



Covid-19 and the energy transition

Presentation to E+ Energy Transition Institute

Kingsmill Bond. May, 2020

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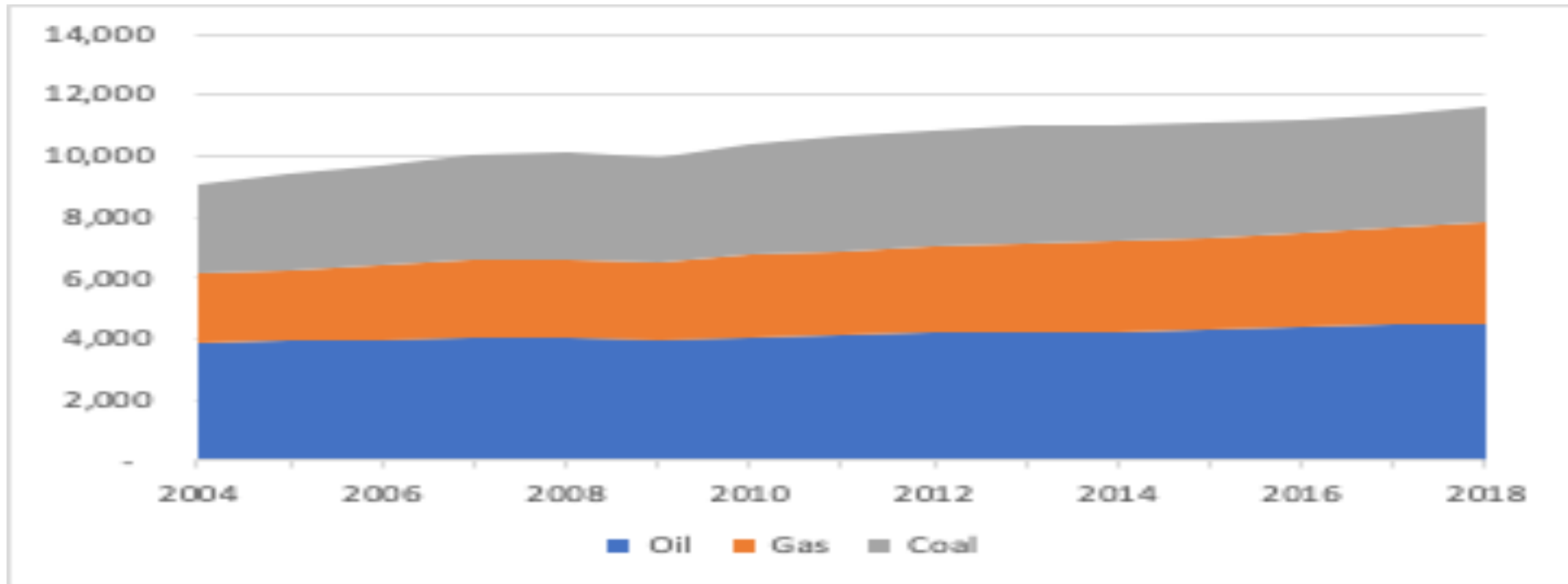
The new world

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Implications for financial markets

