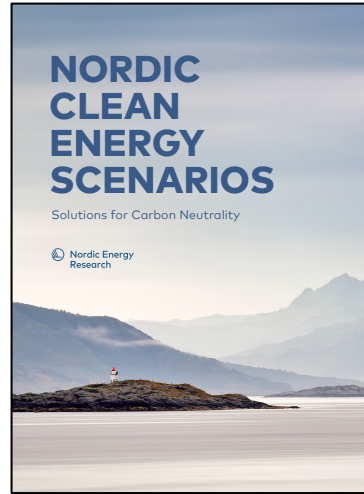
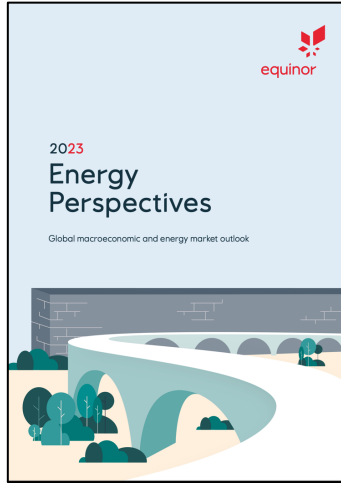
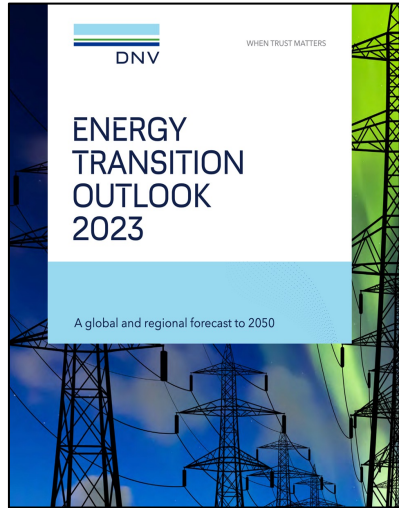
3. **A Messy Transition** that fails to manage the phase out of fossil fuel consumption alongside the build out of clean power generation and improvements in efficiency, resulting in increased price volatility and a public backlash against the transition and a breakdown in international cooperation on climate change (this is a world of significant and persistent geopolitical risk).

