

Disorderly climate transitions and systemic risk

Westminster Energy Forum

April 2023



A decarbonized portfolio or a portfolio for a decarbonizing world?

A decarbonized portfolio

Carbon footprint based

- Carbon footprint of the investments in the portfolio should be consistent with science based targets or other climate transition metrics

Alignment with carbon metrics is assumed to manage financial transition risk

A portfolio for a decarbonizing world

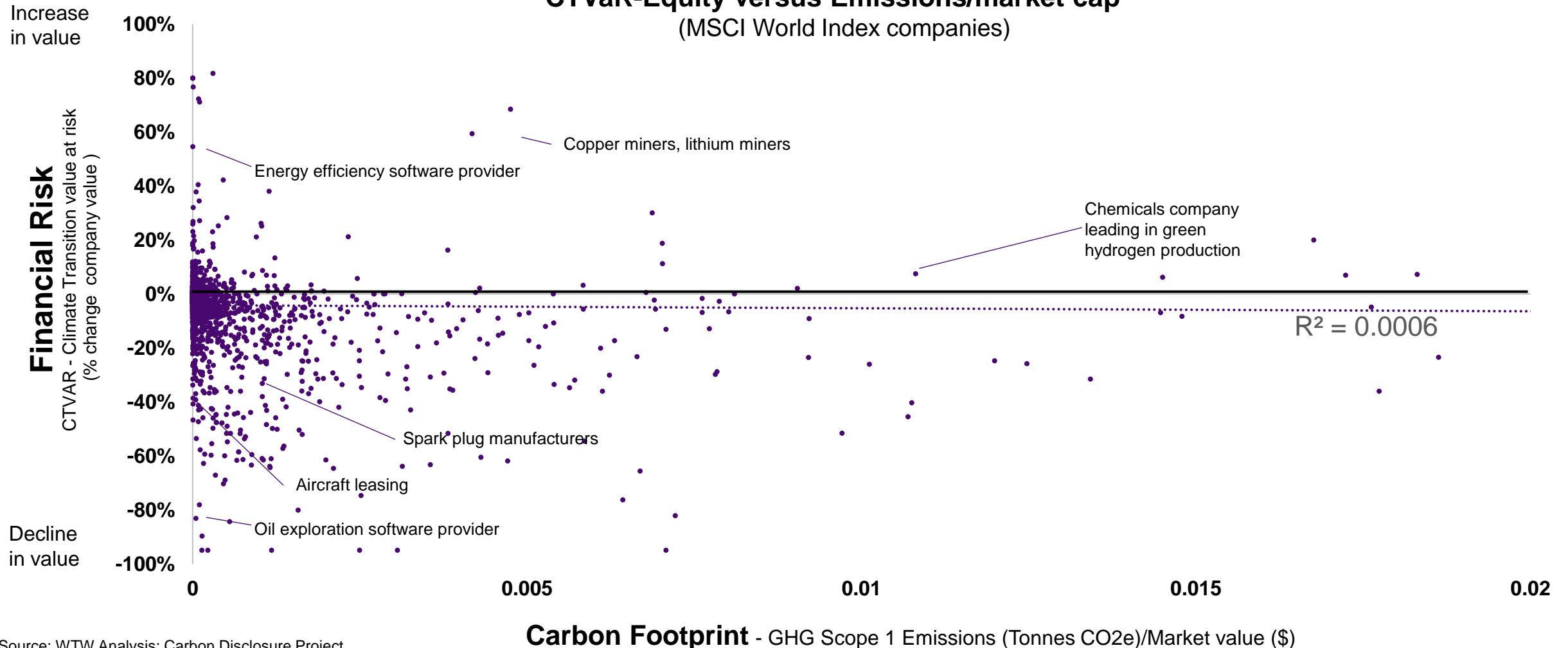
Based on changes to business models driven by requirements to mitigate climate change

- Evaluation of the impact of climate change scenarios on the financial value of assets
- Financial value can be assessed through the impact on future free cash flows

Alignment with carbon footprint pathways is a likely outcome, rather than a constraint

Fundamental value is uncorrelated to carbon emissions

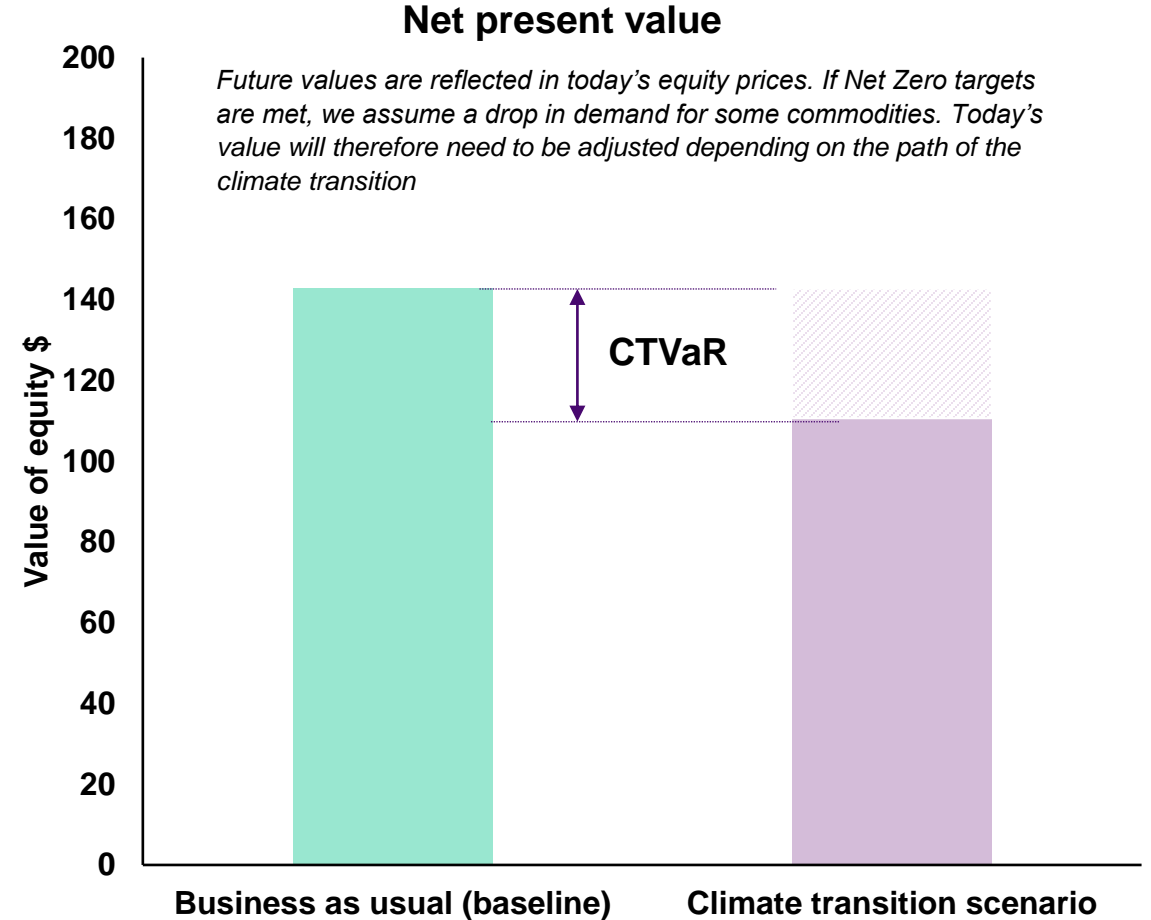
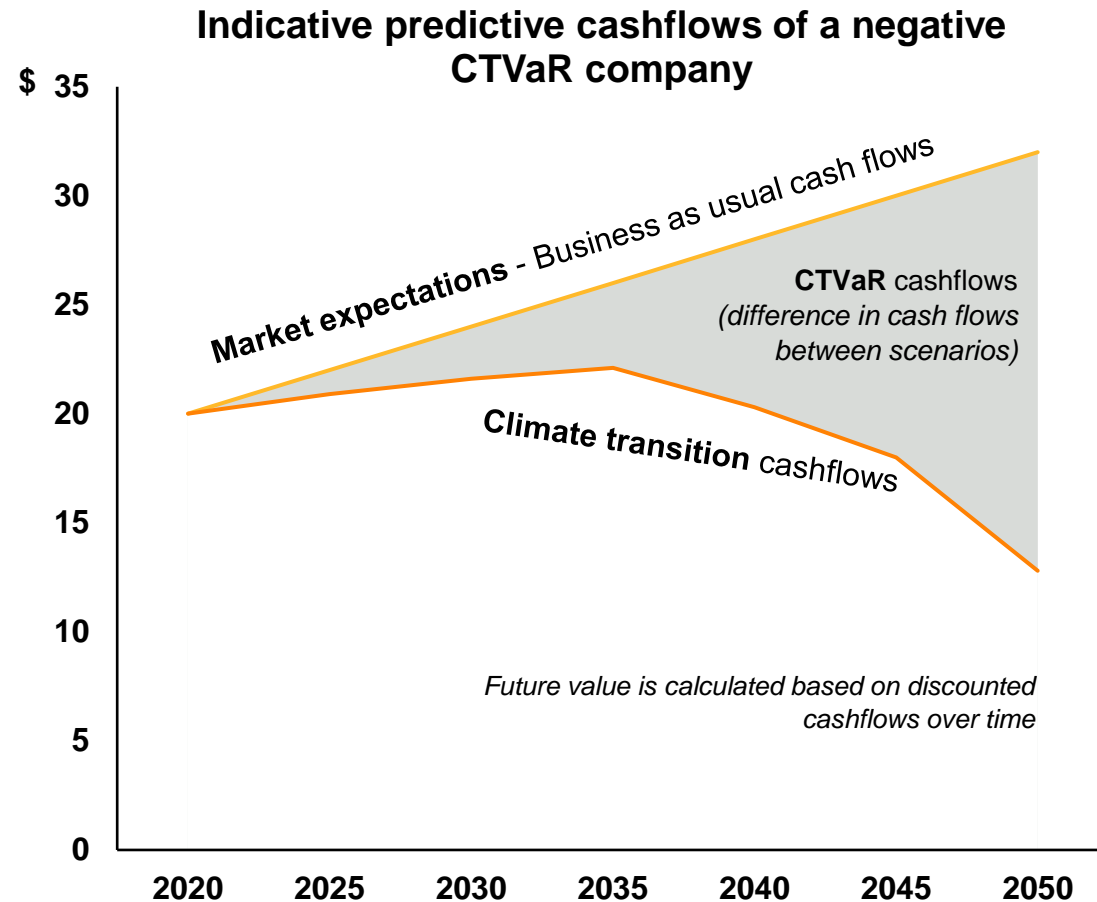
Financial risk from climate transitions versus carbon footprint
CTVaR-Equity versus Emissions/market cap
(MSCI World Index companies)



