



Climate Change and it's Impact on Policy

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CARBON TRACKER: WHO WE ARE

Identity

Carbon Tracker is an independent non profit financial think tank funded by EU and US foundations interested in climate.

Vision

To enable a climate secure global energy market by aligning the capital markets with climate reality.

Mission

Mapping the transition for the fossil fuel industry to stay within a two degree budget.

Strategy

Empower **investors** to identify and switch off capital to the highest cost, highest carbon projects.



Engage with **companies** to re-assess both the viability of such projects and of their business model.



Educate mainstream **financial markets** and **policy-makers** over the risk of a disorderly transition.

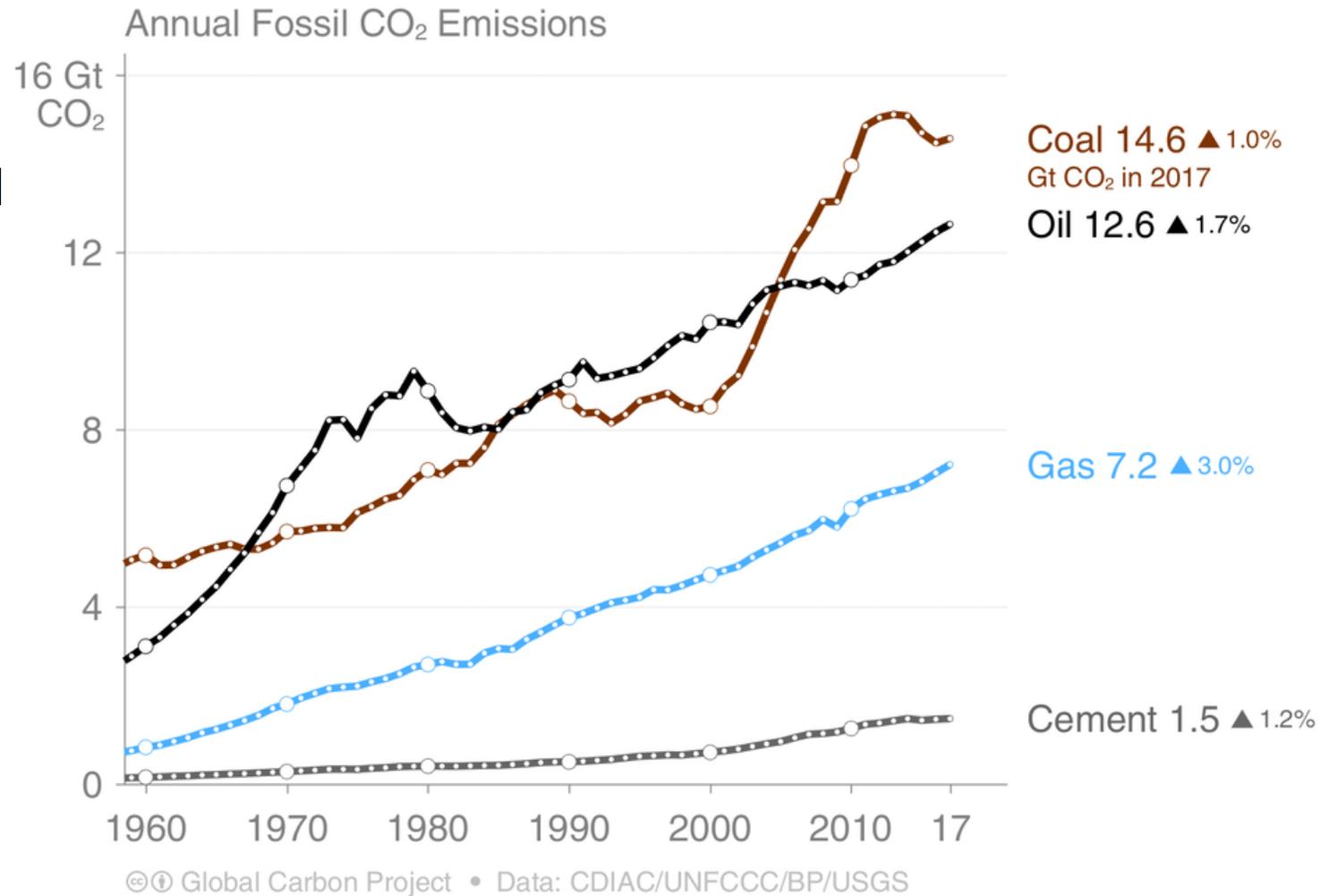


Work with **financial regulators** to bring transparency on carbon and stranded asset risk and the fossil fuel risk premium.