IEA WEO 2022: Fossil and Non-fossil Energy Supply

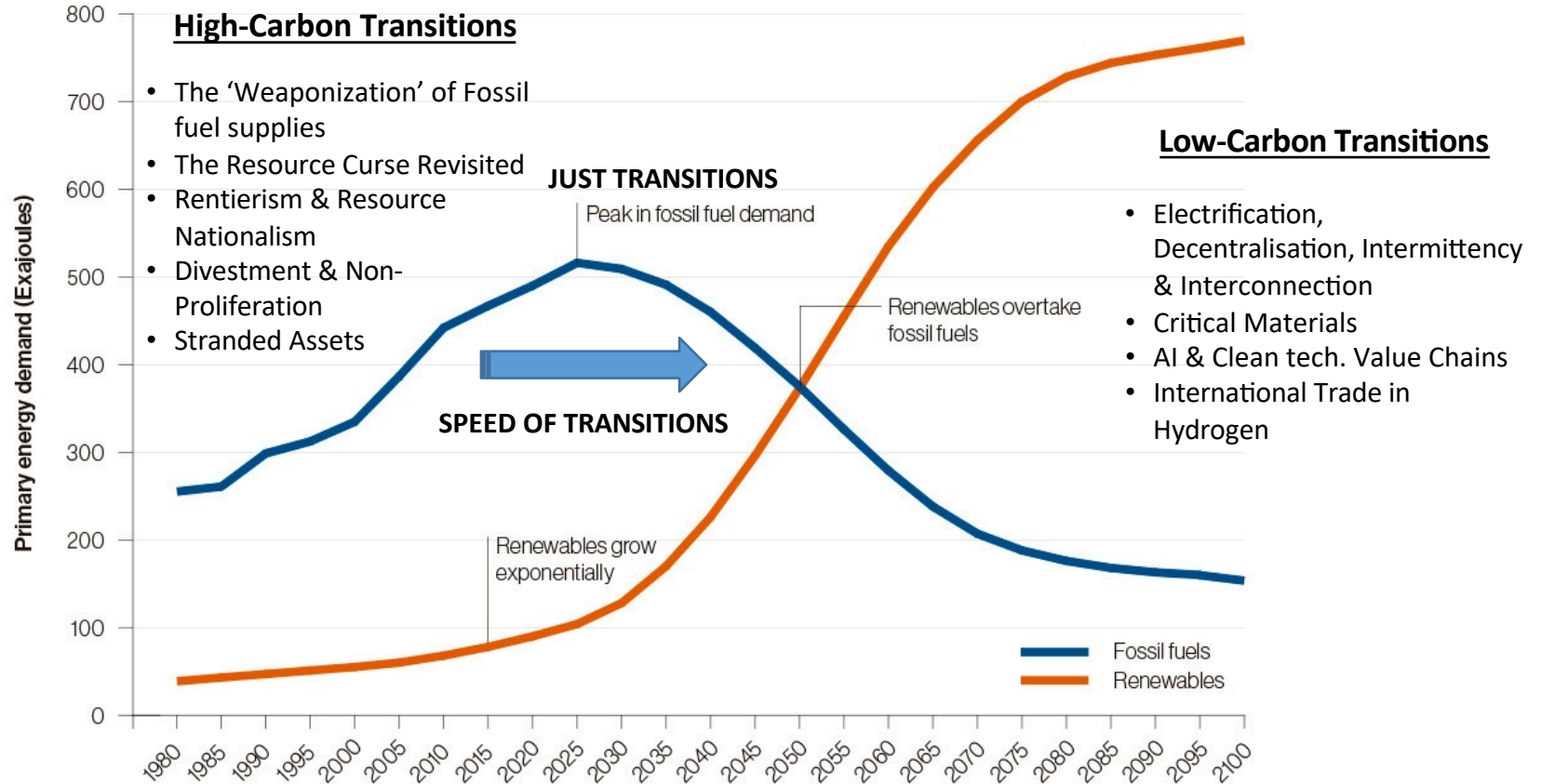


IEA (2022) [World Energy Outlook 2022](#)