Source: WTW Analysis; Carbon Disclosure Project

Climate transitions will impact valuations

Climate Transition Value at Risk (CTVaR) measures the impact of transition scenarios on fundamental value



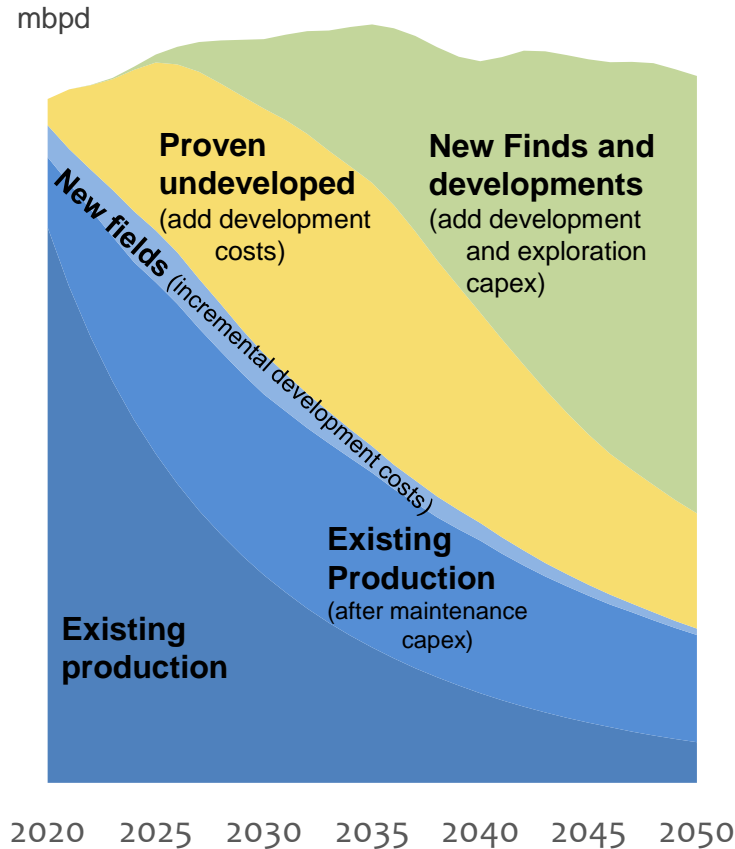
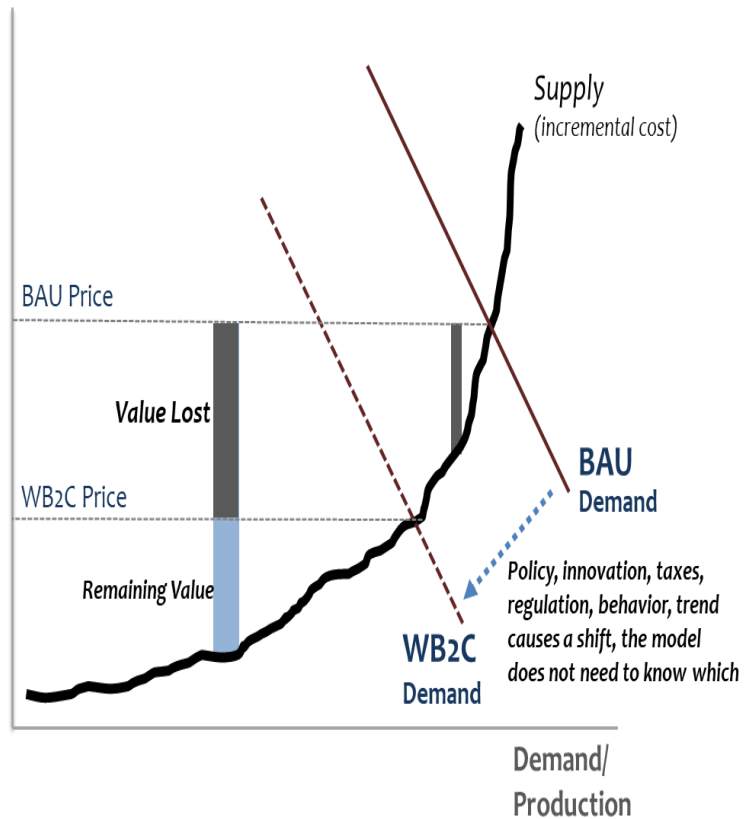
Measuring Transition Risk for upstream oil

Supply/demand for commodities set price, likely development and output

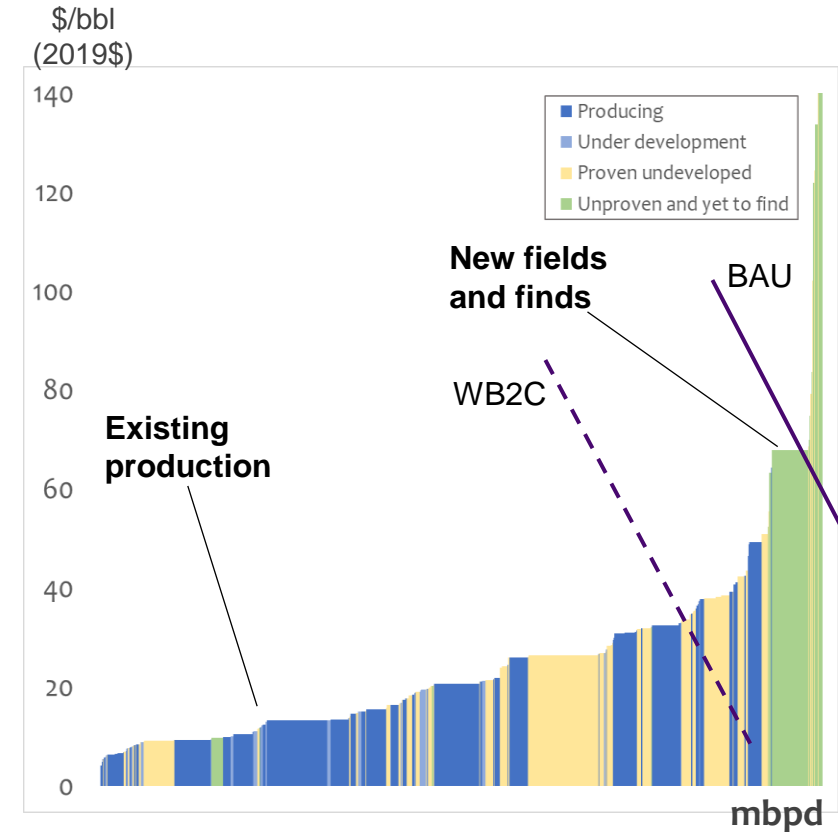
Supply curves based on forward looking costs of incremental supply

The impact is on a field by field basis, with significant variation between resources