EMISSIONS FROM FOSSIL FUELS KEEP RISING

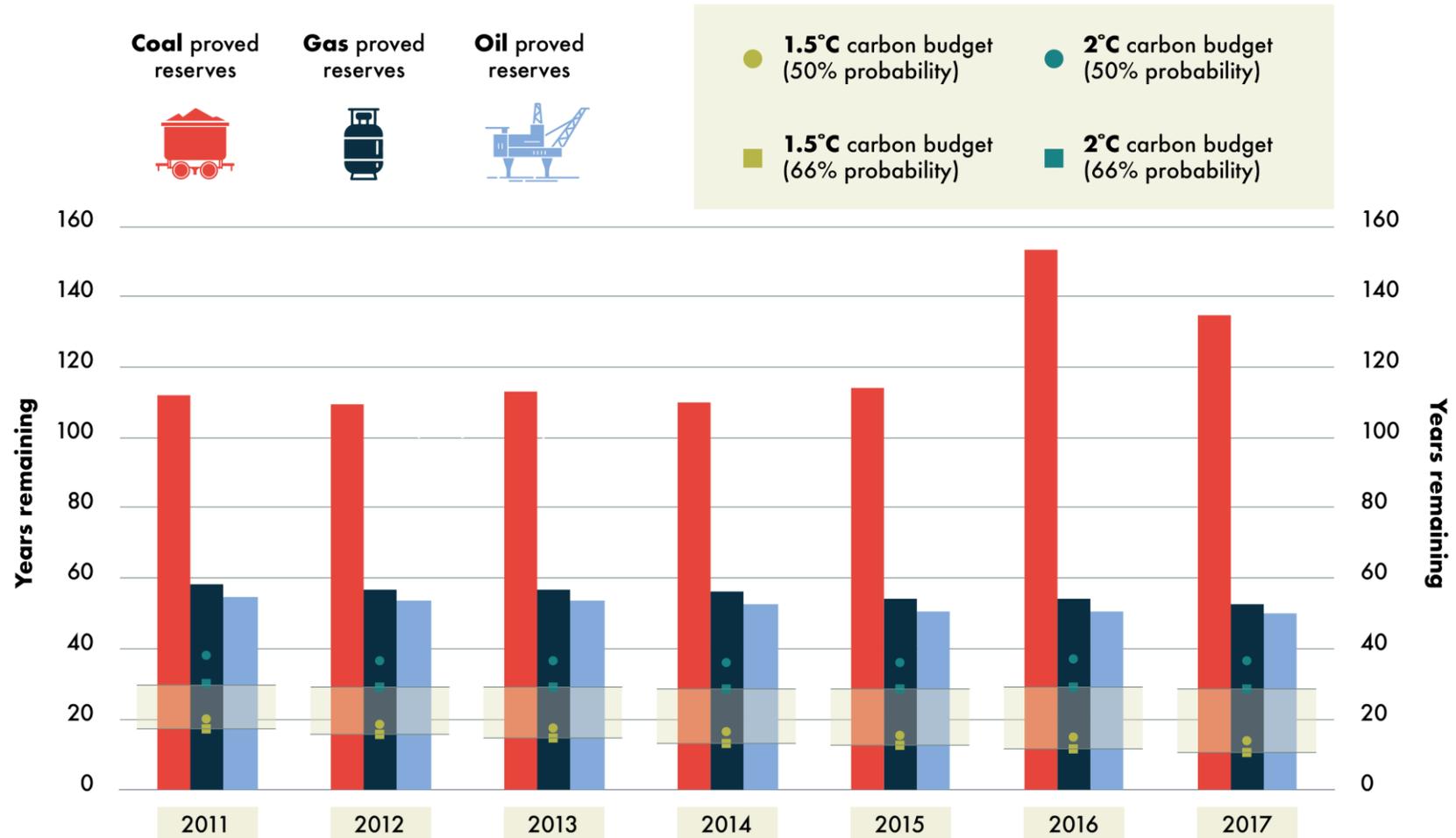
- Steep rises in emissions from coal and oil from 1990 onwards.
- Key reason for optimism is world in 2020 is completely different to that faced by governments in 2008. The cost of renewable energy technologies is down by over 90%.
- The cheapest source of electricity in almost every country in the world today is renewables.



FOSSIL FUEL RESERVES 'OVERHANG' CONTINUES TO GROW

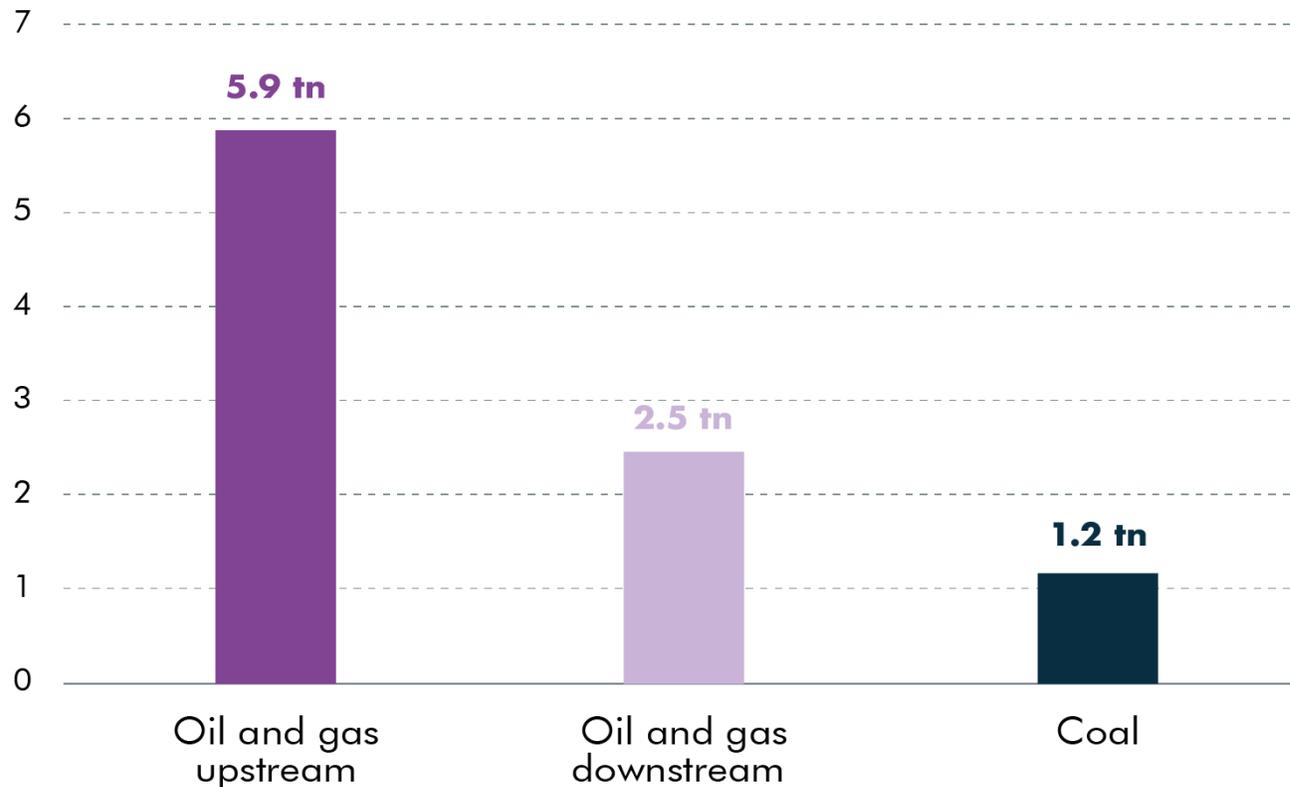
Despite the Paris Agreement the fossil fuel industry is not diverting from business as usual.