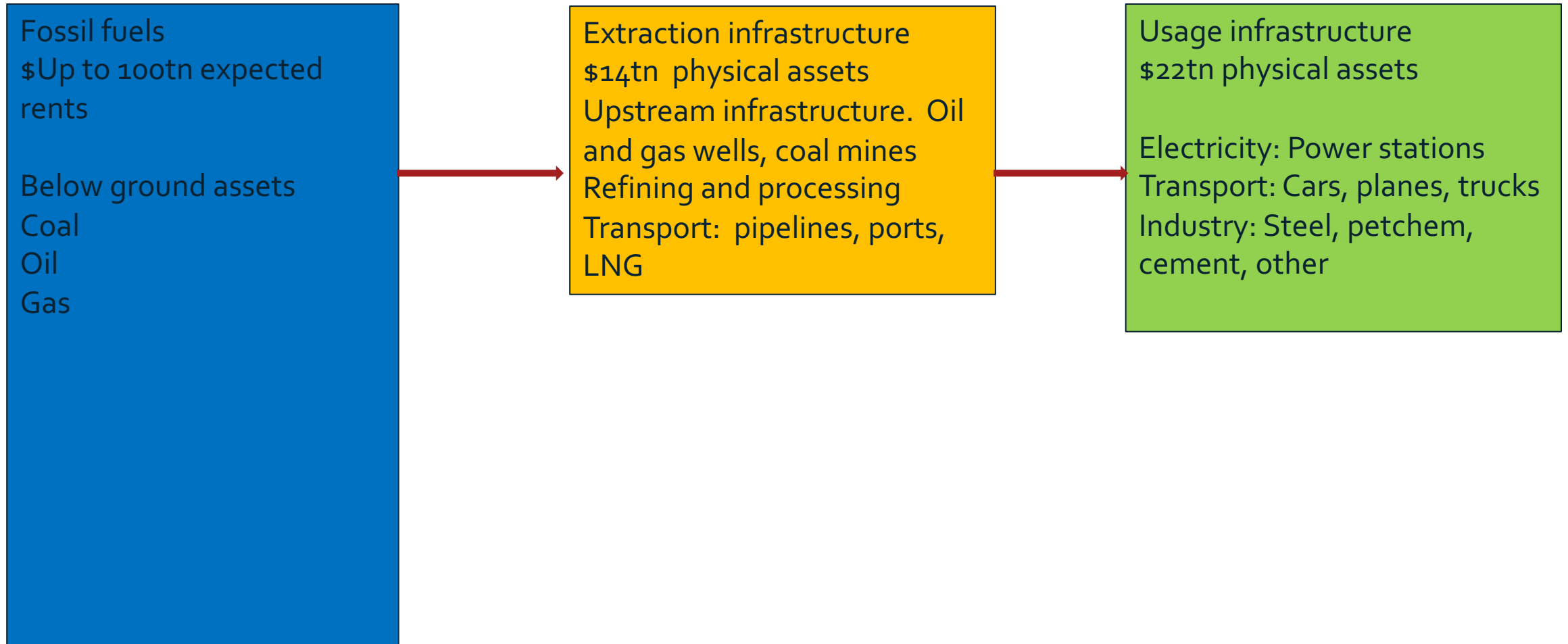
1: Dominant low growth fossil fuels

Energy demand mtoe



Source: BP

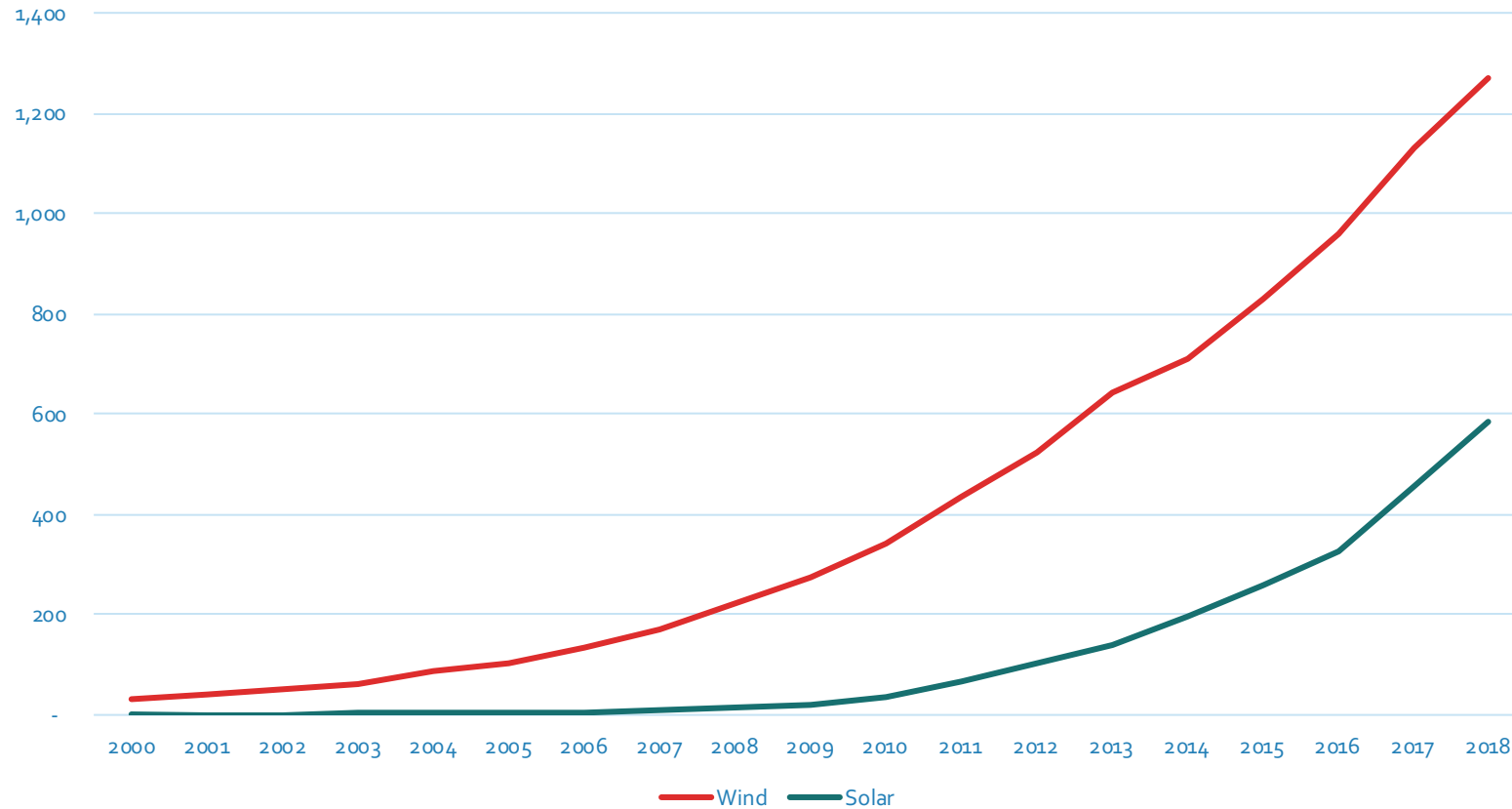
A massive fossil fuel system



Source: Carbon Tracker

Fast growth renewables

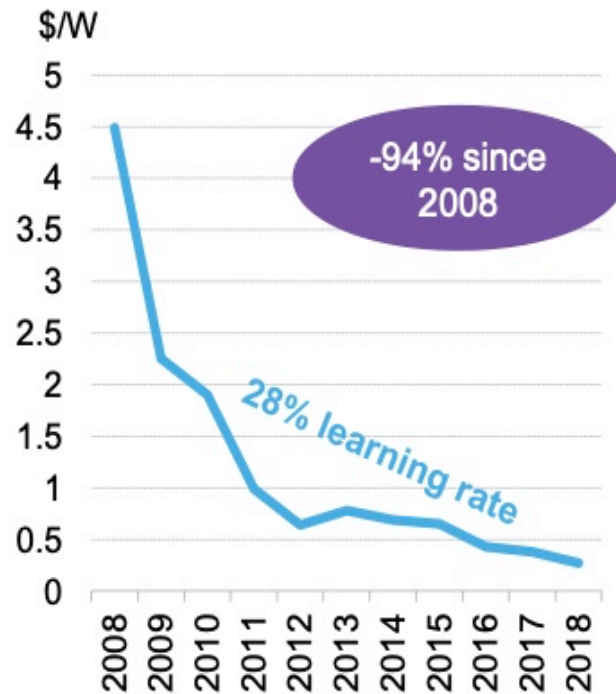
Solar and wind generation (TWh)



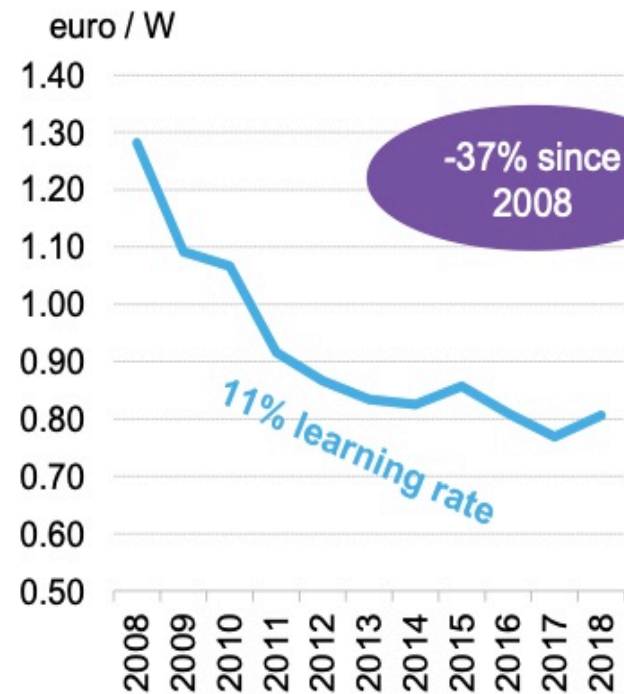
Source: BP statistical review of world energy

Propelled by technology learning curves

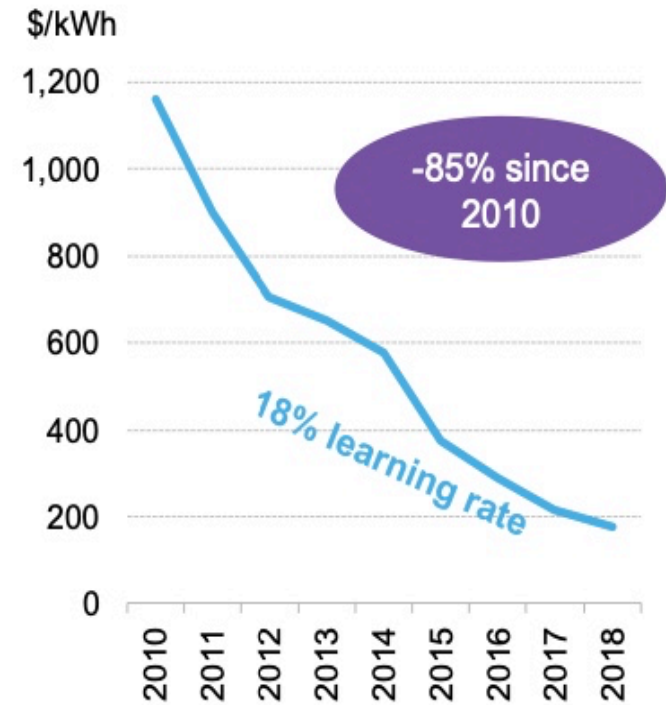
Solar PV module prices



Onshore wind turbine prices



Lithium-ion battery prices



Source: BloombergNEF.

Recently cheaper than fossil fuels

Figure 79: Most competitive source of new bulk generation in 2014



Source: BloombergNEF. Note: Reflective of the cheapest benchmark project for each technology and market.

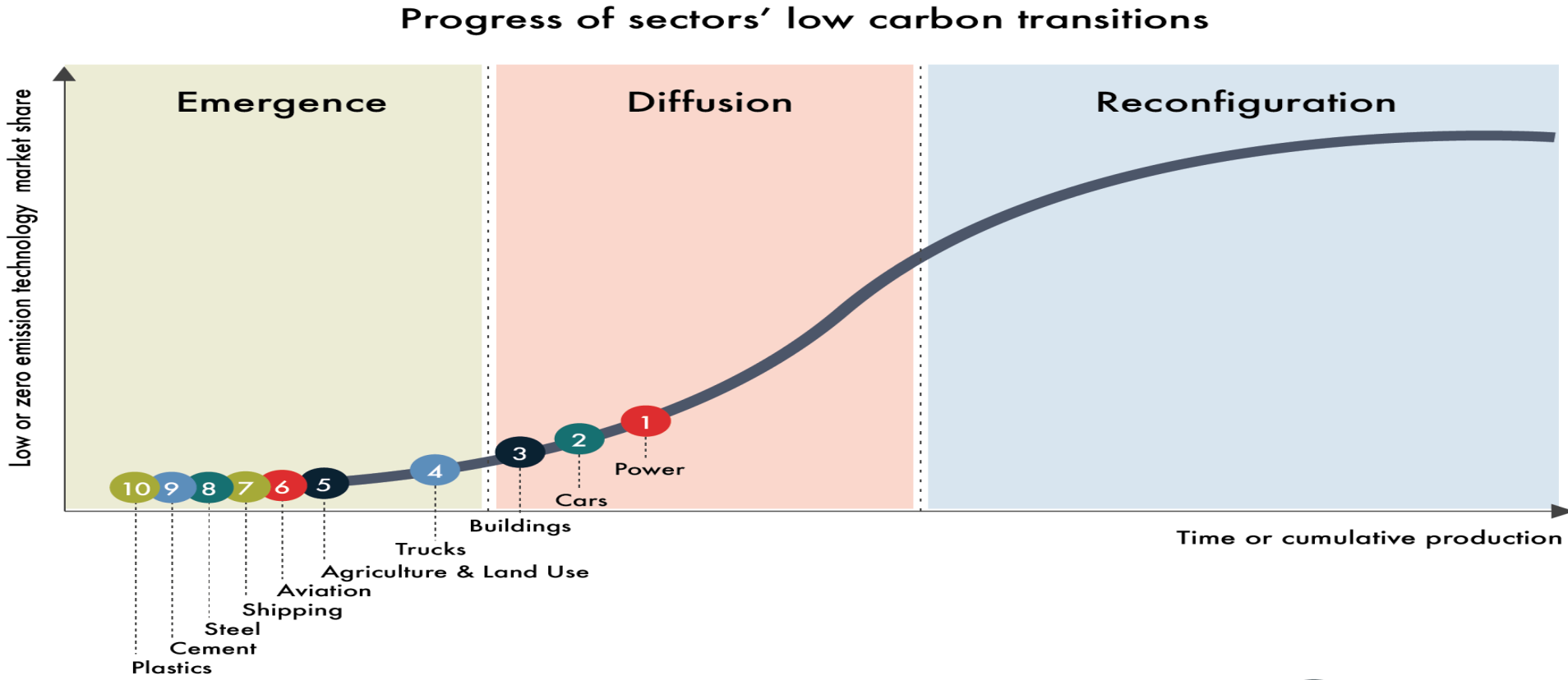
Figure 80: Most competitive source of new bulk generation in 2019



Source: BloombergNEF. Note: Reflective of the cheapest benchmark project for each technology and market.