Price

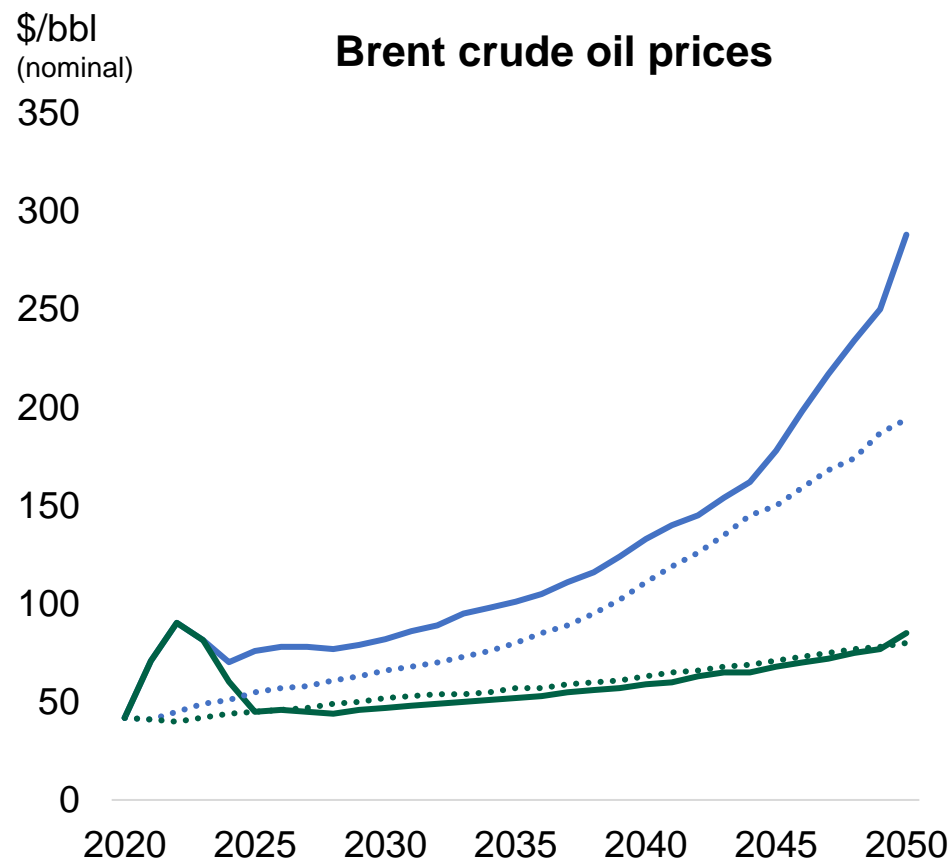
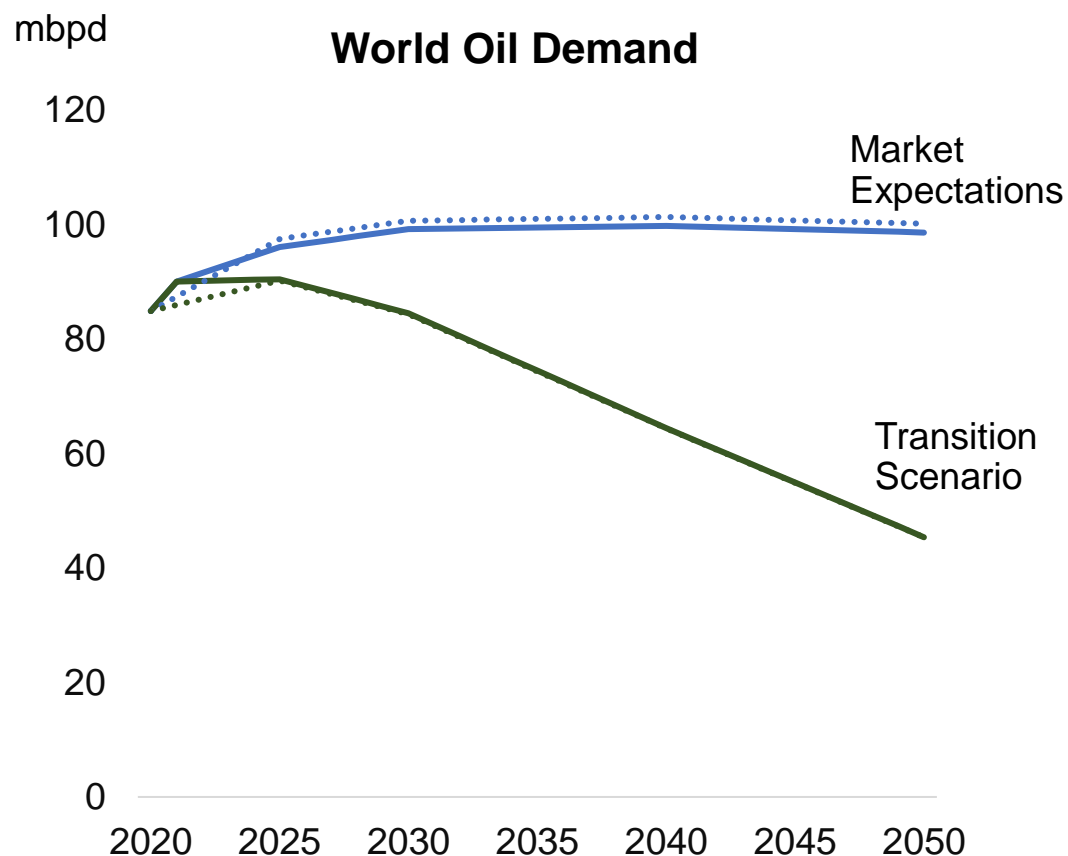


Single year example



Sources: Rystad; WTW modeling

A climate transition would have a significant impact on oil prices



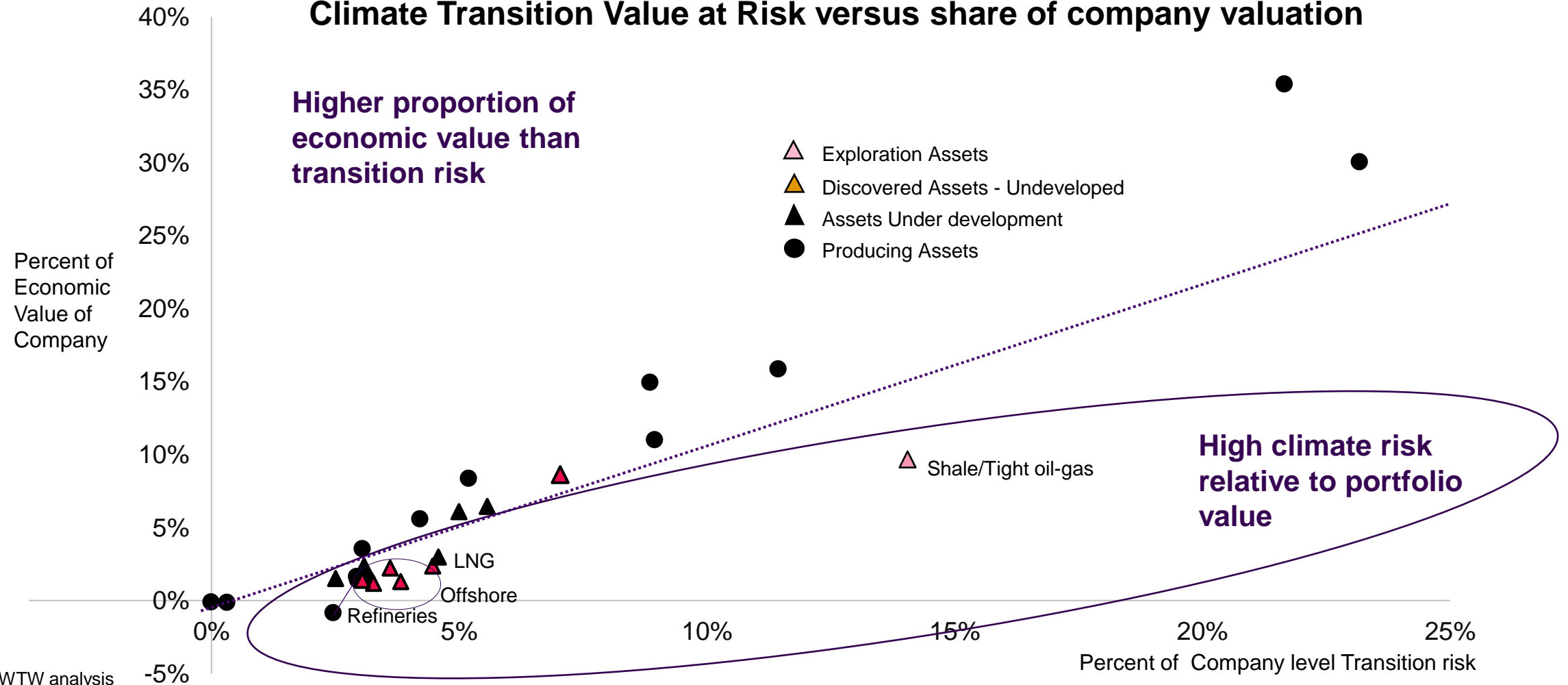
2022 forecast in solid 2021 in dashes

Sources: IEA, WTW modelling

What CTVaR measurement tells us about specific assets

Portfolio analysis: Transition risk versus contribution to corporate value

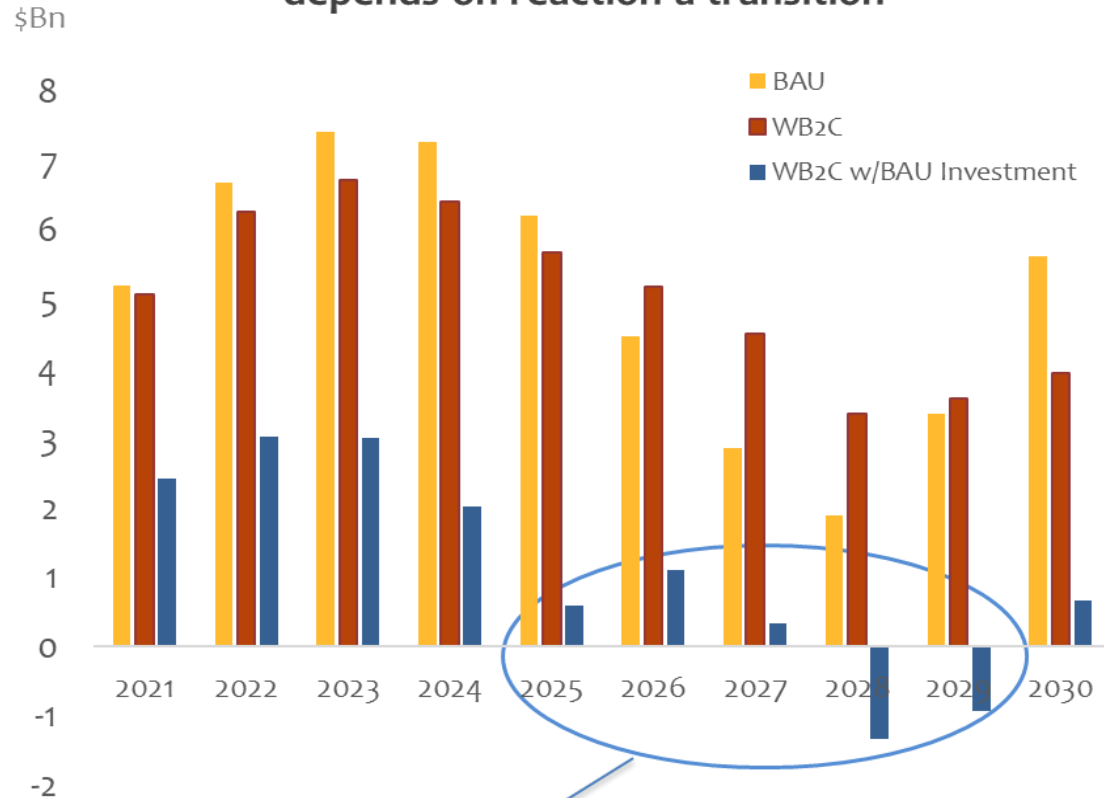
Climate Transition Value at Risk versus share of company valuation