There is an overhang in all fossil fuels, with coal reserves life exceeding the remaining "well-below 2°C" budget life by a factor of 7.



SUPPLY SIDE INFRASTRUCTURE ADDS \$900BN PA

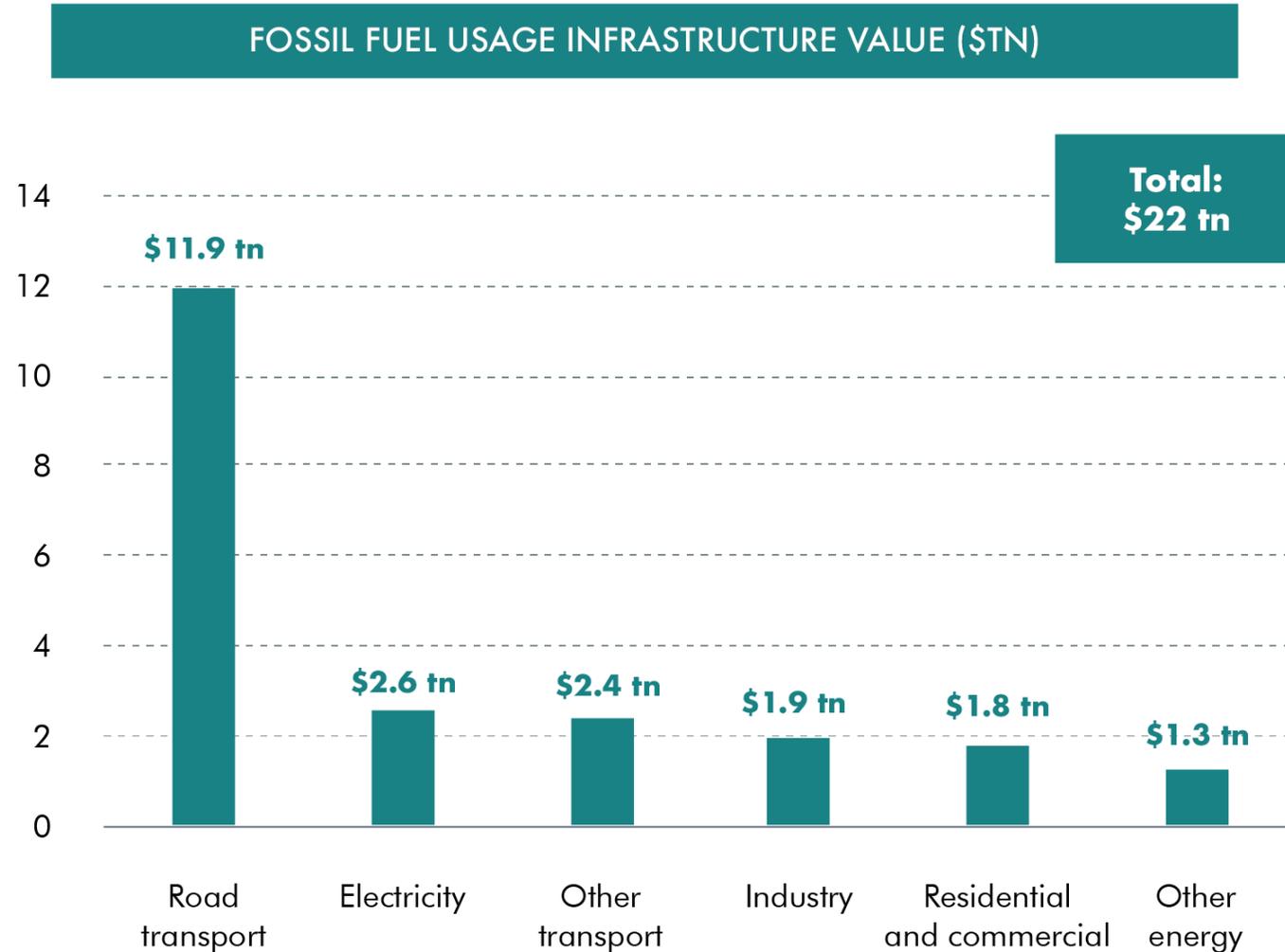
FOSSIL FUEL SUPPLY INFRASTRUCTURE ASSET VALUE (\$TN)



- 65,000 Oil fields and 2 million wells upstream
- O&G Downstream including pipelines, facilities etc
- Coal infrastructure inc mines
- Total of \$10 trillion of which 60% is oil and gas upstream