Source: BNEF

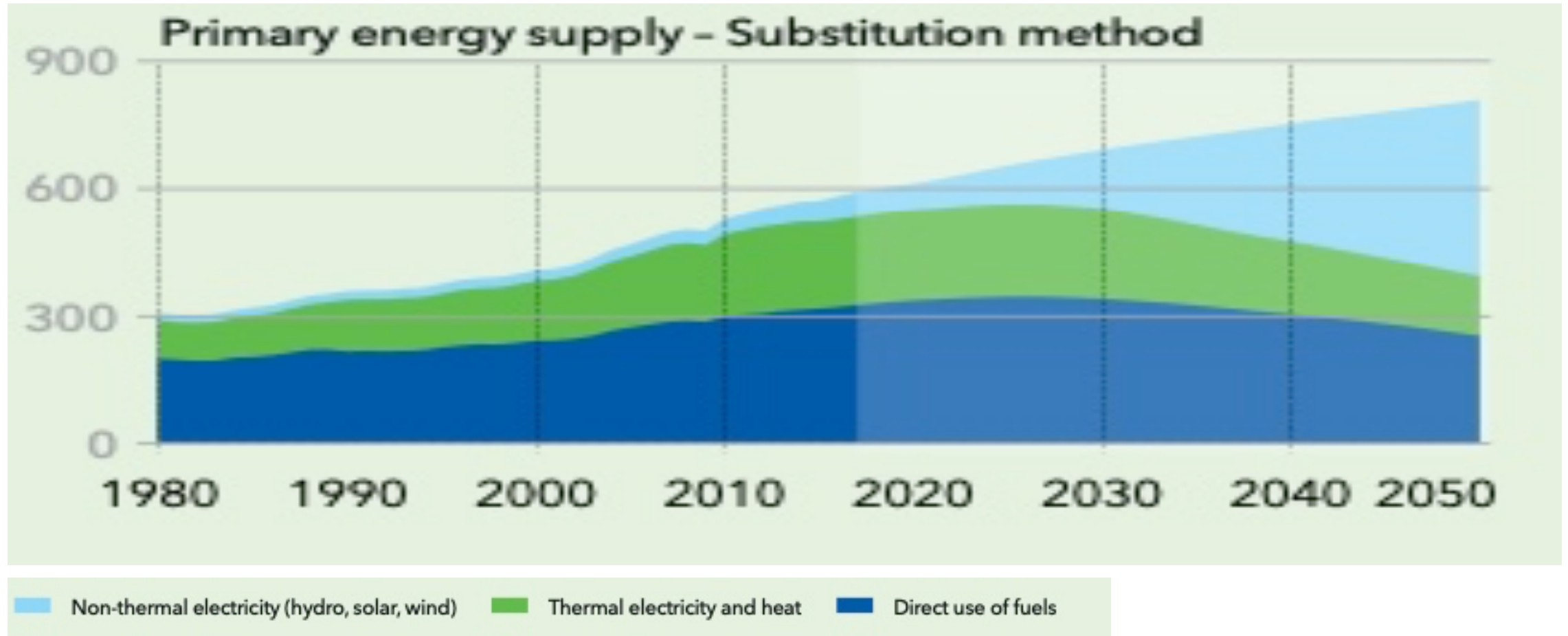
Disruption spreading to new areas



Source: Accelerating the low carbon transition, D. Victor, F. Geels, S. Sharpe, Dec 2019.