Sources: WTW analysis

...or cash flows and financing

Impact on oil business free cash flows of depends on reaction a transition

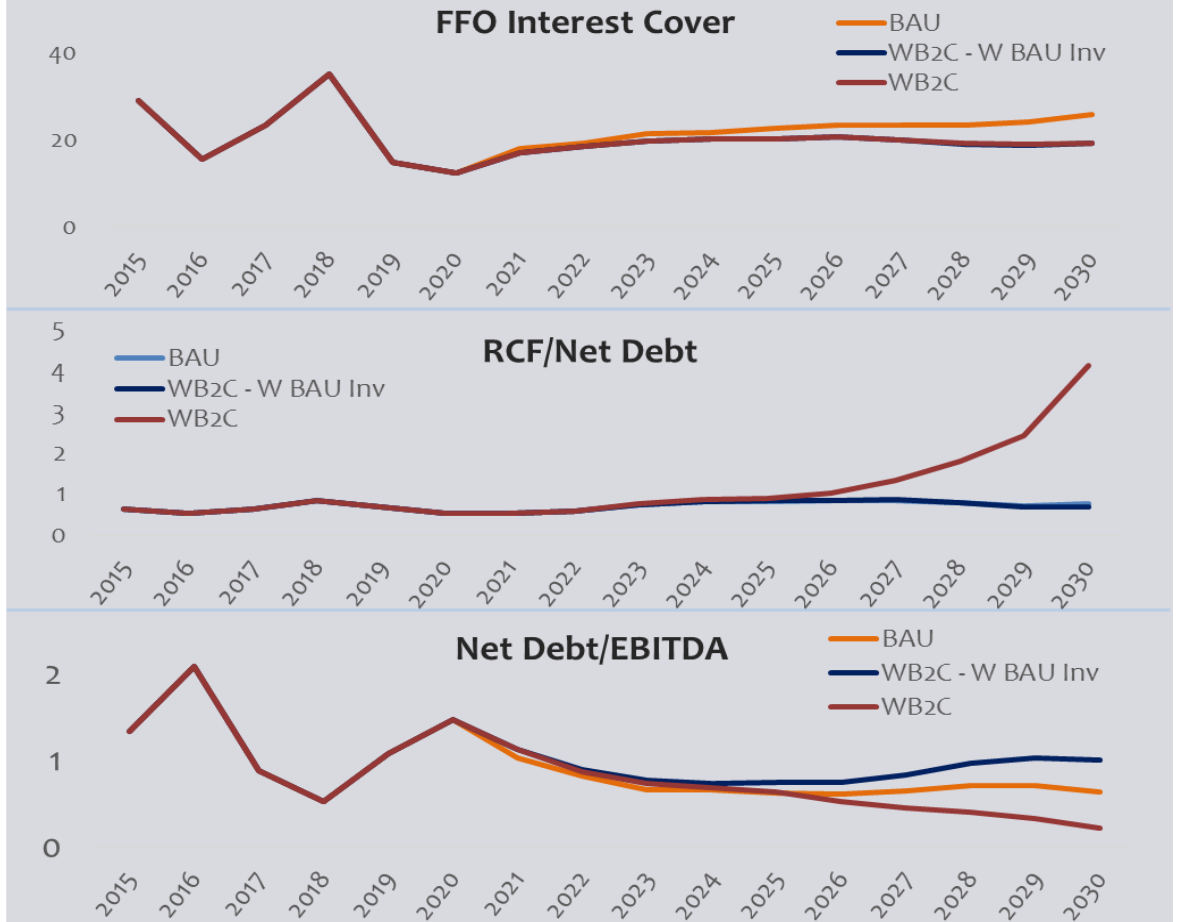


Failure to recognize an energy transition occurring and continued investment in new projects, leads to negative free cash flows before dividends

Sources: WTW analysis

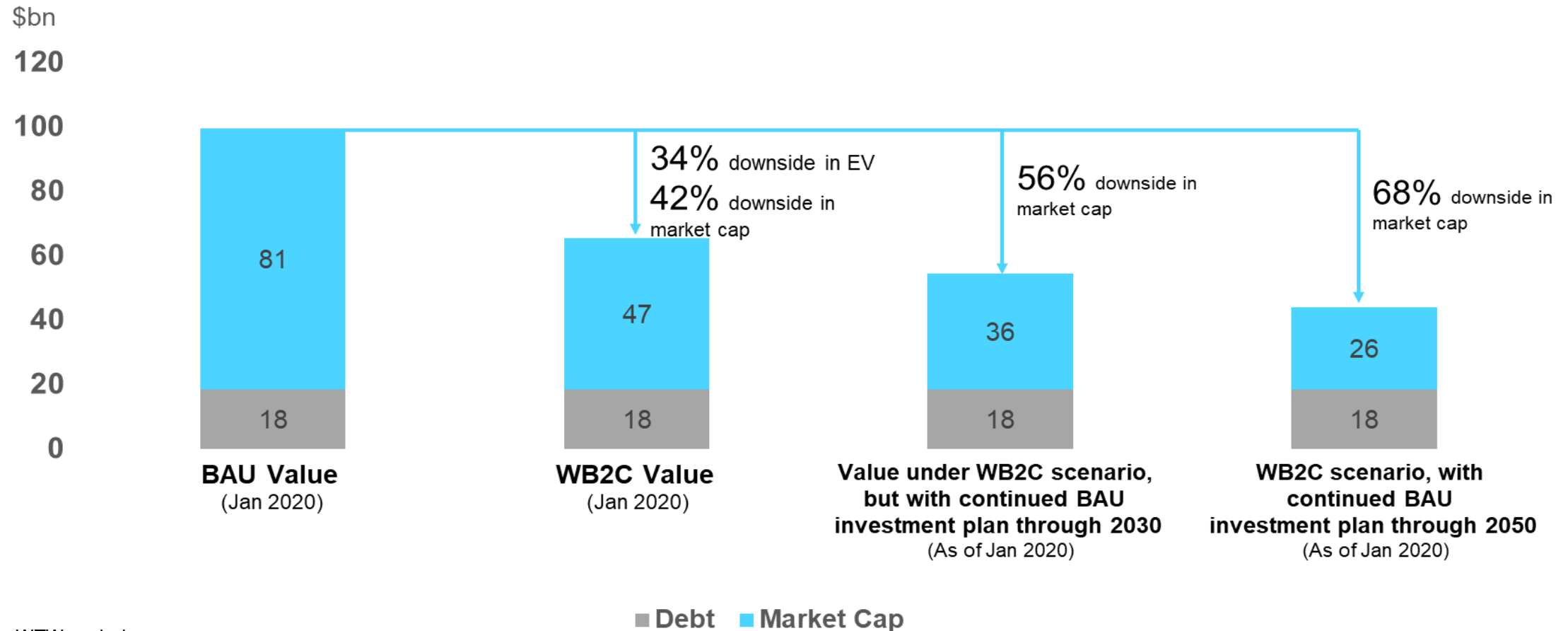
Selected credit metrics

Show that credit improves if company reacts to transition, but would stay stable if the company fails to react



A delayed response can erode shareholder value

Change in Transition Value at Risk as function of when the company begins to reduce investment in response

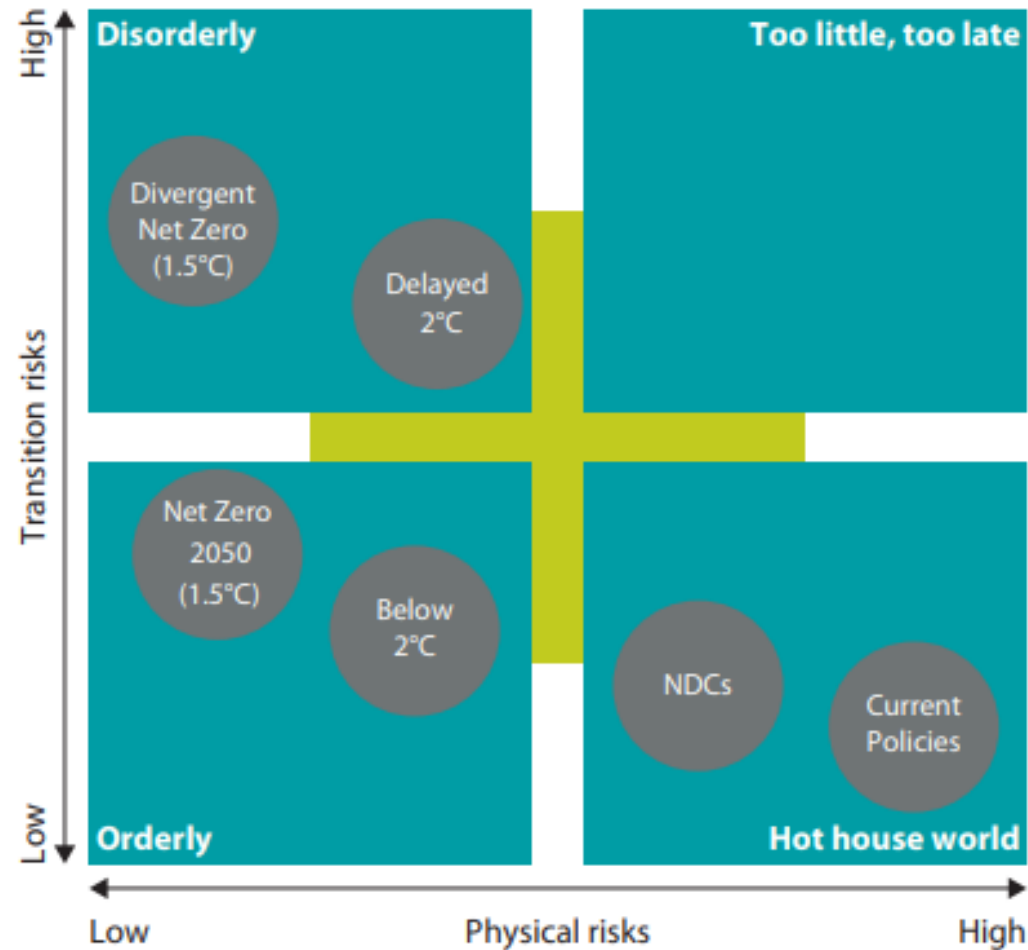


Sources: WTW analysis

Scenarios provide the backbone for transition risk analysis

Network on the Greening of the Financial System Scenarios form a standard starting point