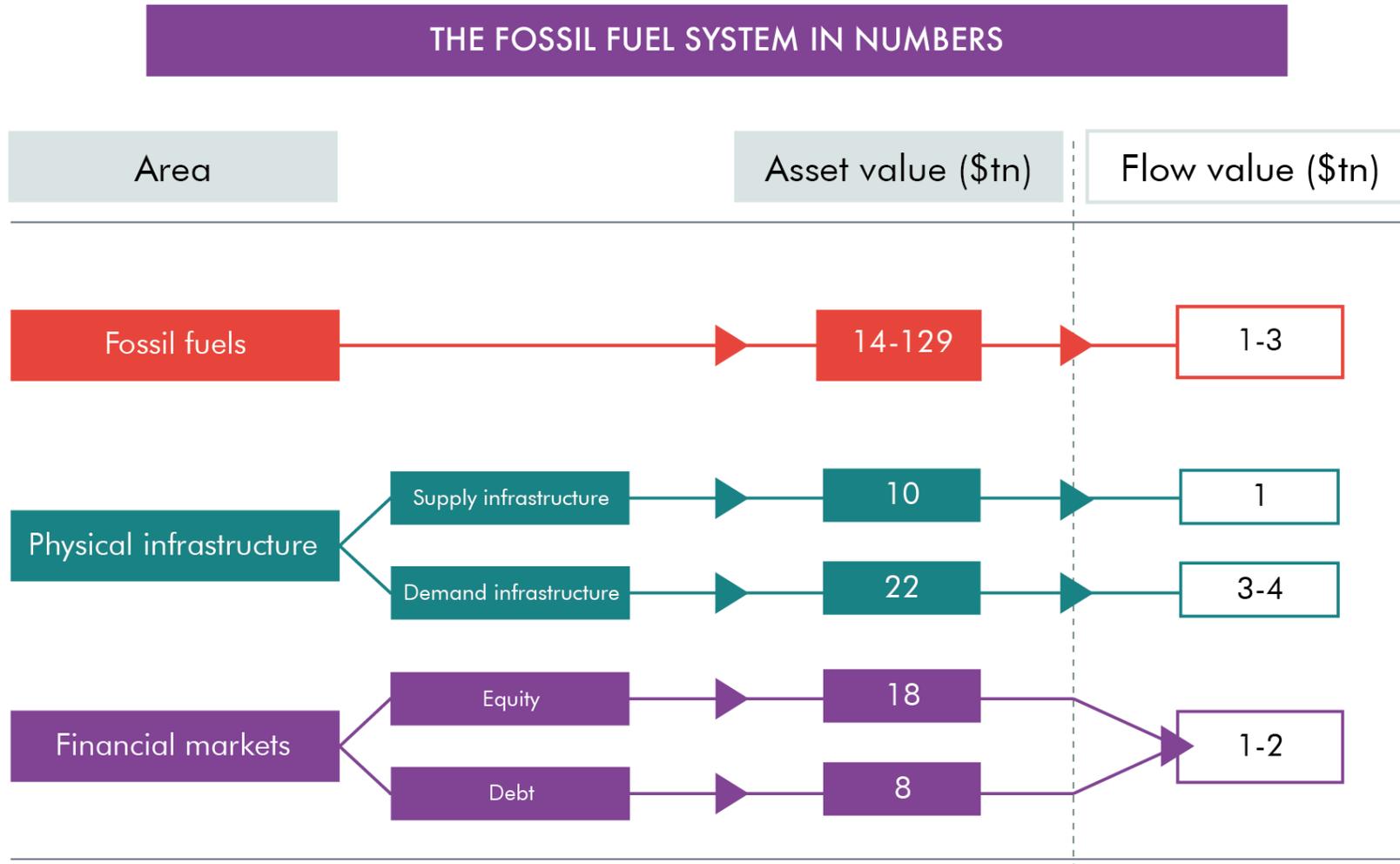
Source: IEA WEI, Carbon Tracker

\$22 TN OF DEMAND SIDE INFRASTRUCTURE



- Road: 1,100m cars and 400m commercial vehicles
- Electricity: 4,300 GW of fossil fuel power gen
- Transport: 23,000 planes, 2000mt of shipping
- Industry: 6,000mt of cement, 2,200mt of steel capacity, 1,600mt of petchem, 65mt of aluminium etc
- Value of assets is \$22tn

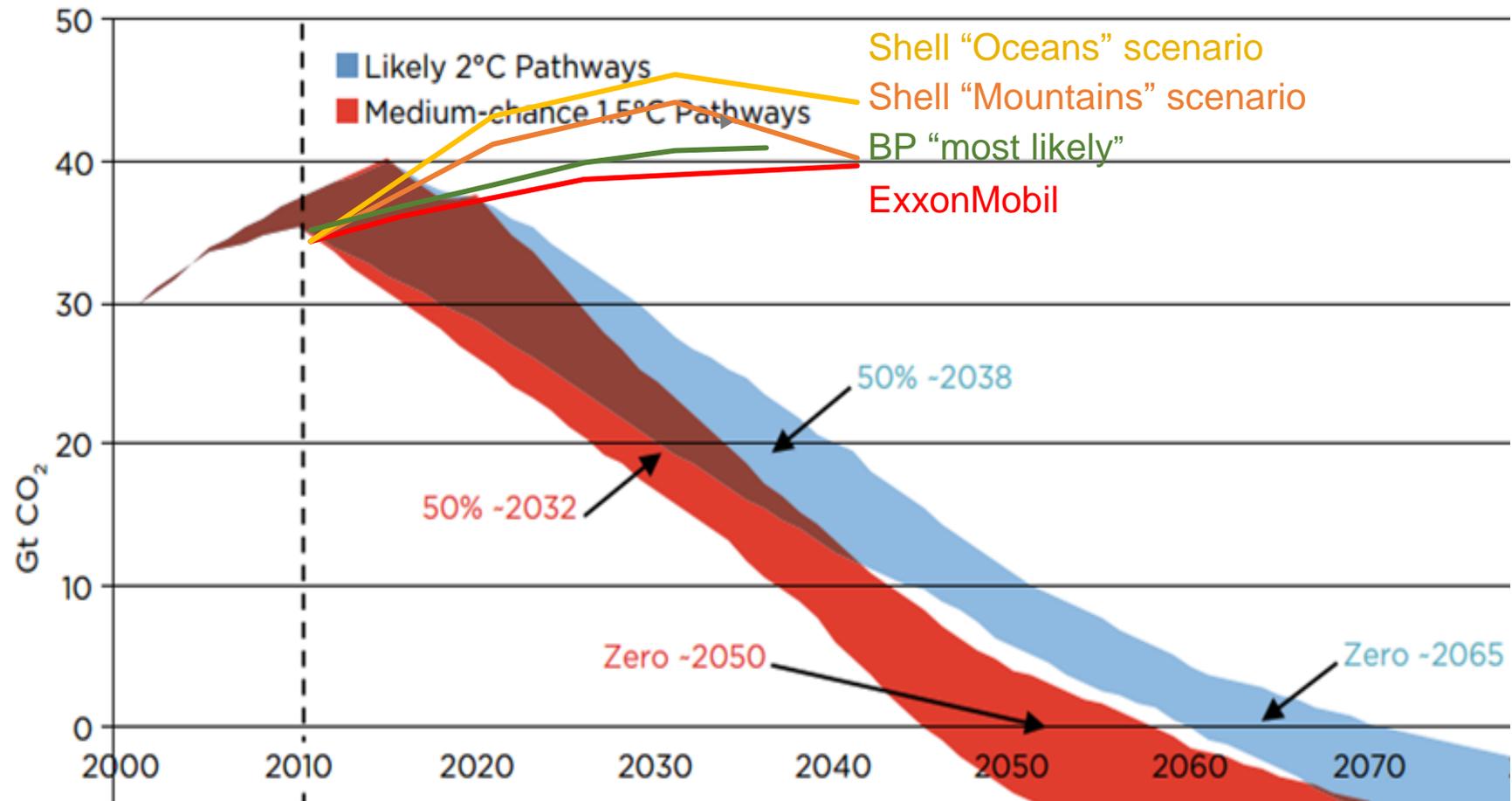
THE FOSSIL FUEL SYSTEM IN NUMBERS IN \$TRILLIONS