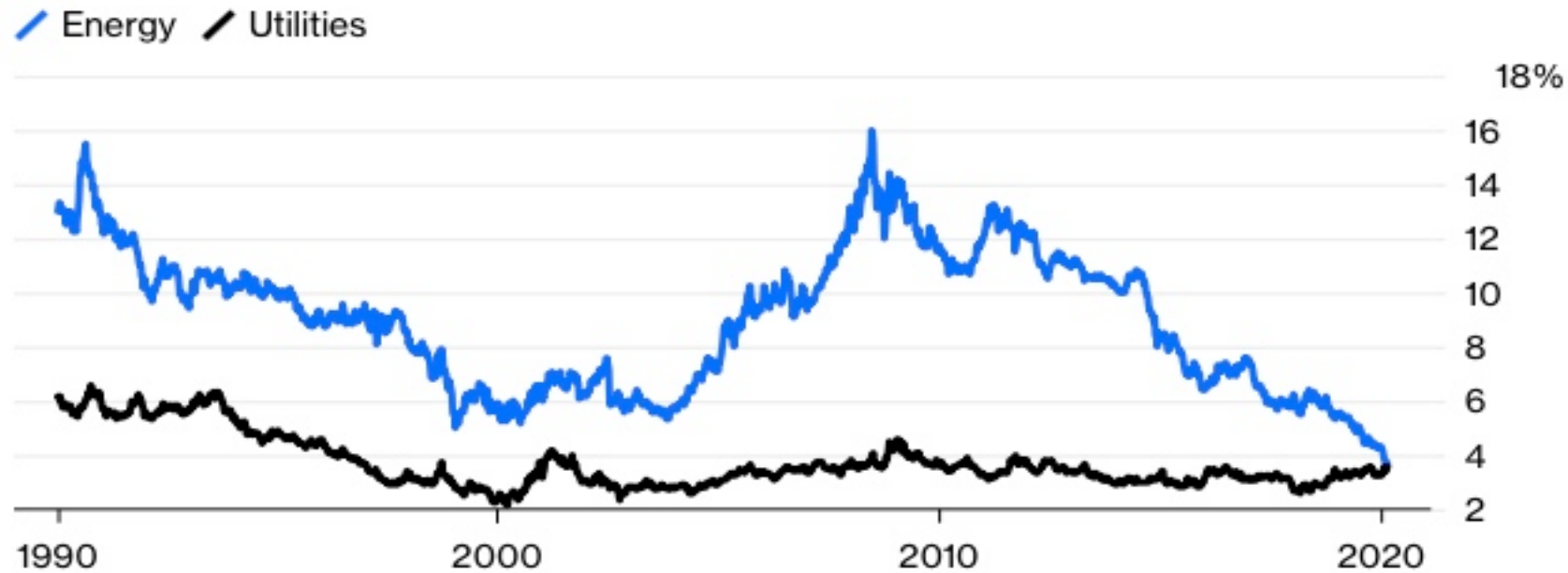
So the fossil fuel peak was in sight



Source: DNV GL

And investors had noticed

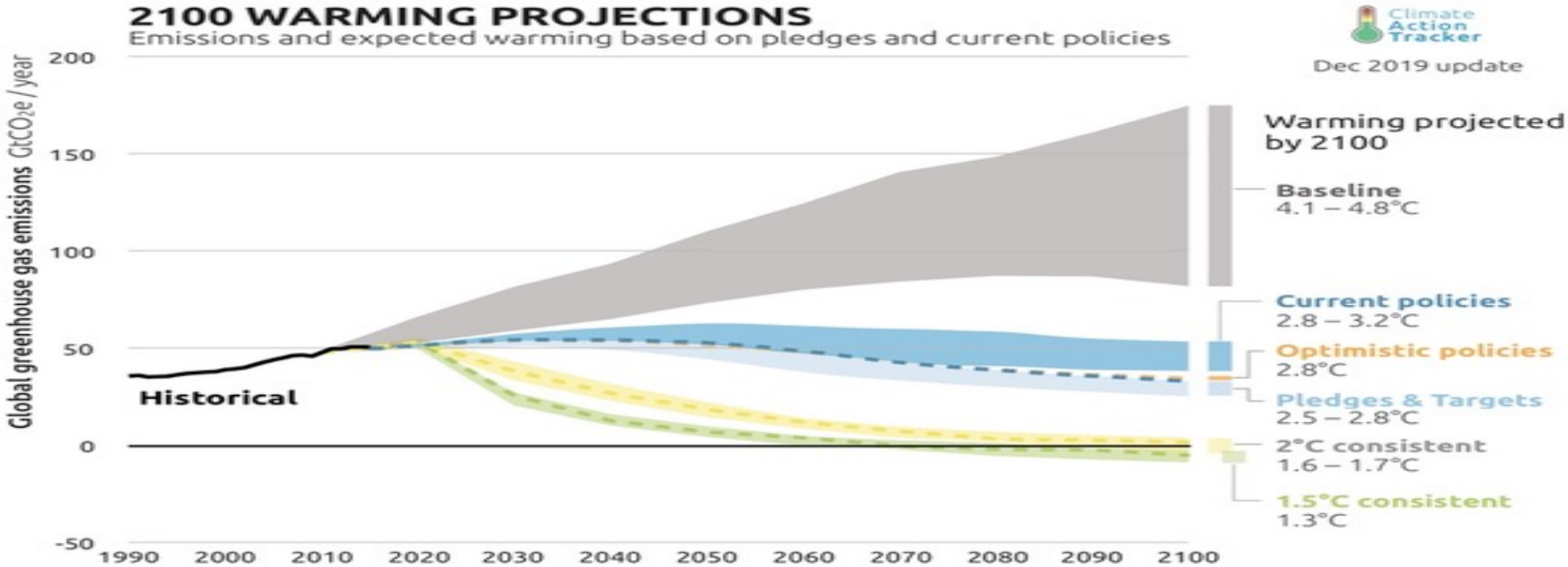
Energy sector share of the S&P Index



Source: Bloomberg

Pressure on policymakers: global warming

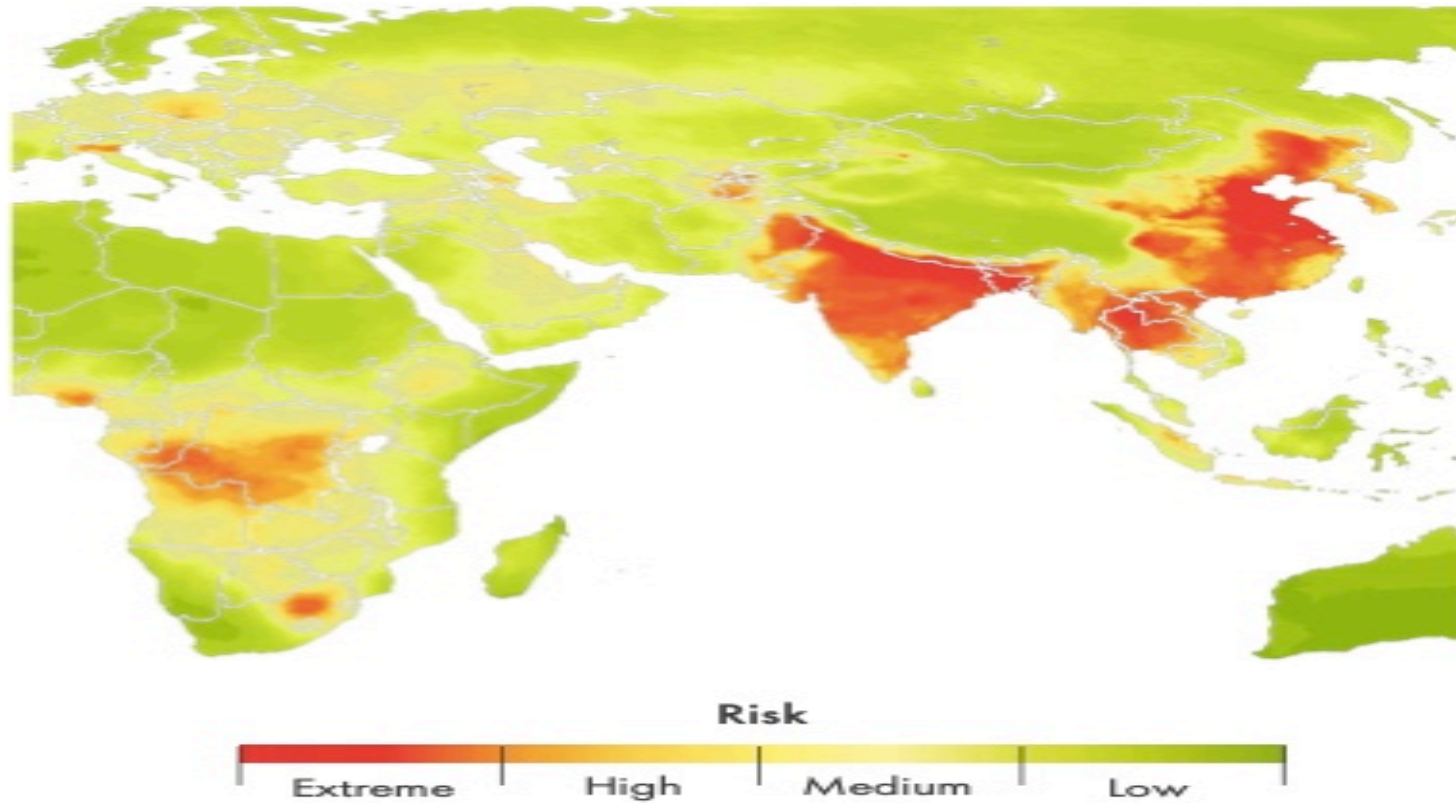
Greenhouse gas emissions and the global temperature rise



Source: Climate Action Tracker

Local pollution

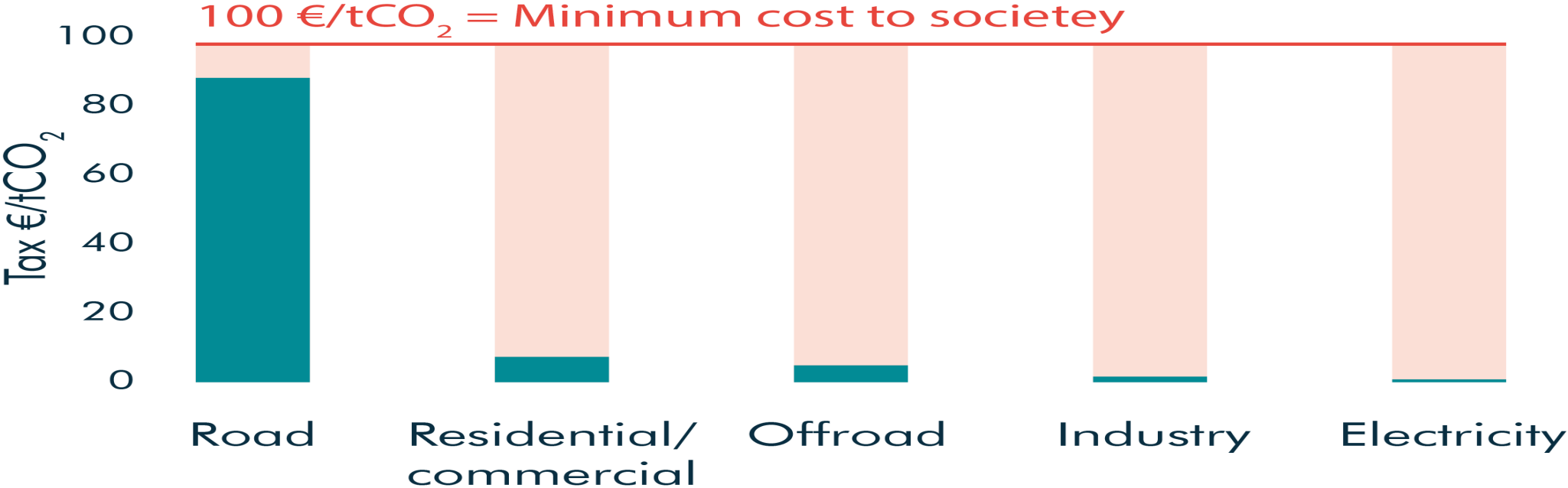
Air quality index 2018



Source: Shell

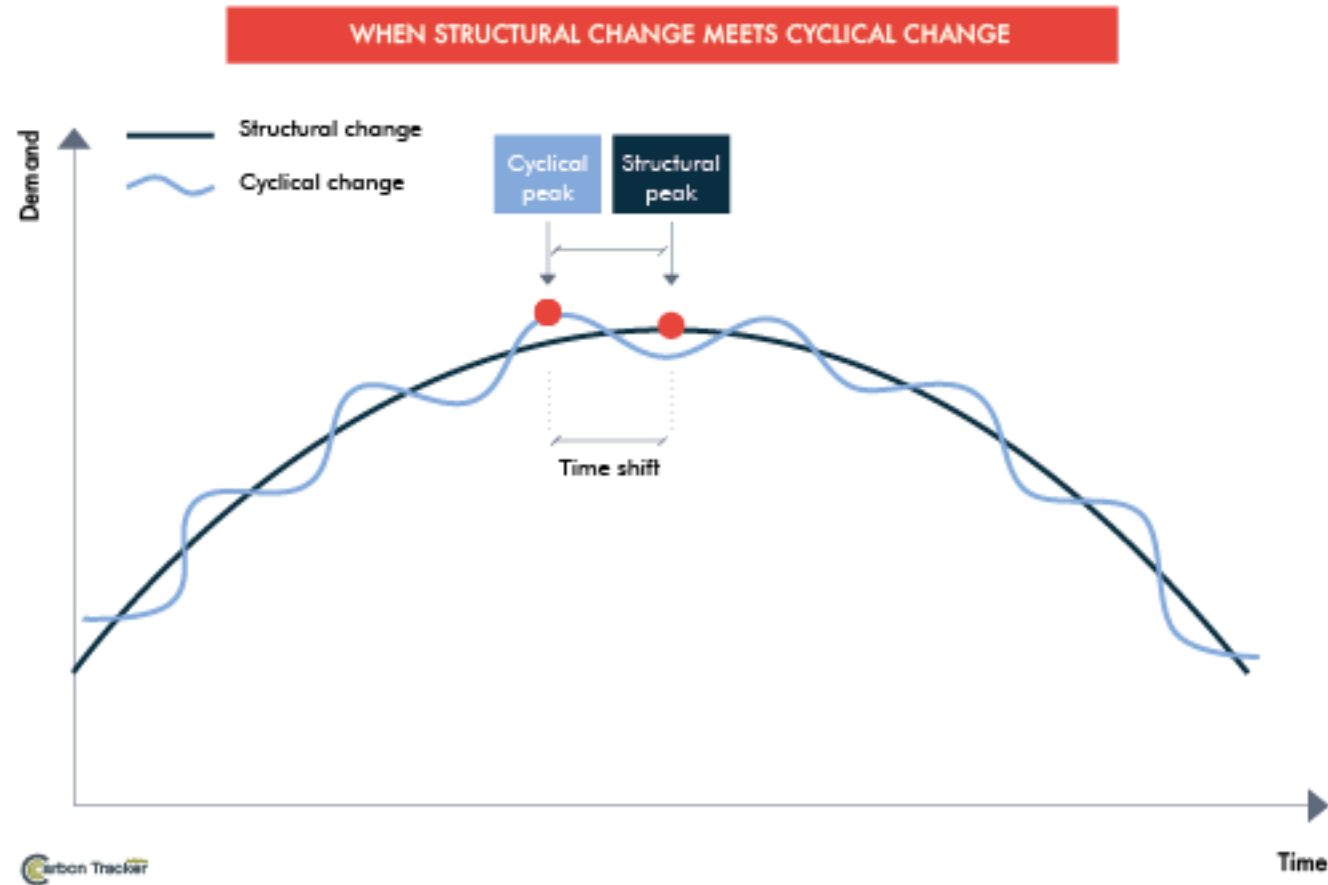
But not much action

Tax per tonne of CO₂



Source: Carbon Tracker analysis, OECD's Taxing Energy Use 2019, available at <https://bit.ly/3a4agAi>