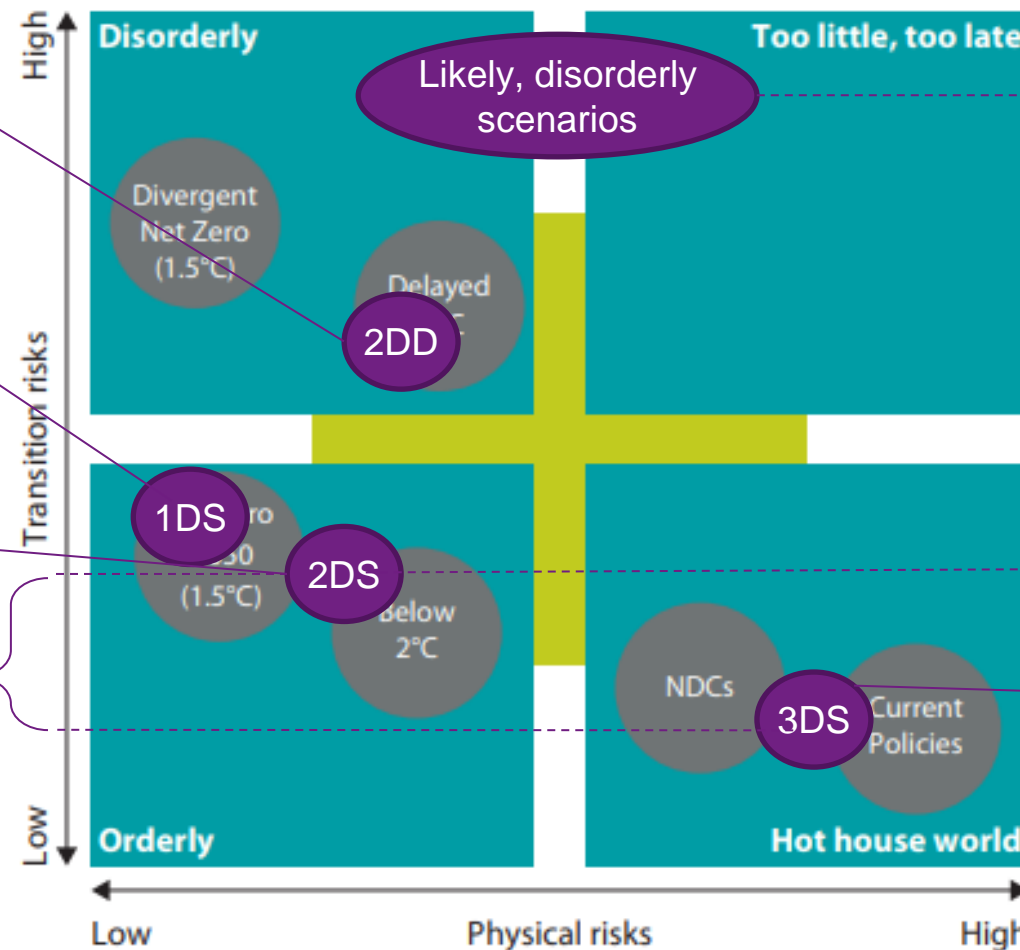
NGFS scenarios framework



Scenarios provide the backbone for transition risk analysis

WTW Scenarios - Disorderly scenarios show that risk can be an order of magnitude higher

NGFS scenarios framework



2DD Scenario

Measures impact of a delayed transition, but timing, implications for the scale of the accelerated response, etc, make this scenario infeasible

1DS Scenario

Measures impact of a 1.5C (50%) scenario, but our models suggest it is infeasible without technological breakthroughs

2DS or WB2C scenario

Base WTW scenario used to measure financial risk purely from the transition and not mismanagement, corresponds to a carbon budget consistent with 67% chance of below 1.7C temperature increase

Basic CTVaR
Pure transition risk

Disorderly Scenarios

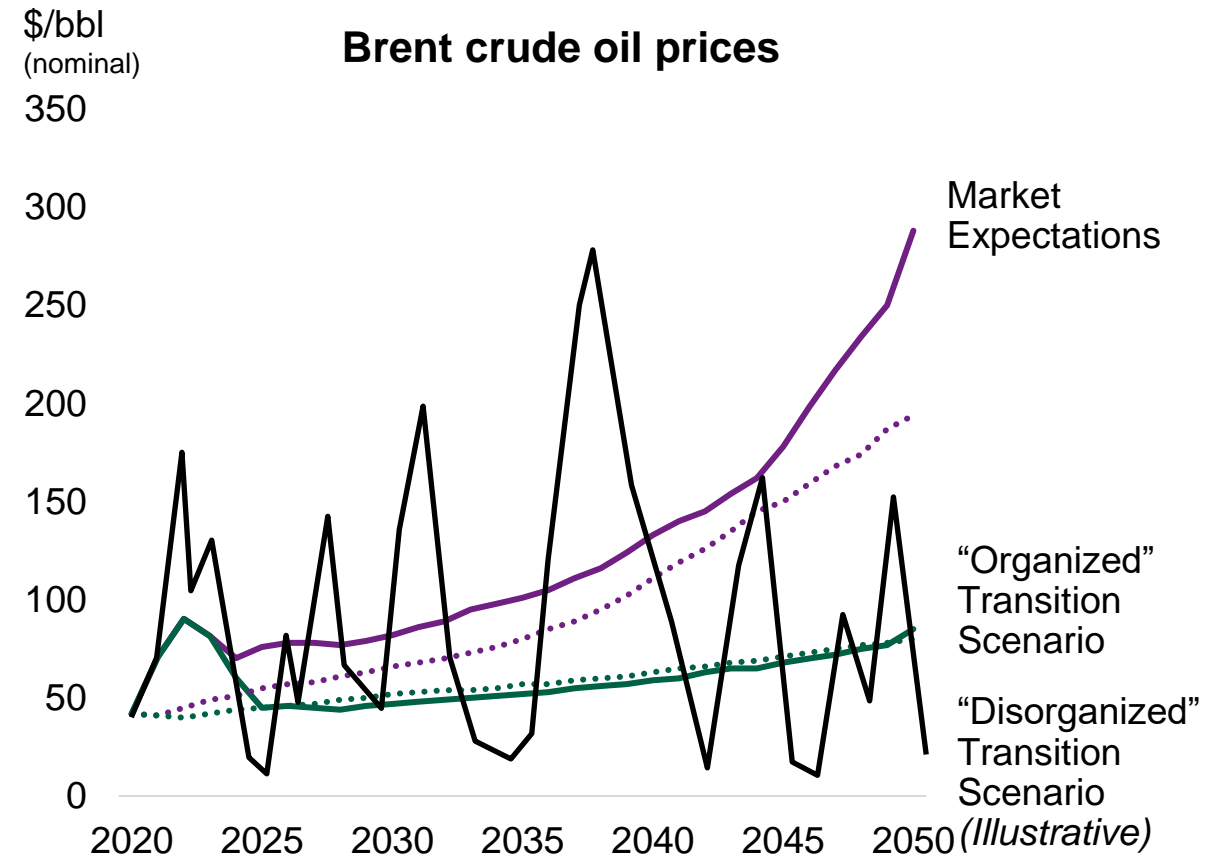
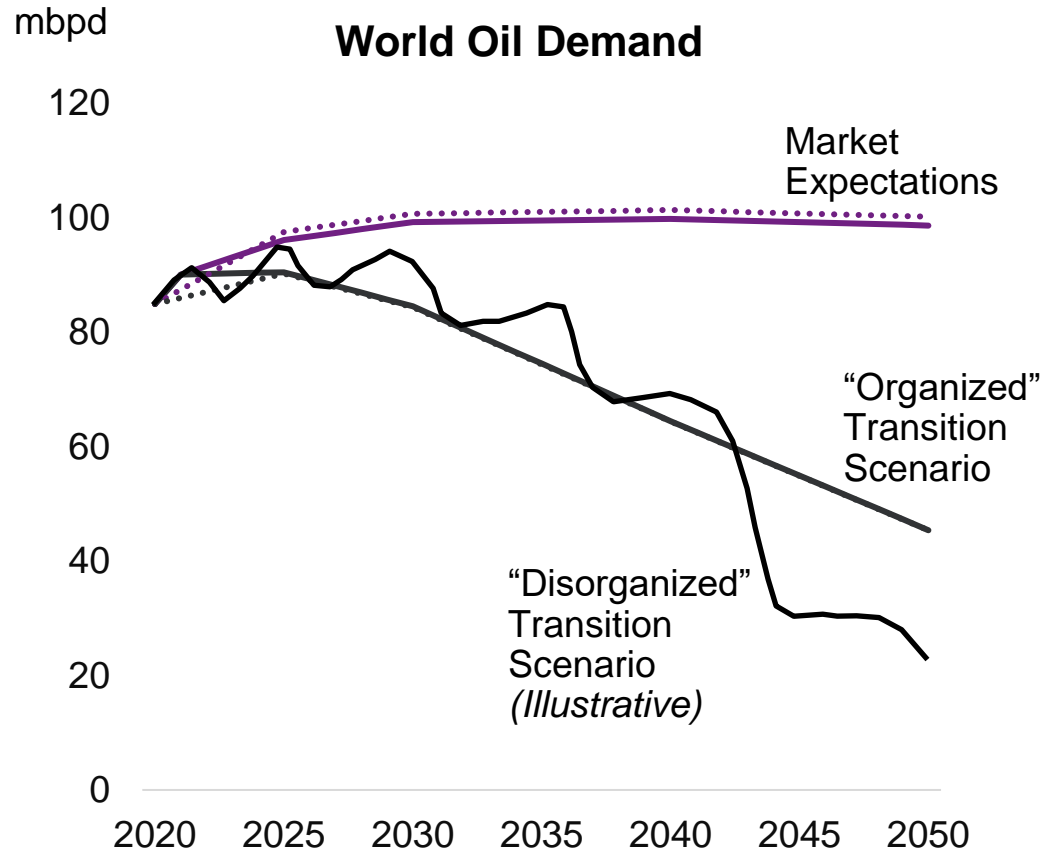
The most likely transition path is one where some sectors and countries follow more organized paths than others, and where risks change rapidly at an aggregate and asset level. ***These risks are central to an asset manager's fiduciary duty and to a financial regulator's core responsibility.***

Additional CTVaR risk due to disorder, inappropriate policy response, lack of coordination

Market expectations (3DS or BAU) scenarios

This transition risk is fully priced into the market on average, but huge potential for sectoral and regional differences