FOSSIL FUEL COMPANIES PLAN FOR CLIMATE FAILURE....

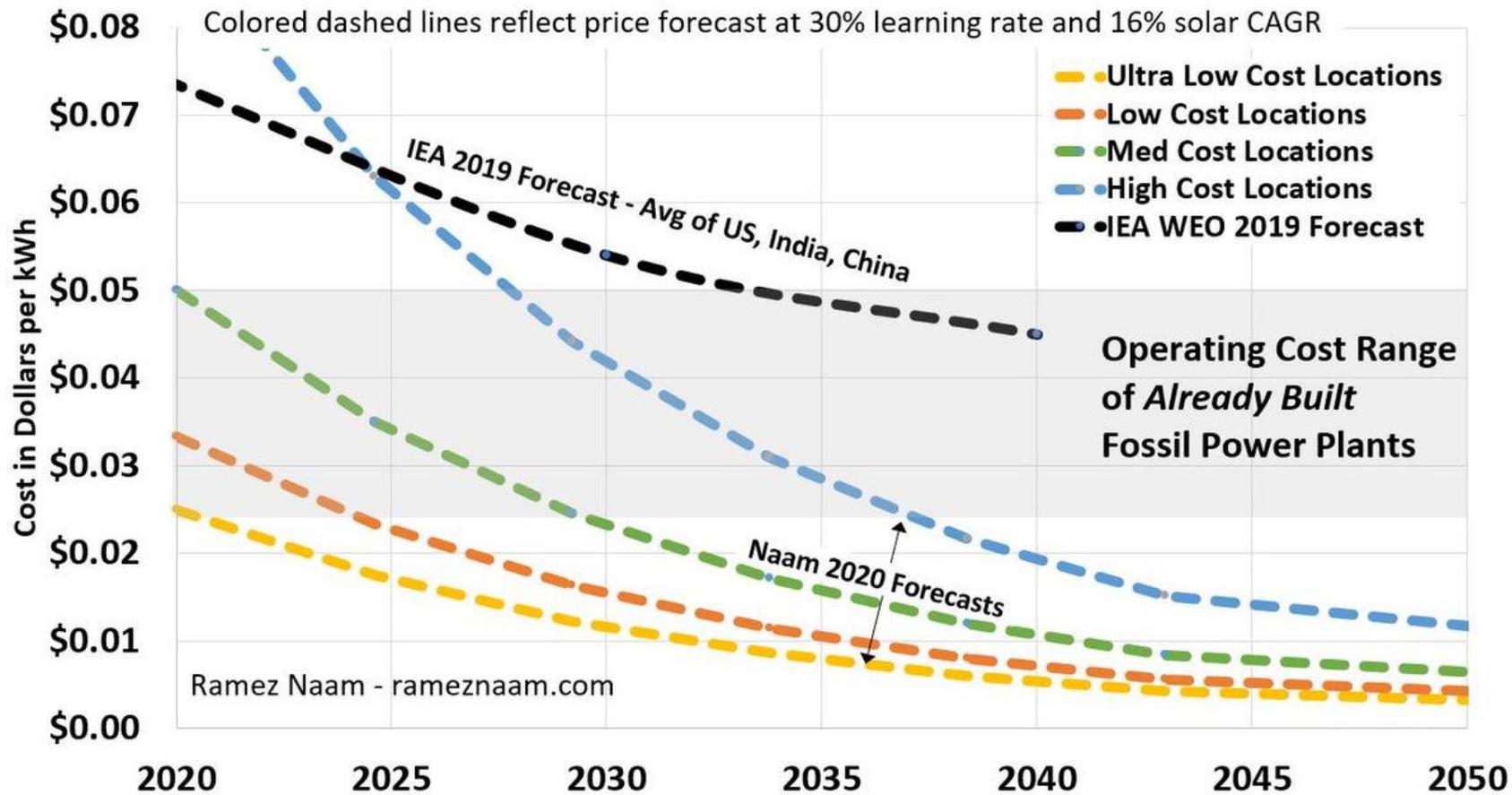


Range of IPCC emissions scenarios (from all sources) consistent with Paris goals VS corporate planning scenarios