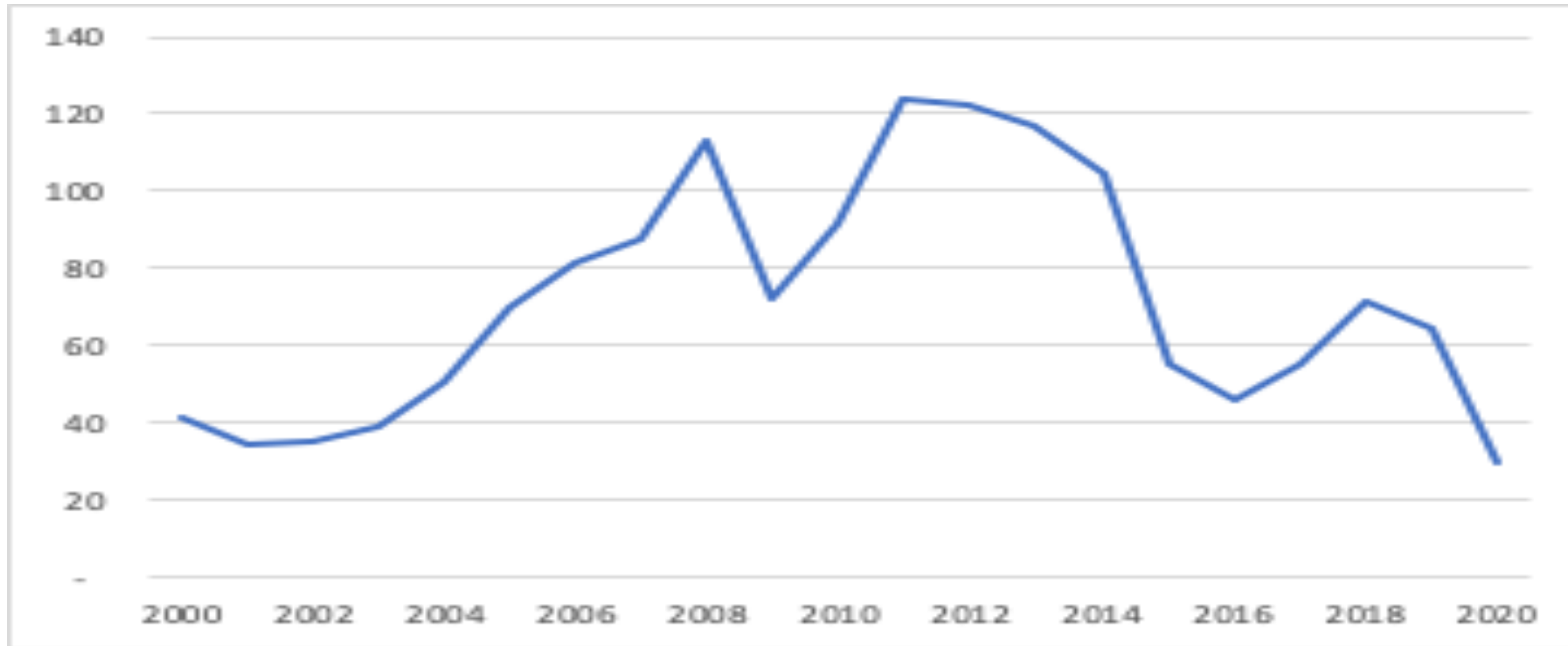
2: The impact of the virus: Bring forward the peak



Source: Carbon Tracker

Weaken the fossil fuel incumbency

Oil price \$/b



Source: BP

Give new power to governments

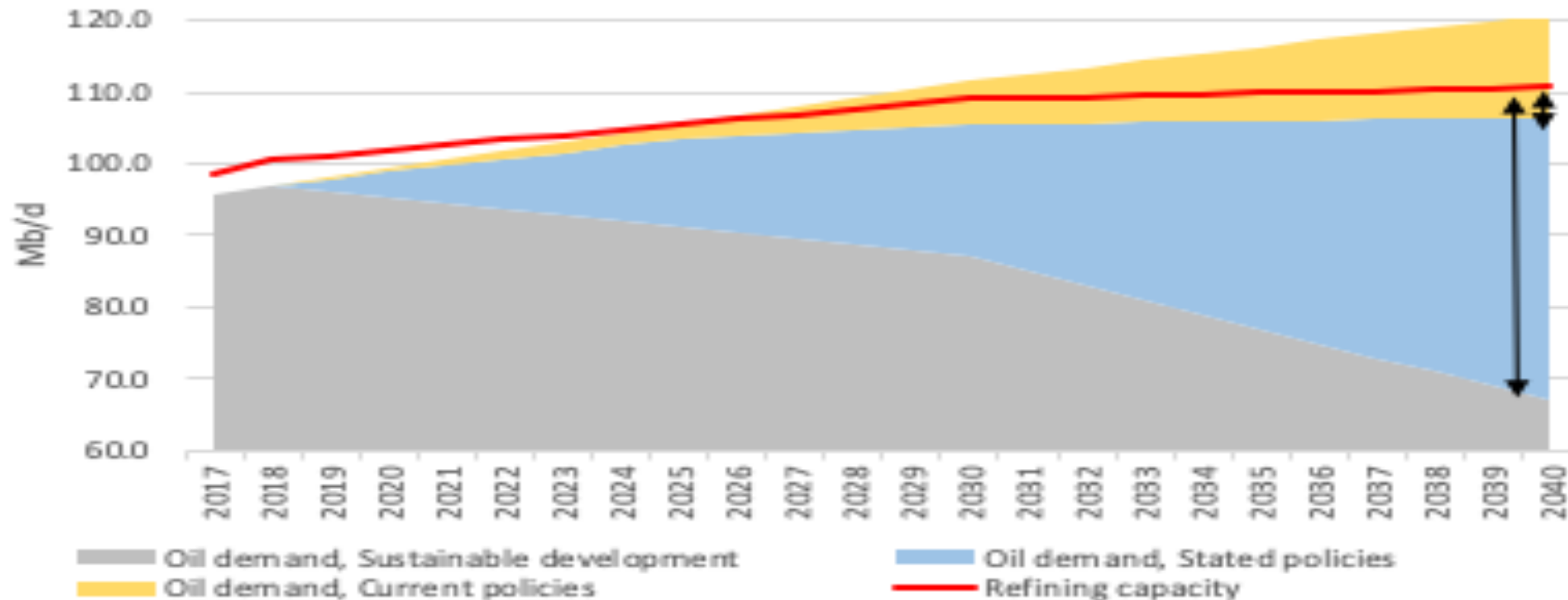
Where \$2 Trillion in U.S. Rescue Funds Will Go



Source: U.S. Senate, Committee for a Responsible Federal Budget, Bloomberg research

3: The new world: Fossil fuel overcapacity

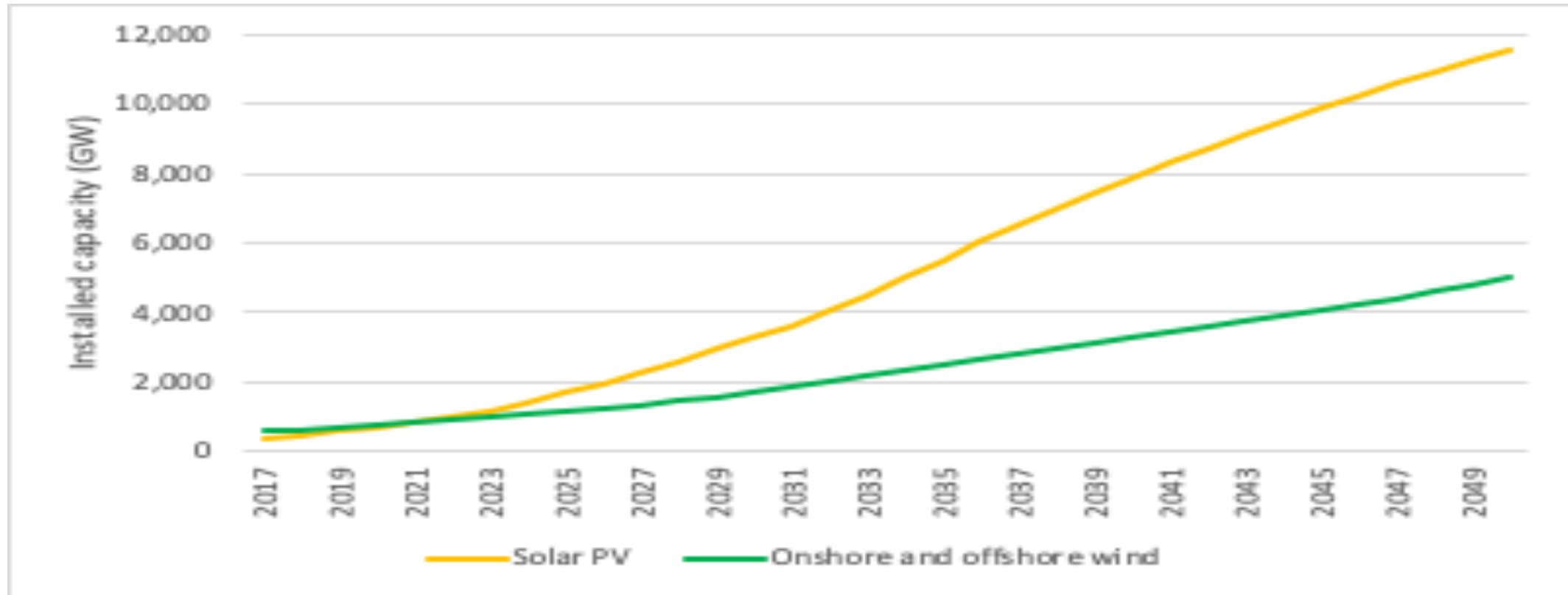
Refining capacity and oil demand forecasts