Energy markets show the risk of a disorderly scenario



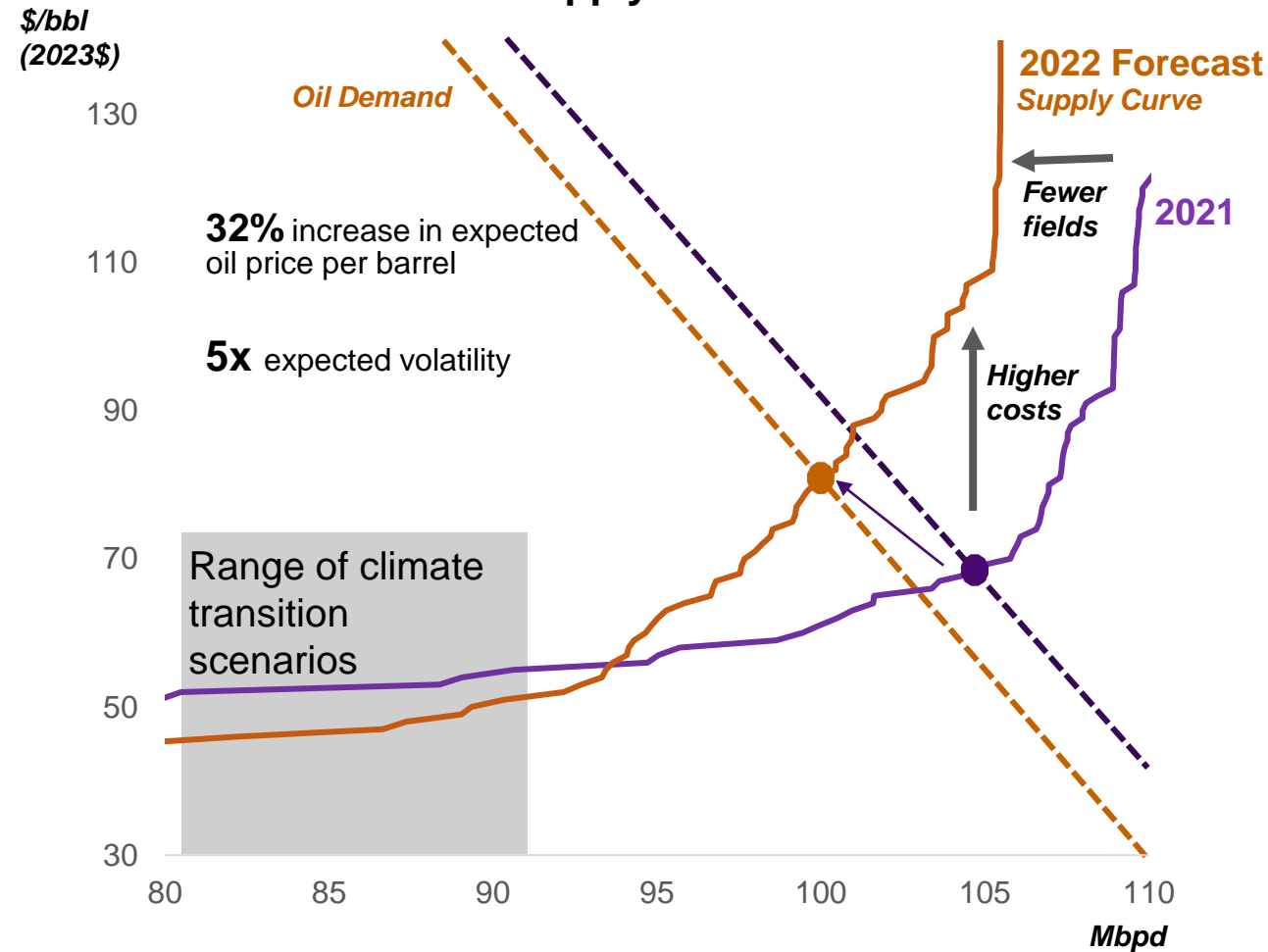
2022 forecast in solid 2021 in dashes

Sources: IEA, WTW modelling

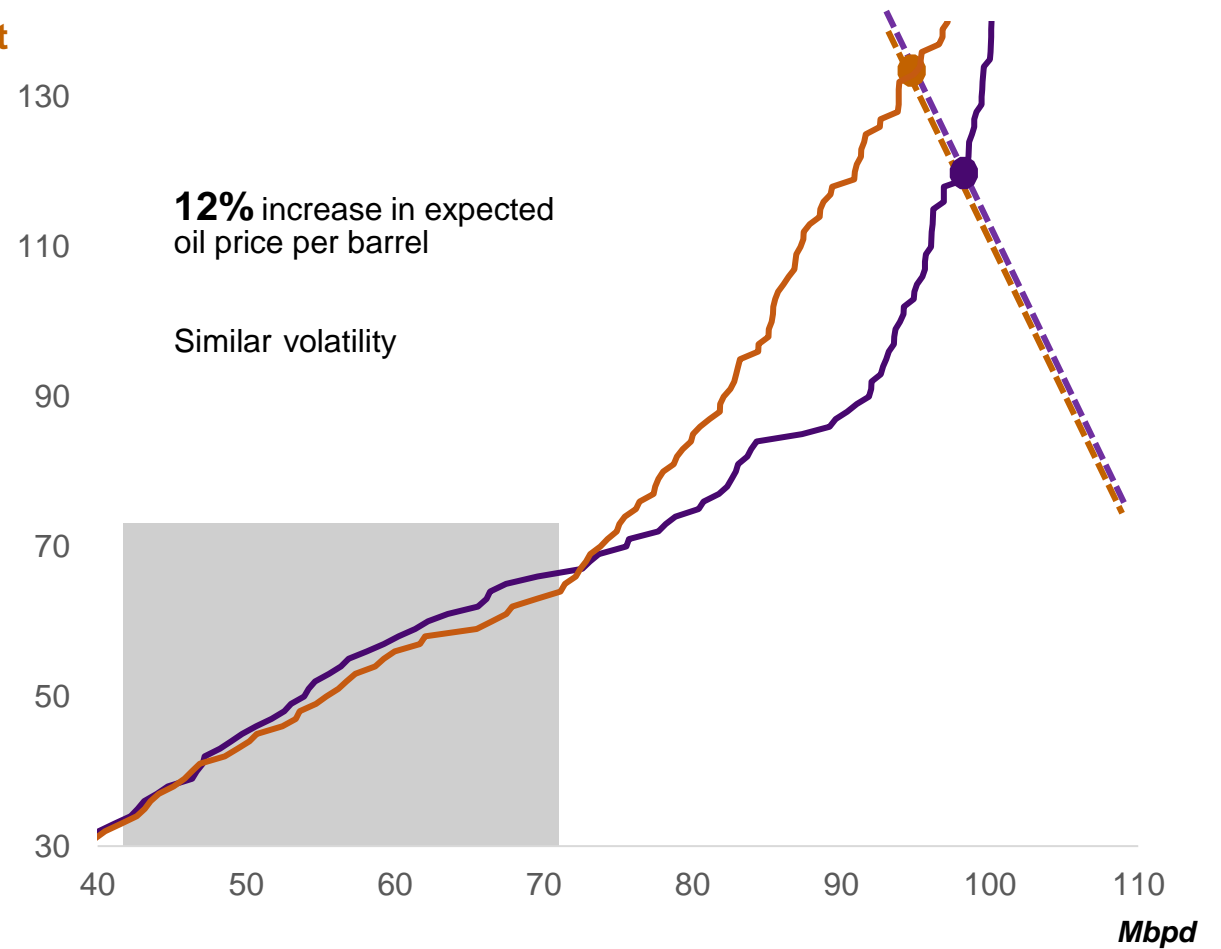
One year of disorder can completely realign risks