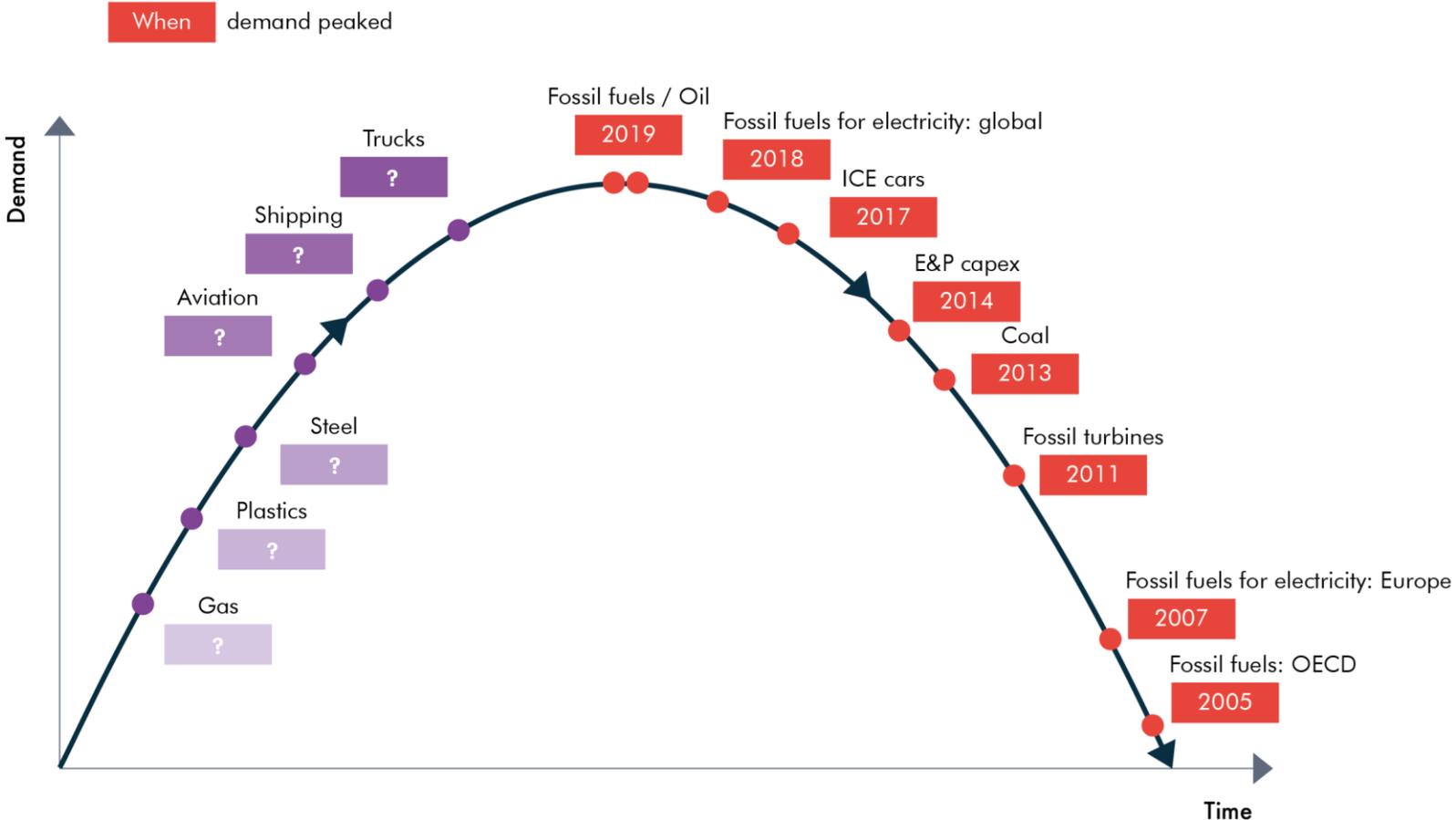
RENEWABLE COSTS KEEP FALLING

Expected price of solar electricity \$/ KWh



NEW WORLD OF PEAK DEMAND FOR FOSSIL FUELS

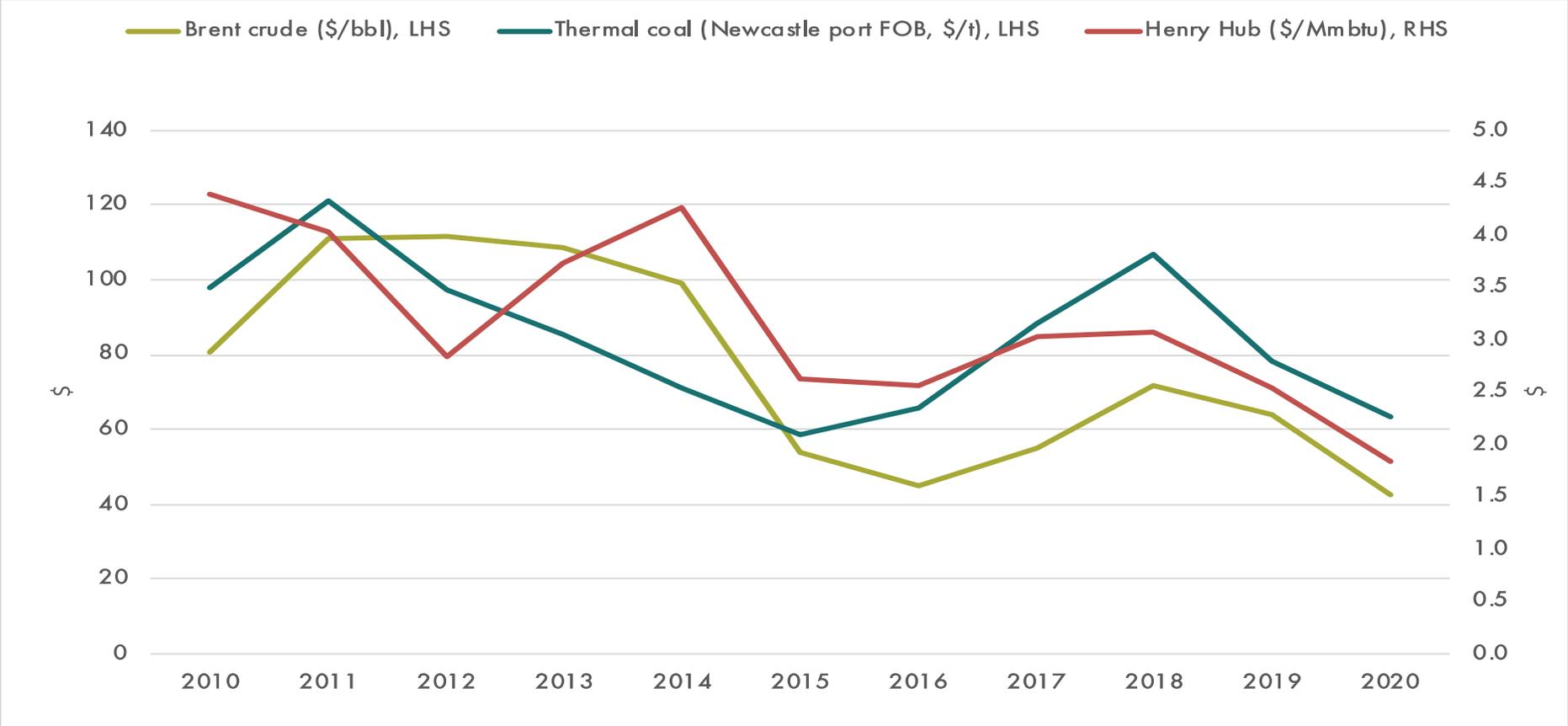
PEAK DEMAND DETAIL



Source: Carbon Tracker

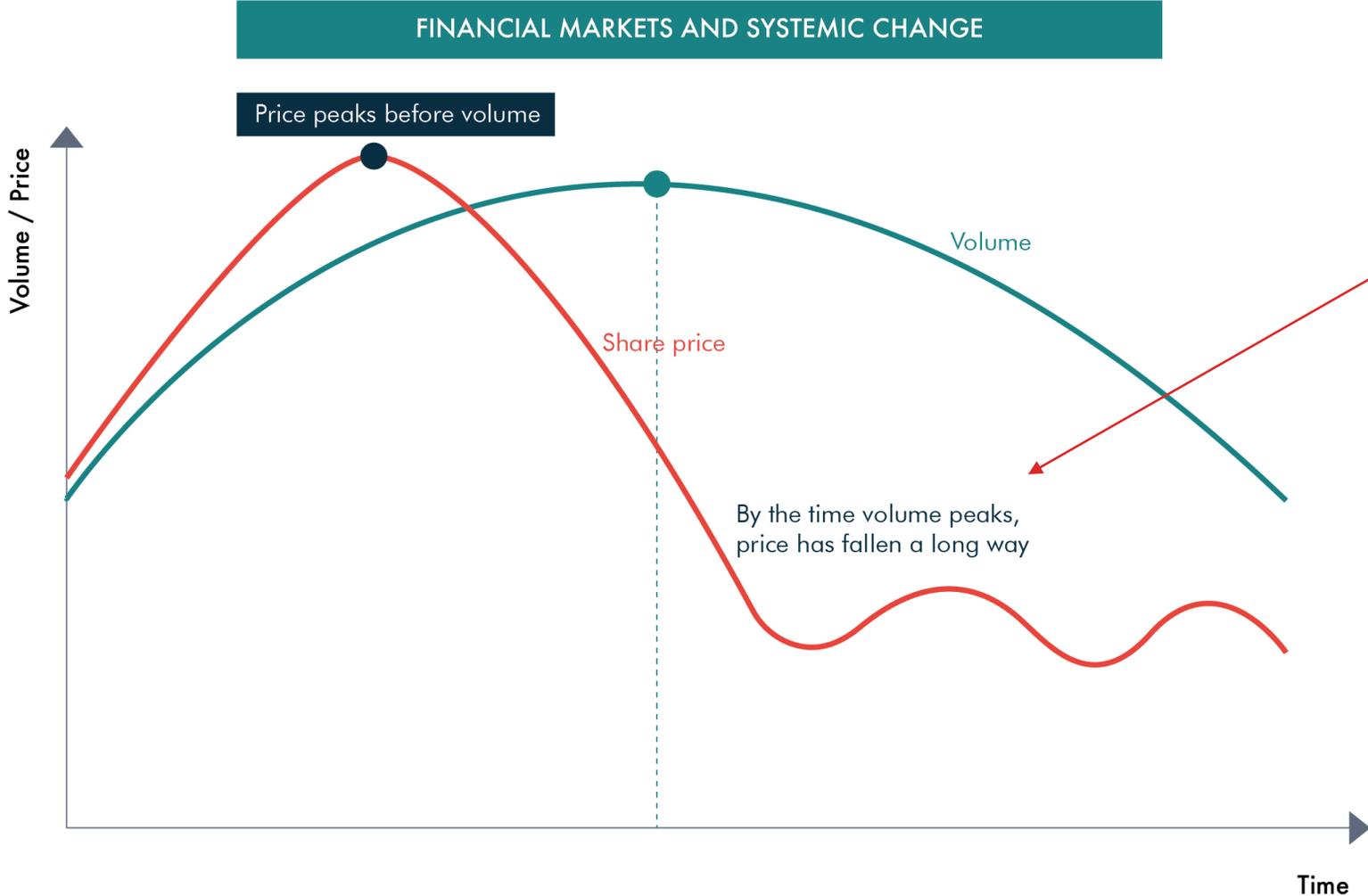
FALLING DEMAND LEADING TO FALLING PRICES

Fossil fuel annual average prices for oil, coal and gas



Source: Bloomberg

HOW EQUITY MARKETS REACT AT THE PEAK: THEORY



By the time volume peaks, share prices have already fallen a long way

HOW EQUITY MARKETS REACT IN PRACTICE: THEY FALL

FOSSIL FUEL SUBSECTOR PERFORMANCE