Other scenarios are available

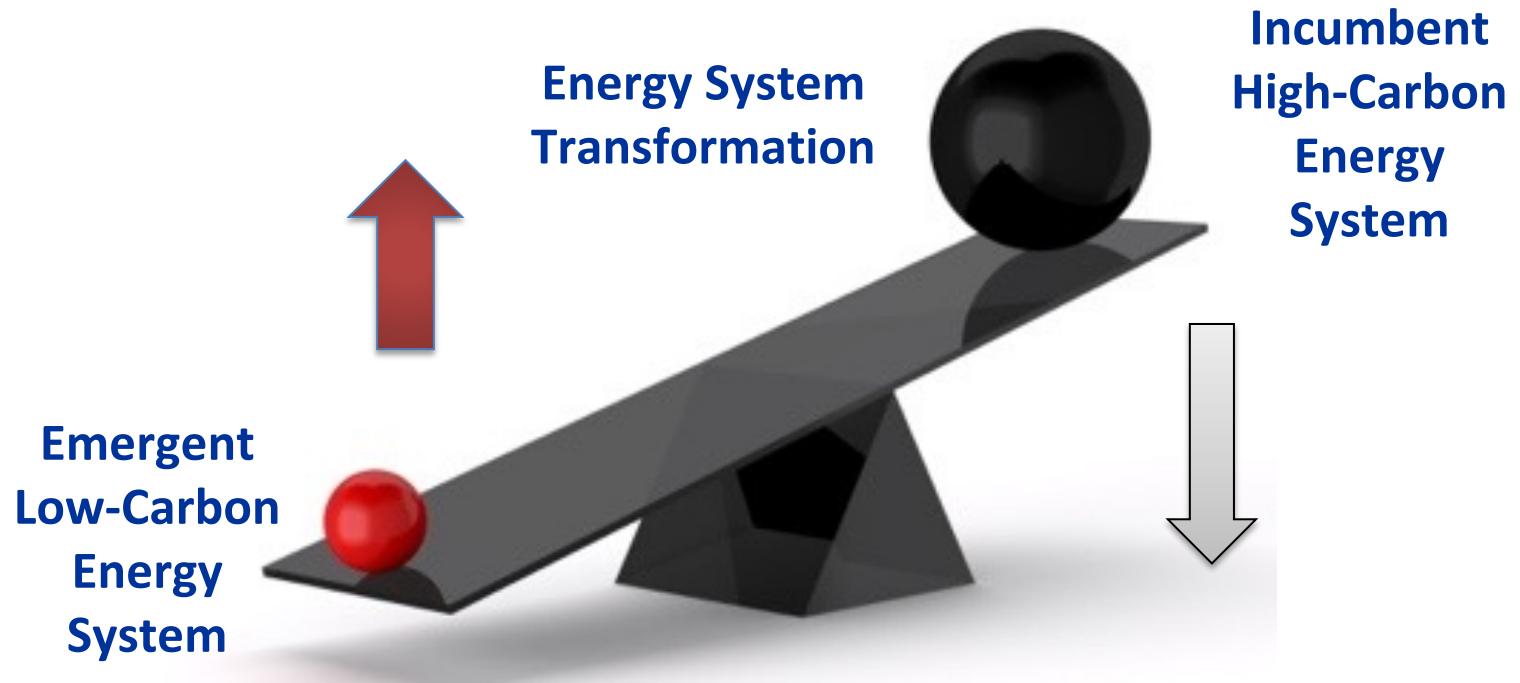


The Geopolitics of Energy System Transformation

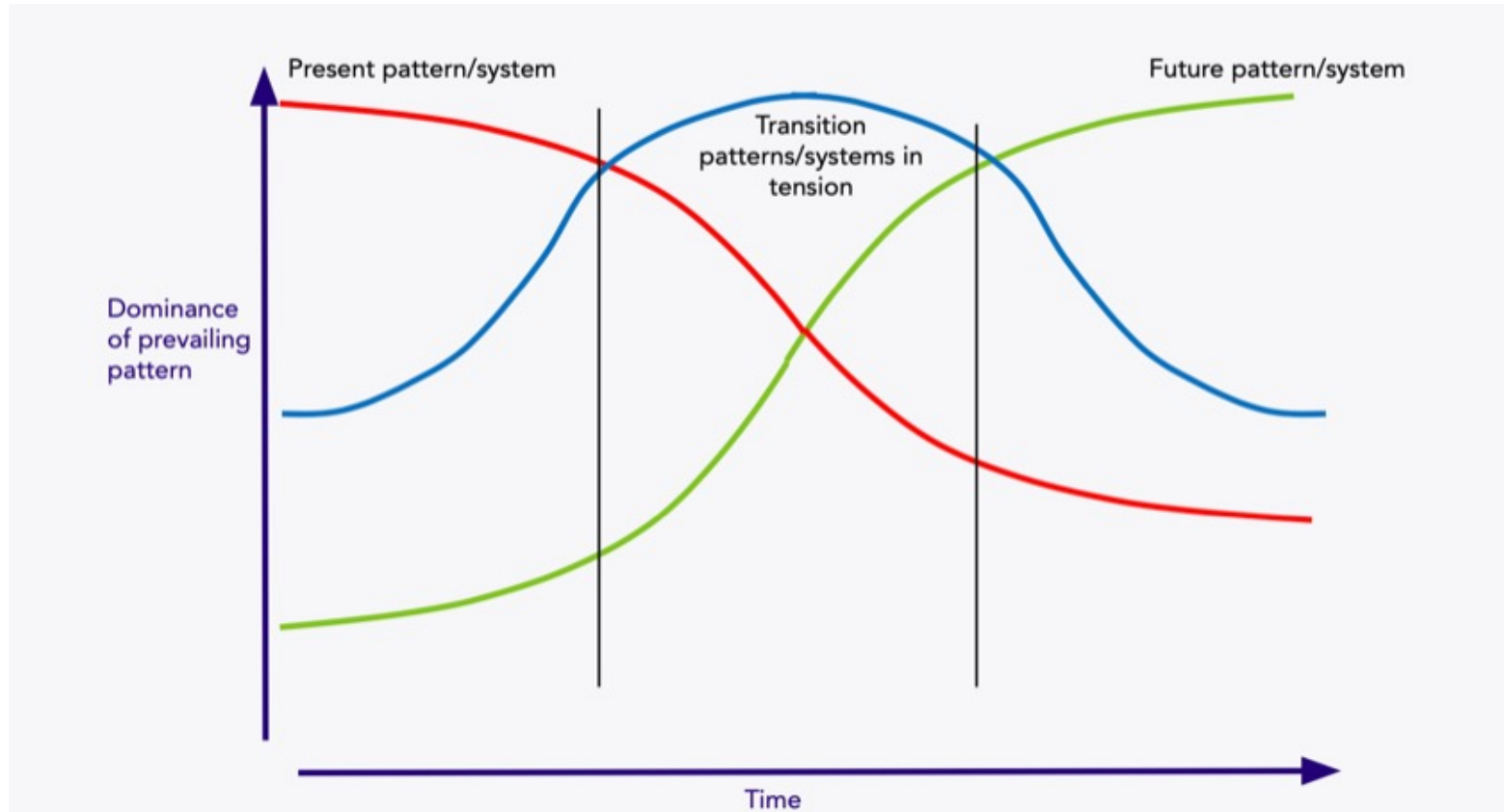


<https://compass.onlinelibrary.wiley.com/doi/10.1111/gec3.12580>

A Balancing Act

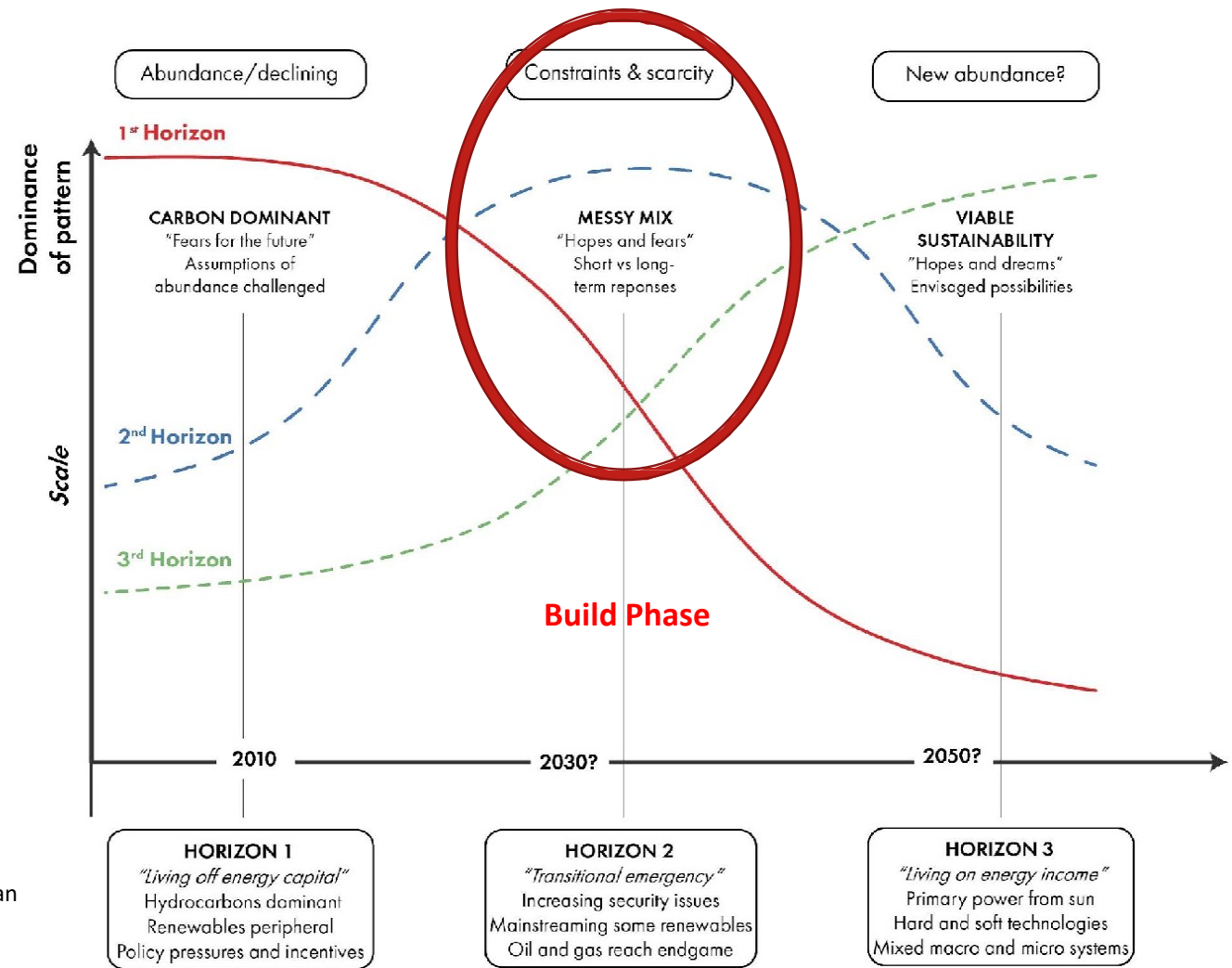


The Three Horizons Approach



Source: [International Futures Forum](http://www.international-futures-forum.org/)

Threats and opportunities during energy system energy transformation



Adapted from "Energy Security and Climate Change" by Bill Sharpe, Anthony Hodgson, & Ian Page. Discussion Paper, *International Futures Forum*, 2006, Aberdour

Managing the 'Messy Mix'

- We are only at the beginnings of the transformation of the global energy mix, today fossil fuels still meet over 80% of global energy demand (in UK it is 78%);
- There remains huge uncertainty over the pace of transformation, and it is the case that we are still going to need fossil fuels for some time yet, the key issue is how much for how long?
- While there are numerous scenarios that suggest a smooth transformation to a net-zero energy system by 2050, the reality is that this is already a volatile process that presents both challenges and opportunities (winners and losers);
- To enable an acceleration in the rate of progress towards net-zero, rather than hoping for the best, we need to embrace the 'messy mix' and manage the risks that it presents.

Thank you