Change in the long-term oil market from 2021 to 2022

2030 Crude Oil Supply and Demand Curves



2040 Crude Oil Supply and Demand Curves

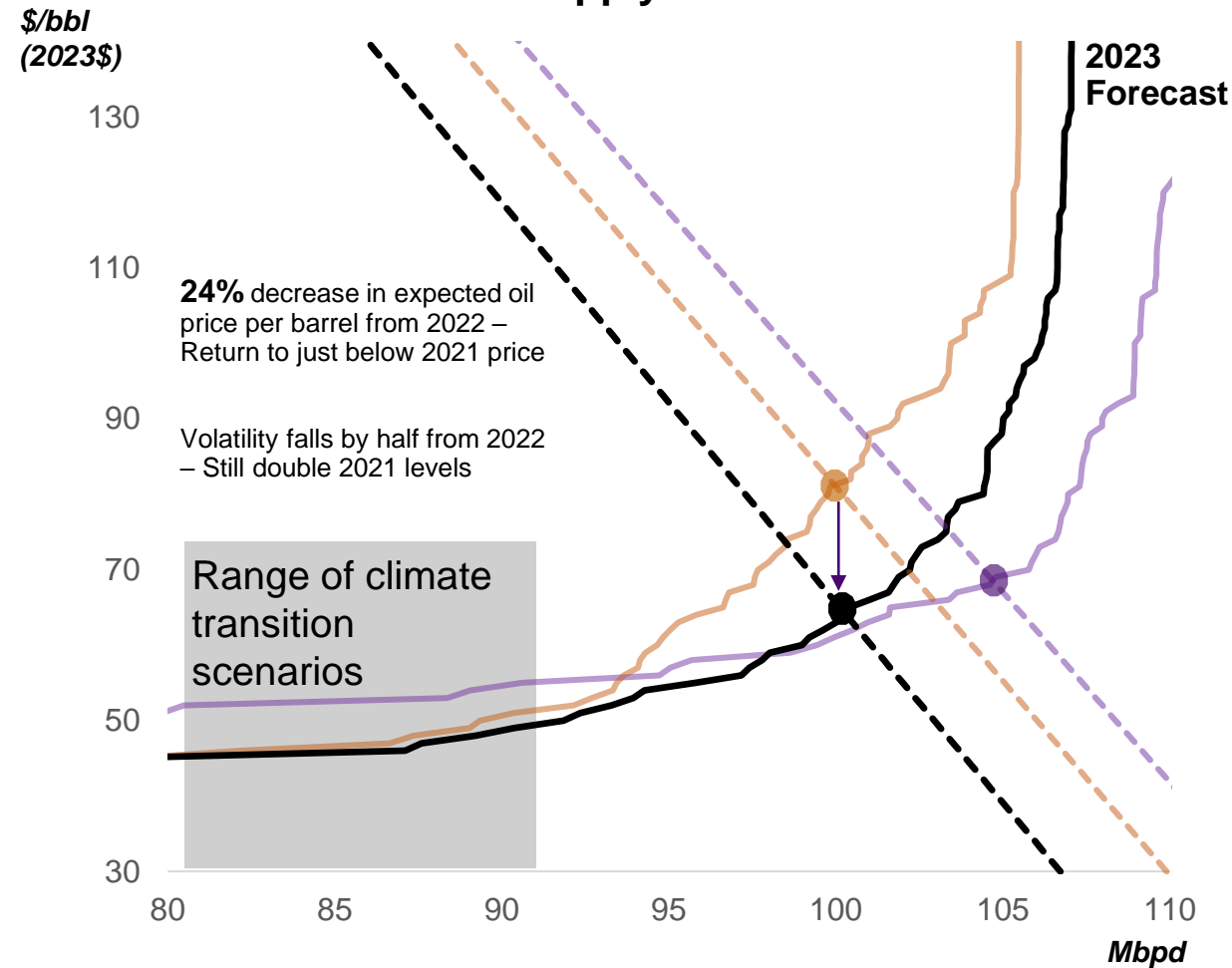


Sources: IEA, Rystad, WTW modelling

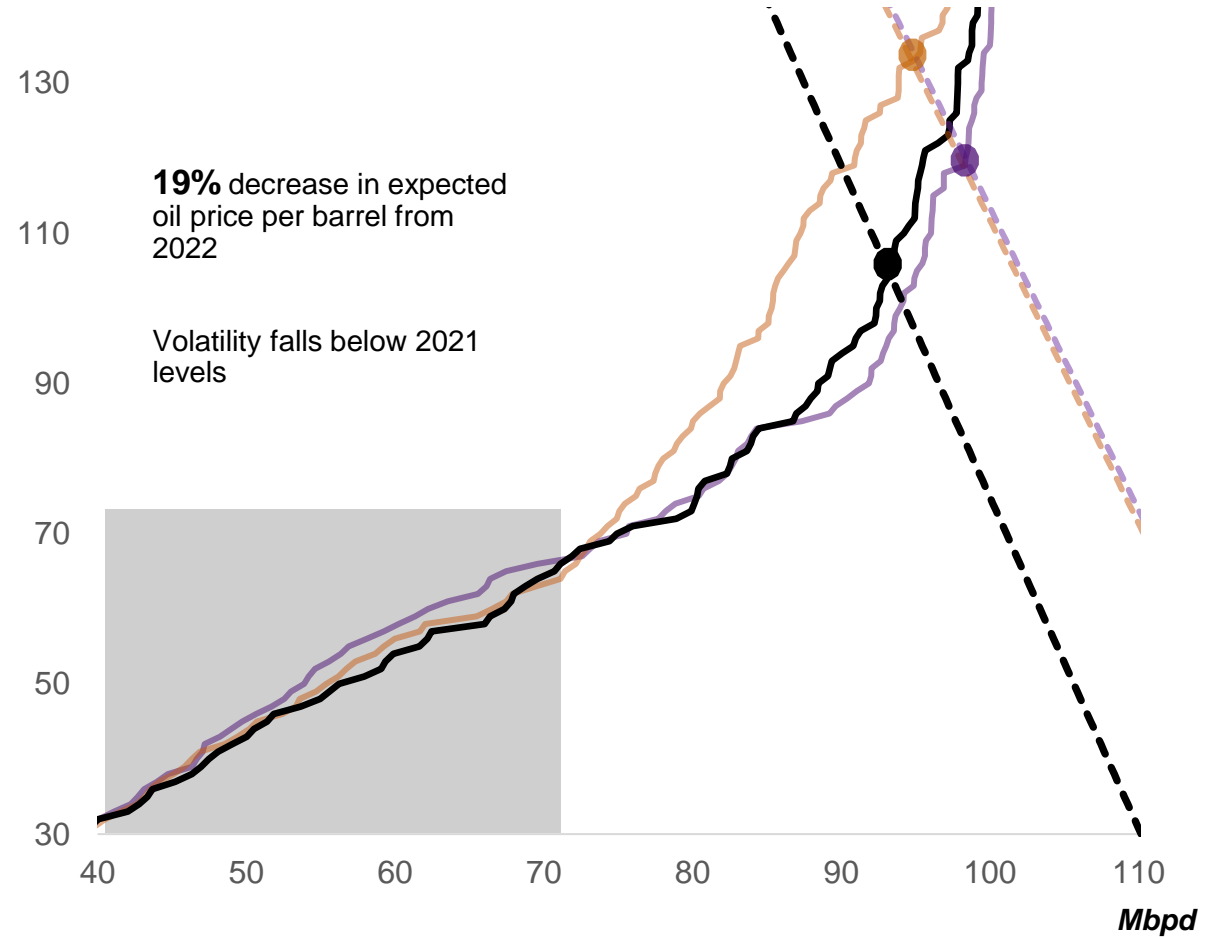
One year of disorder can completely realign risks