Source: Bloomberg

IMPLICATIONS FOR FINANCIAL ANALYSTS



New competition



Lower prices



Higher taxes



Asset write-downs



Higher discount rates



Lower terminal values



Clean-up costs



Question the assumptions made by the banks

Source: Carbon Tracker



Thanks for listening

For more information please visit:

www.carbontracker.org

@CarbonBubble

If you are interested in knowing more,
please get in touch:

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Disclaimer

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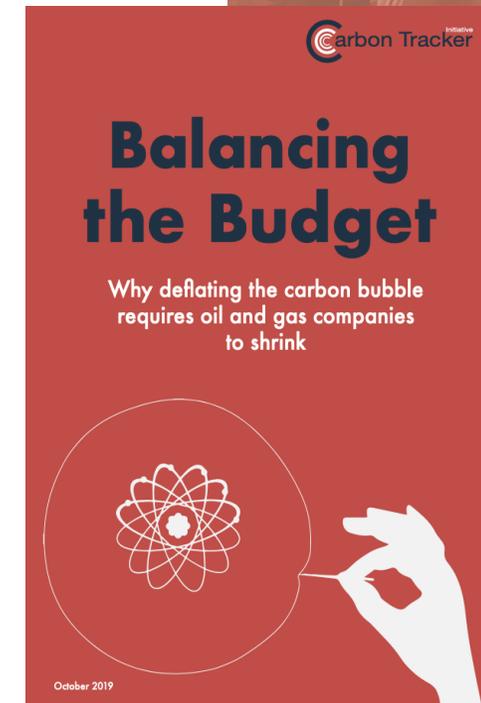
WHOSE BREAKING THE BUDGET?