Source: IEA

Continued renewable growth

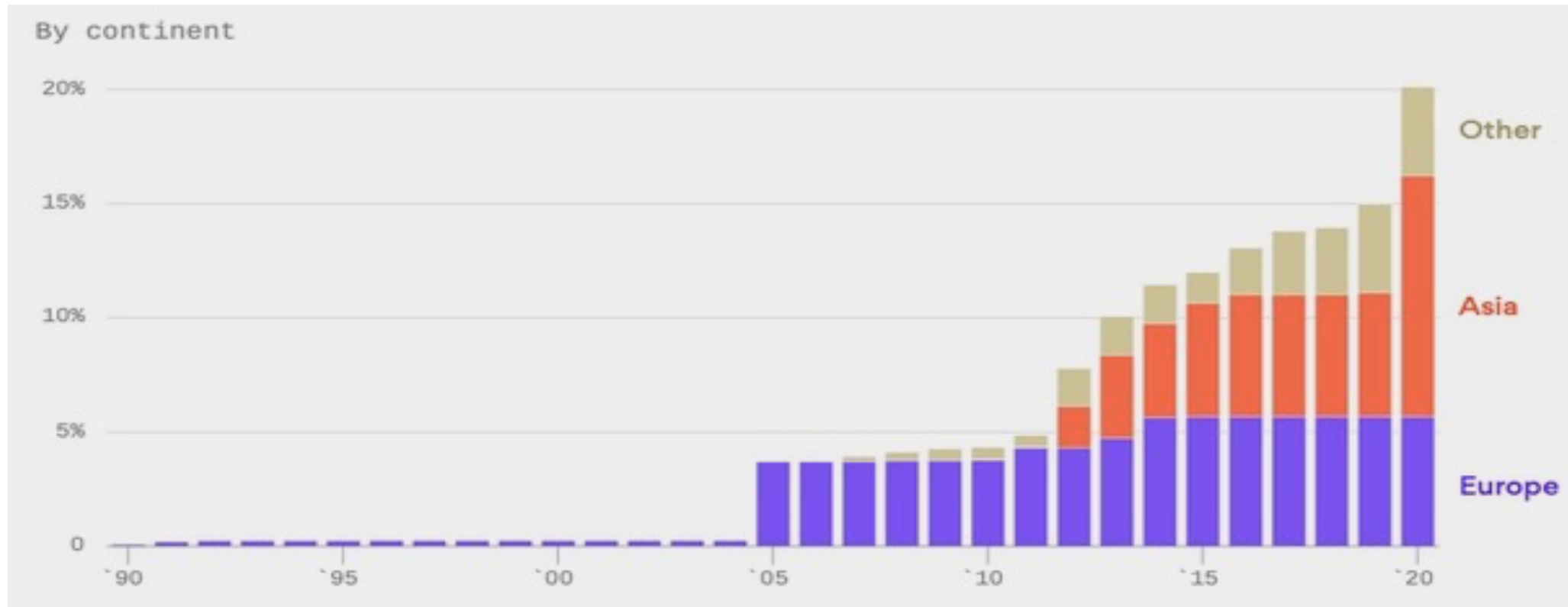
Solar and wind capacity GW



Source: DNV GL

More regulatory pressure

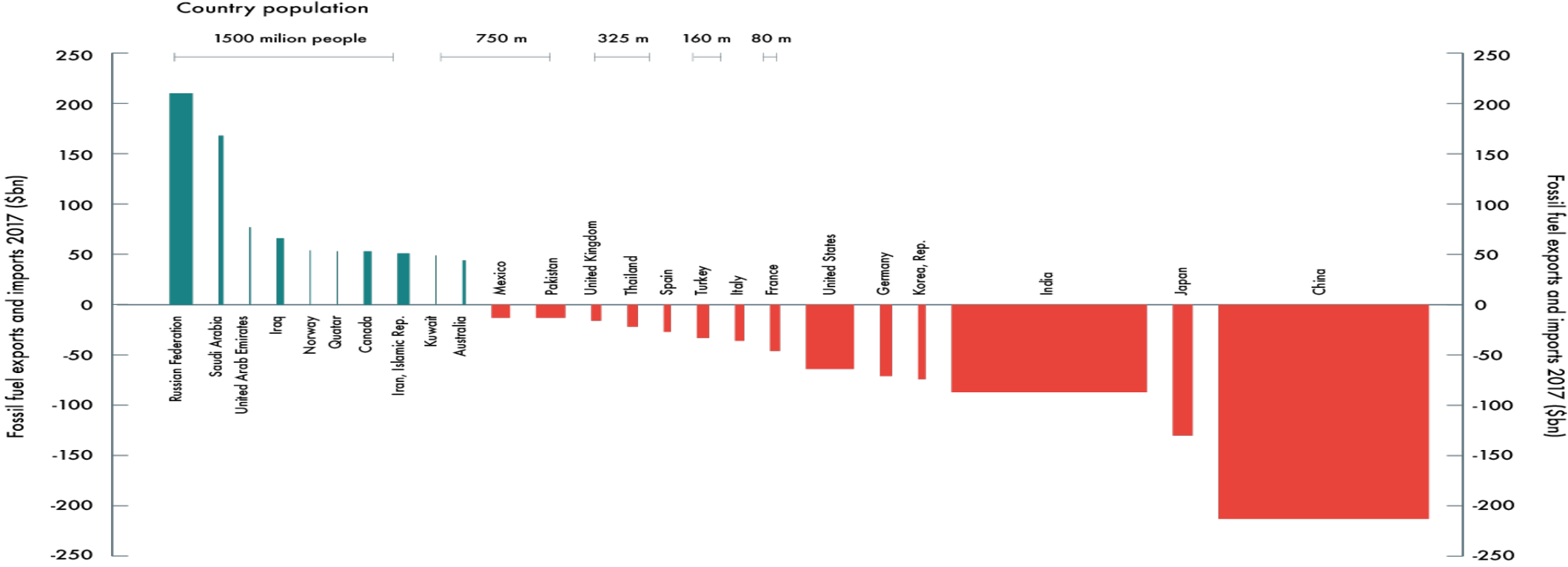
Share of global emissions covered by carbon pricing initiatives