And again to 2023

2030 Crude Oil Supply and Demand Curves

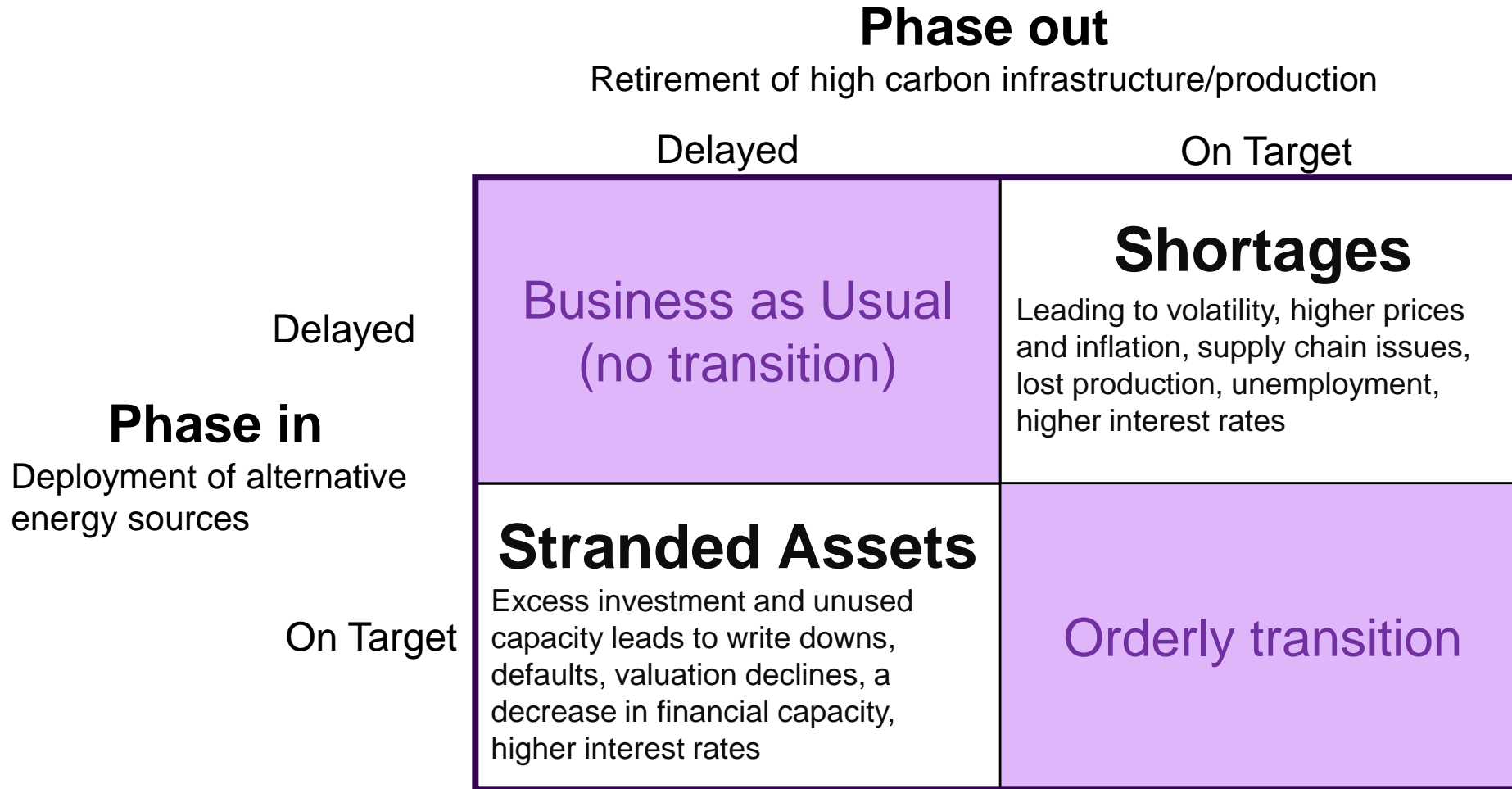


2040 Crude Oil Supply and Demand Curves

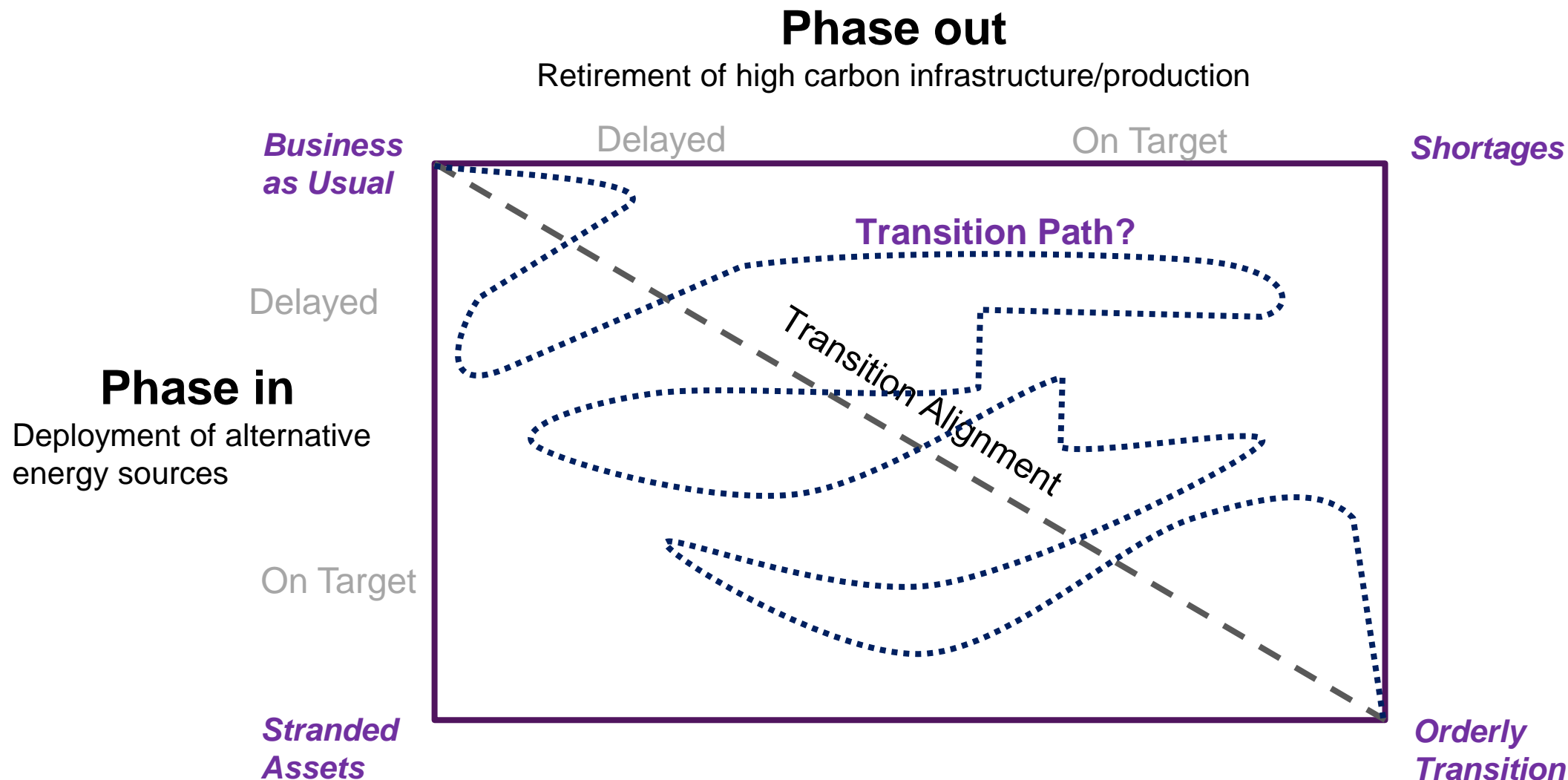


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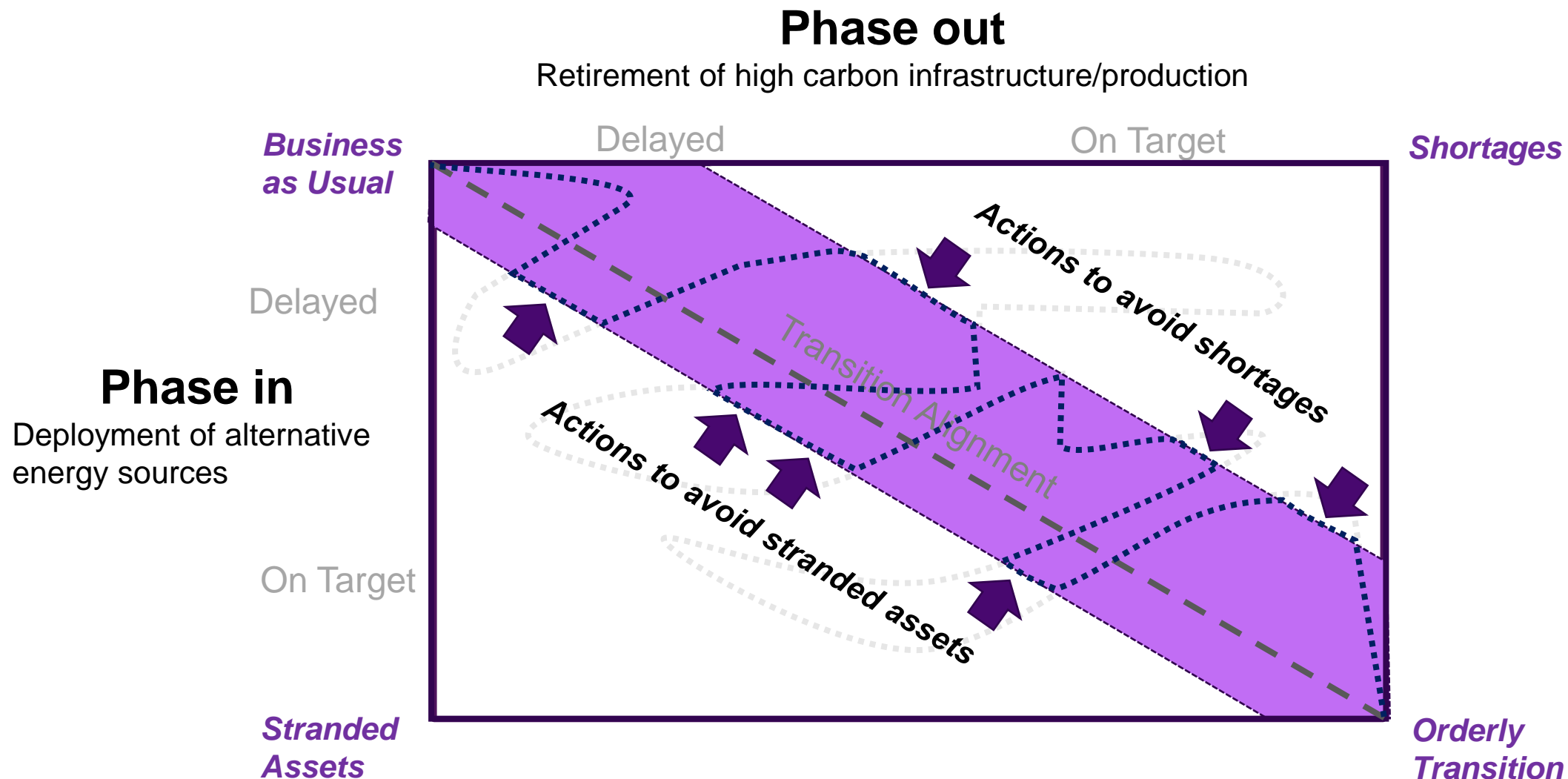
Disorder creates two types of risks



...And the path is likely to generate both types of risks

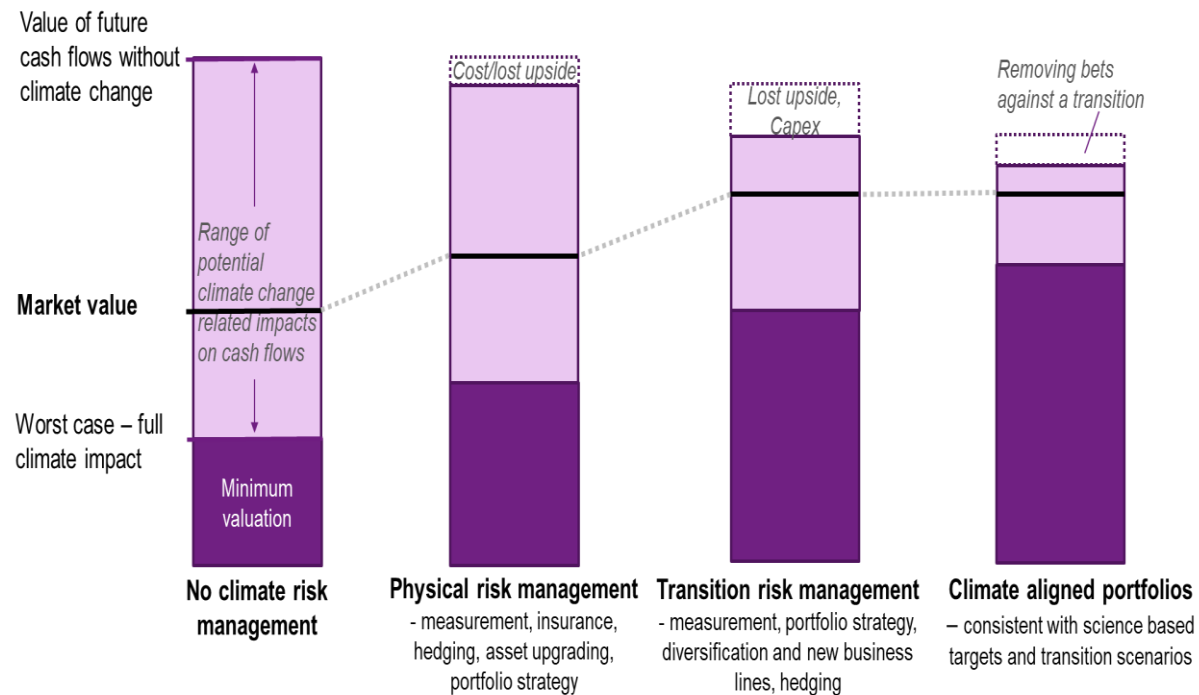


...And the path is likely to generate both types of risks



Tools to manage climate risk and improve value

Managing physical and transition risk to manage uncertainty/risk, and increase value



Risk Management actions	Risk management tools				
	Risk Measurement	Strategic evaluation	Portfolio analysis and strategy	Financial products/hedges	Insurance products
Avoid New high climate risk investments	X	X			
Improve Climate risk of existing investments	X	X			
Divest High risk investments	X	X	X		
Diversify To manage portfolio/company level risk	X	X	X		
Hedge Risks that cannot be improved/divested	X	X	X	X	
Insure Risks that cannot be otherwise managed	X	X	X	X	X

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