- There are **finite limits** to carbon emissions for any warming outcome: the **Carbon Budget**
- Far more fossil fuel is available that fits within these limits – highest cost assets **run greater risk of destroying value** in the energy transition
- Despite the rhetoric, the **oil and gas industry continues to invest billions** on projects that do not fit in a low-carbon demand pathway

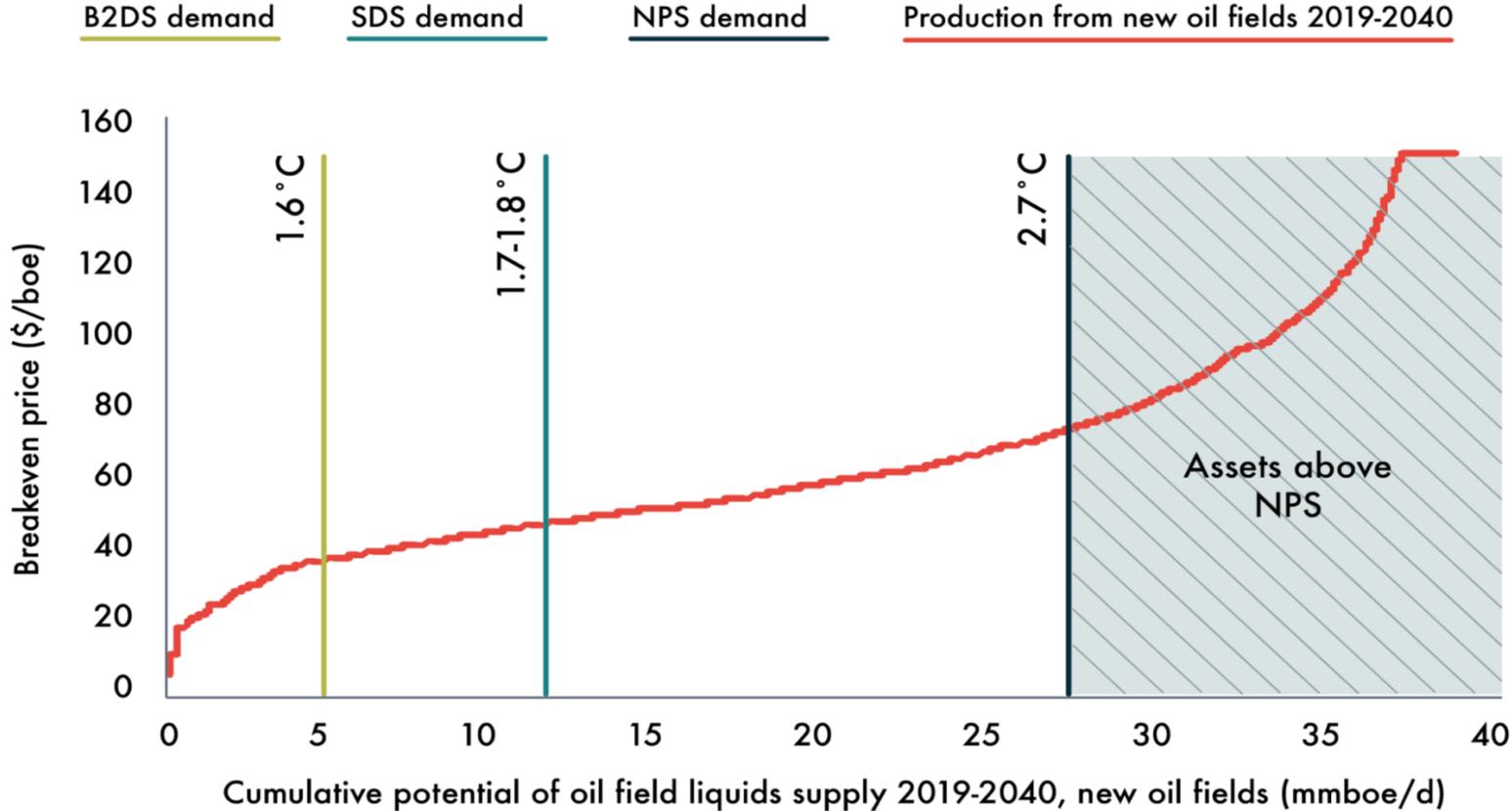
Reports

- *Breaking the Habit*
- *Balancing the Budget*

2 Degrees of Separation Tool



COST CURVES ASSUME ECONOMIC LOGIC



- Carbon Tracker cost curve approach assumes economic logic plays out
- Lowest cost supply will be most competitive for reduced demand
- Risk mostly with future project options – reflects reality that capital has been sunk on existing projects

Source: Rystad Energy, IEA, CTI analysis
 Note: potential oil supply with a breakeven of >\$150/boe has been aggregated at that level

MAJORS NEED TO REDUCE PRODUCTION BY 35% BY 2040

- Same least-cost methodology as capex analysis applied to define projects within a given scenario
- Cumulative production (2019-2040) aggregated by company using B2DS as benchmark
- Linear projection to 2040 defines required reduction
- Production and capex results are complementary

Company	% of NPS Capex Outside B2DS to 2030	Minimum Production Reduction	
		2040 (vs 2019)	Annual Decline
ExxonMobil	60% - 70%	55%	2.4%
Shell	30% - 40%	10%	0.5%
Chevron	30% - 40%	35%	1.6%
BP	20% - 30%	25%	1.1%
Total	30% - 40%	35%	1.7%
Eni	30% - 40%	40%	1.8%
ConocoPhillips	40% - 50%	85%	3.8%
Subtotal - Majors	-	35%	1.7%