Source: World Bank

Driven by fossil fuel importers

TOTAL FOSSIL FUEL EXPORTS (IMPORTS) AND POPULATION

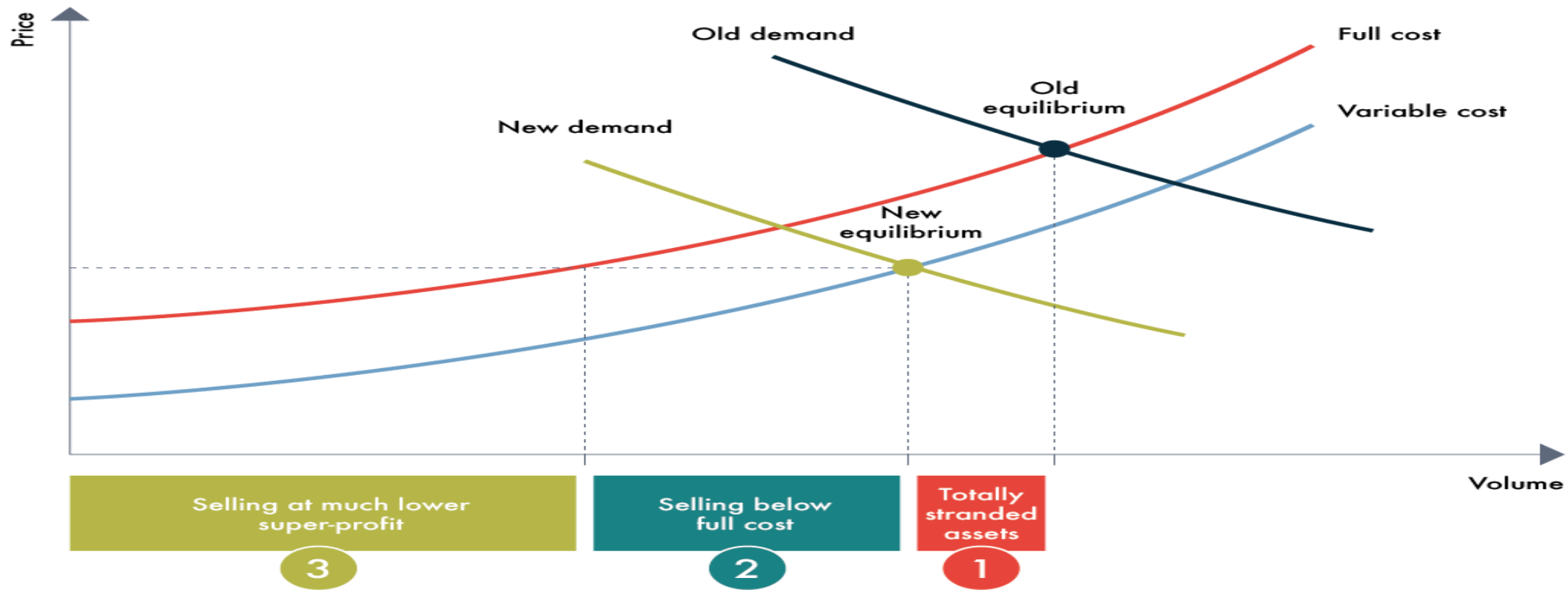


Source: IRENA

Source: World Bank 2017

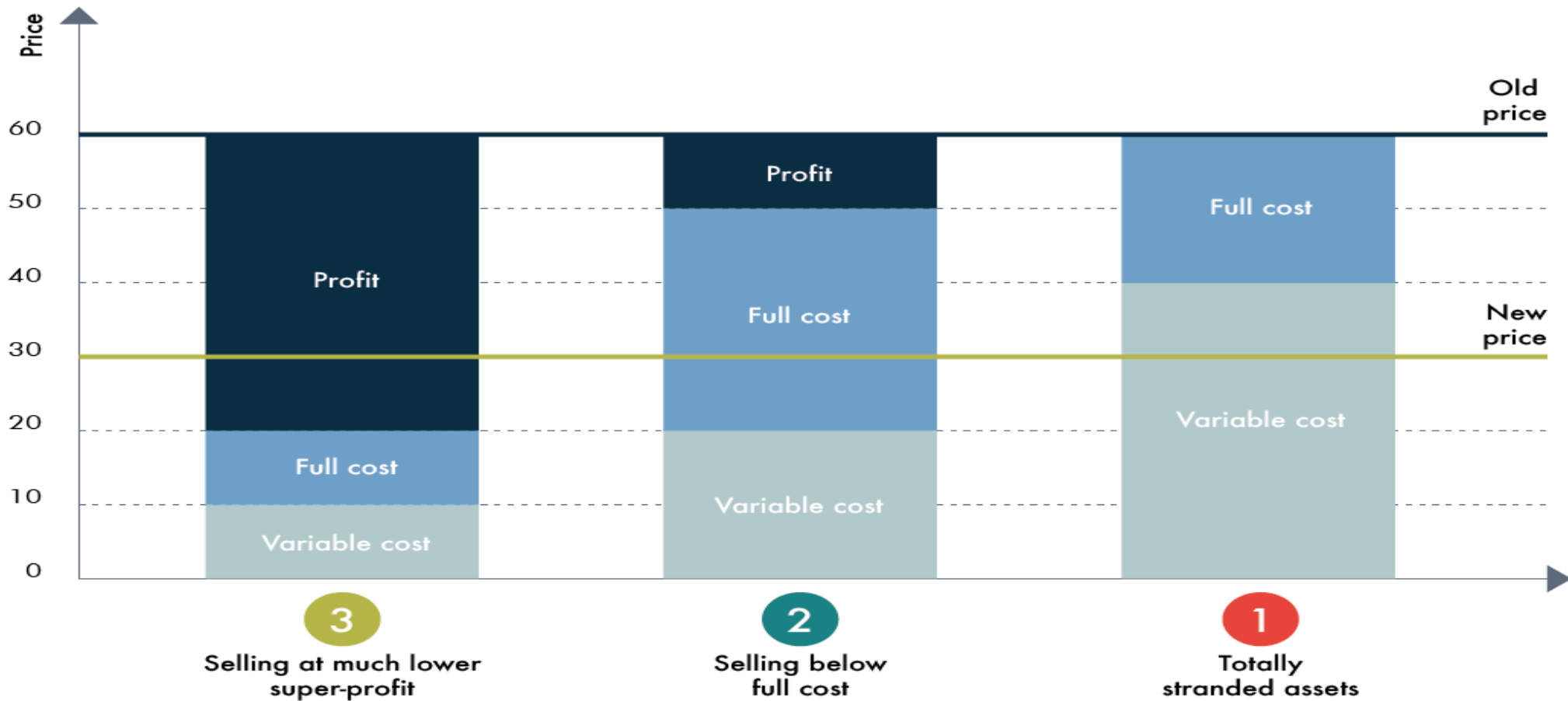


4. The impact of the peak on commodity prices



Source: Carbon Tracker

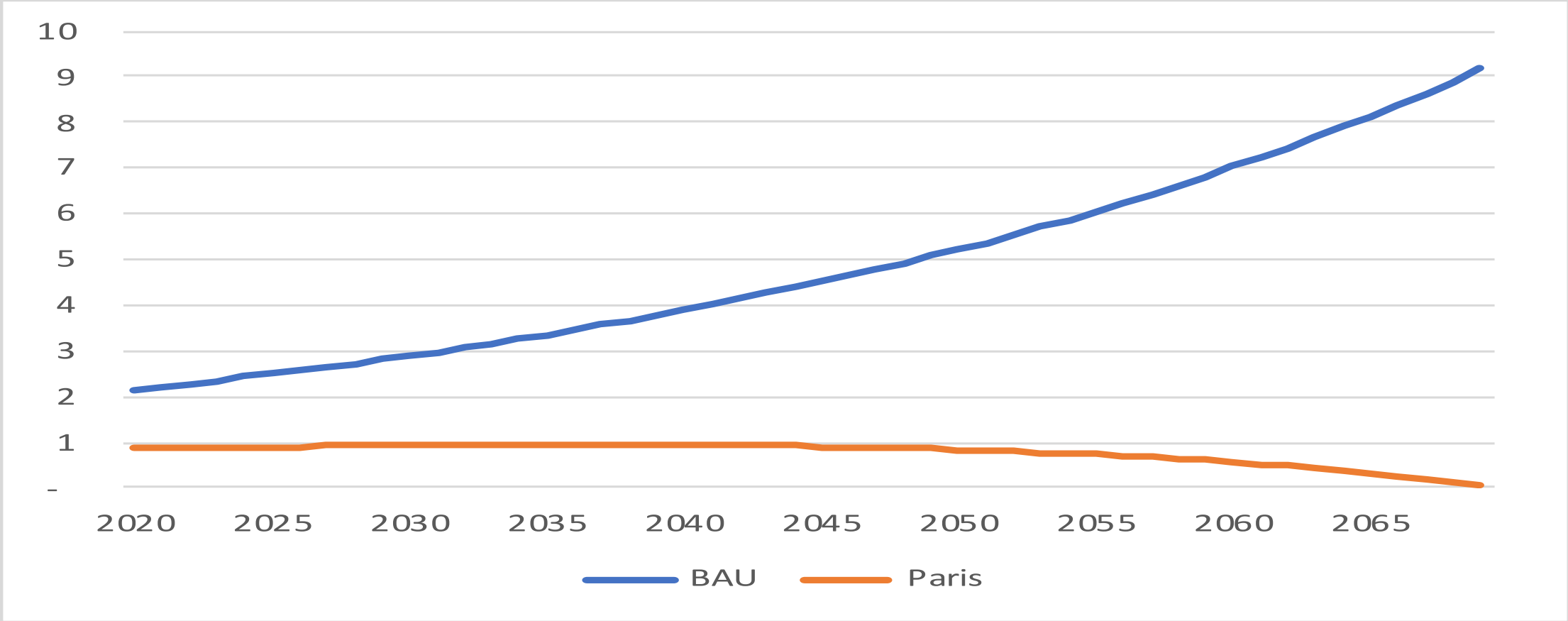
The three groups of companies



Source: Carbon Tracker

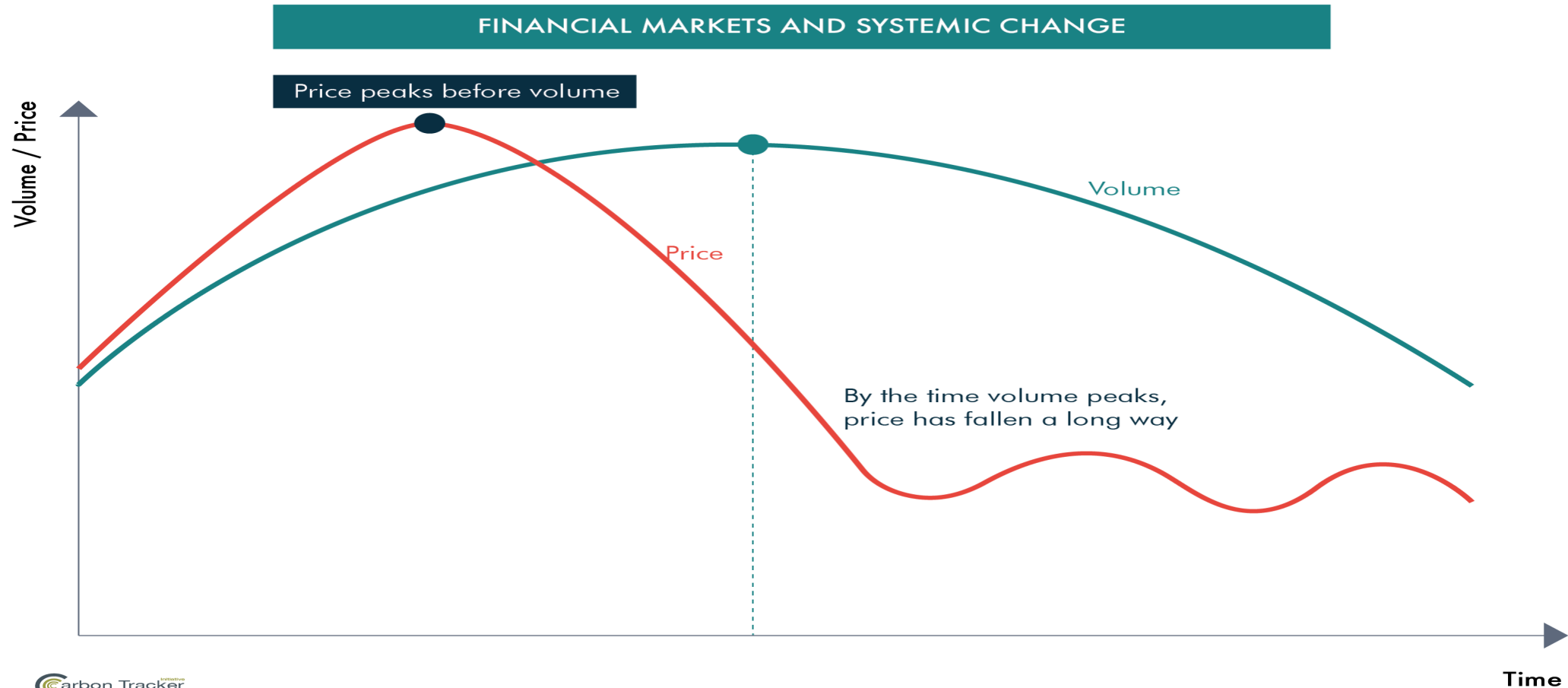
Lower rents

Fossil fuel rents \$tn



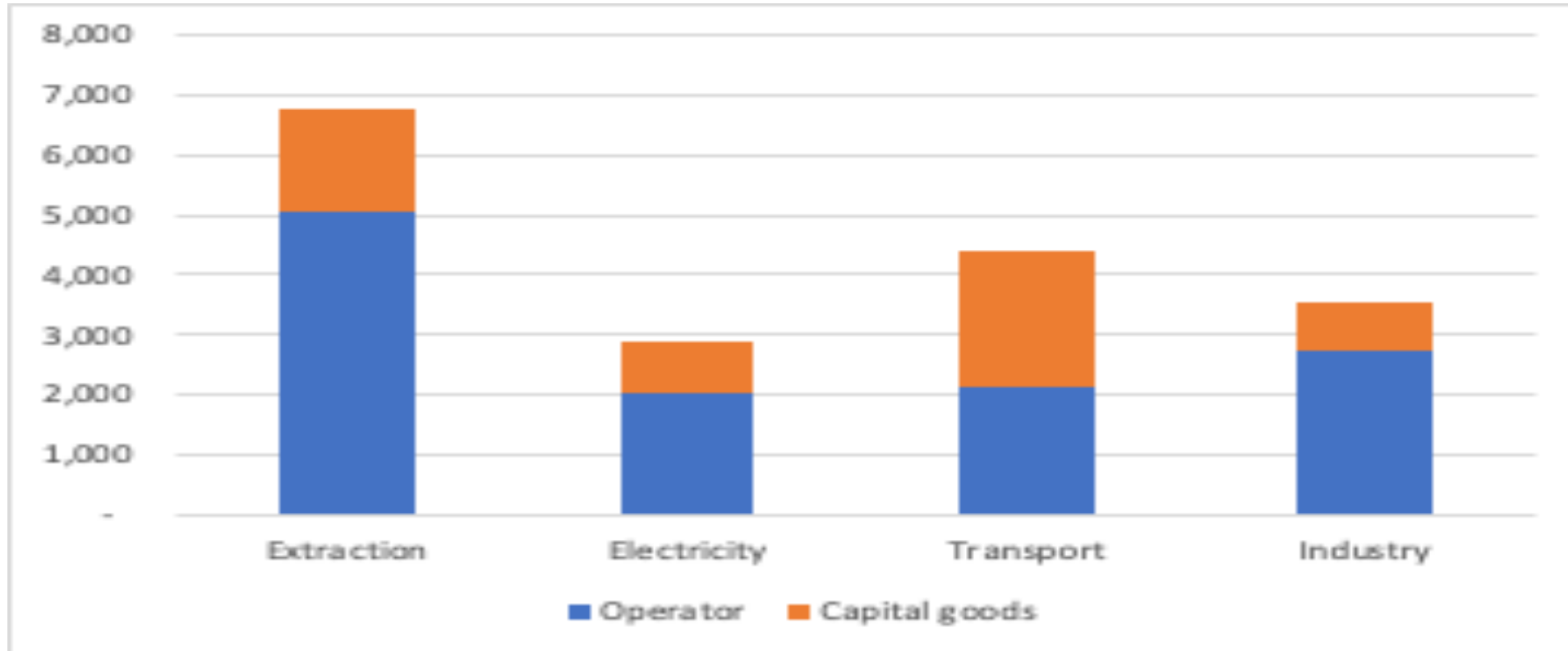
Source: Carbon Tracker

The impact of the peak on stock prices



Which sectors are at risk

Market capitalization of sectors at risk \$bn



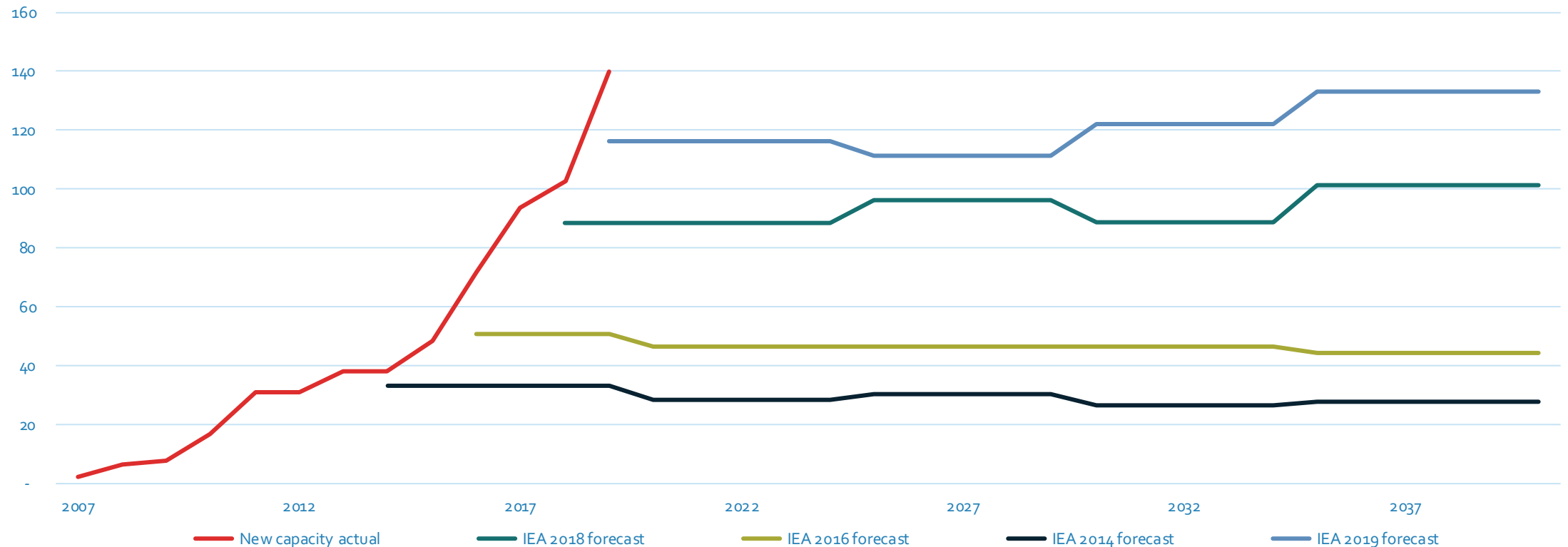
Source: Bloomberg, Carbon Tracker

Investment implications

- The risks to the fossil fuel sector remain high. The sector faces overcapacity, falling prices, low returns and rising regulatory pressure.
- The top end of the fossil fuel cost curve will be obliged to shut down. That will be a messy process especially for the banks.
- Beware fragility in the petrostates.
- All the growth in the energy sector will come from renewables. As with all technology shifts, many will fail, but some will rise to greatness.
- Energy users who exploit new energy technologies will gain industrial advantage.
- Energy importers have a new development tool.

Appendix 1: Incumbents are in denial

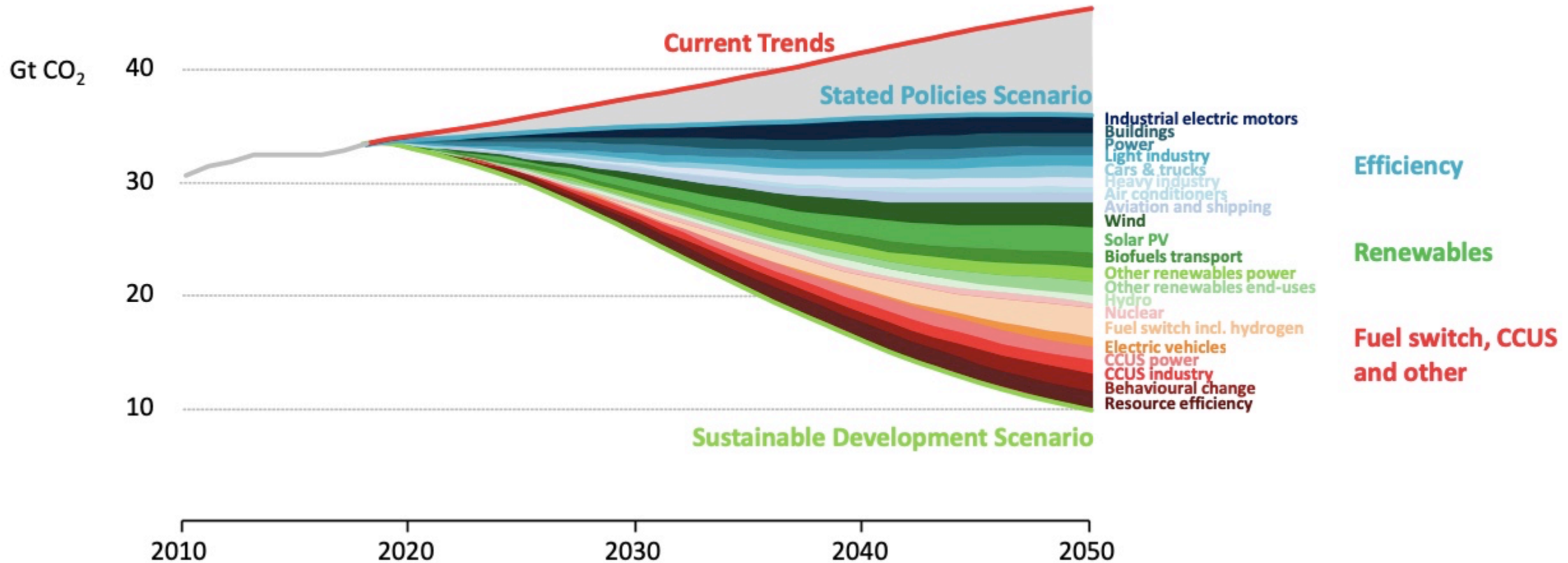
Annual solar additions (GW)



Source: BP, IHS, IEA, based on methodology of Auke Hoekstra

How to do the transition

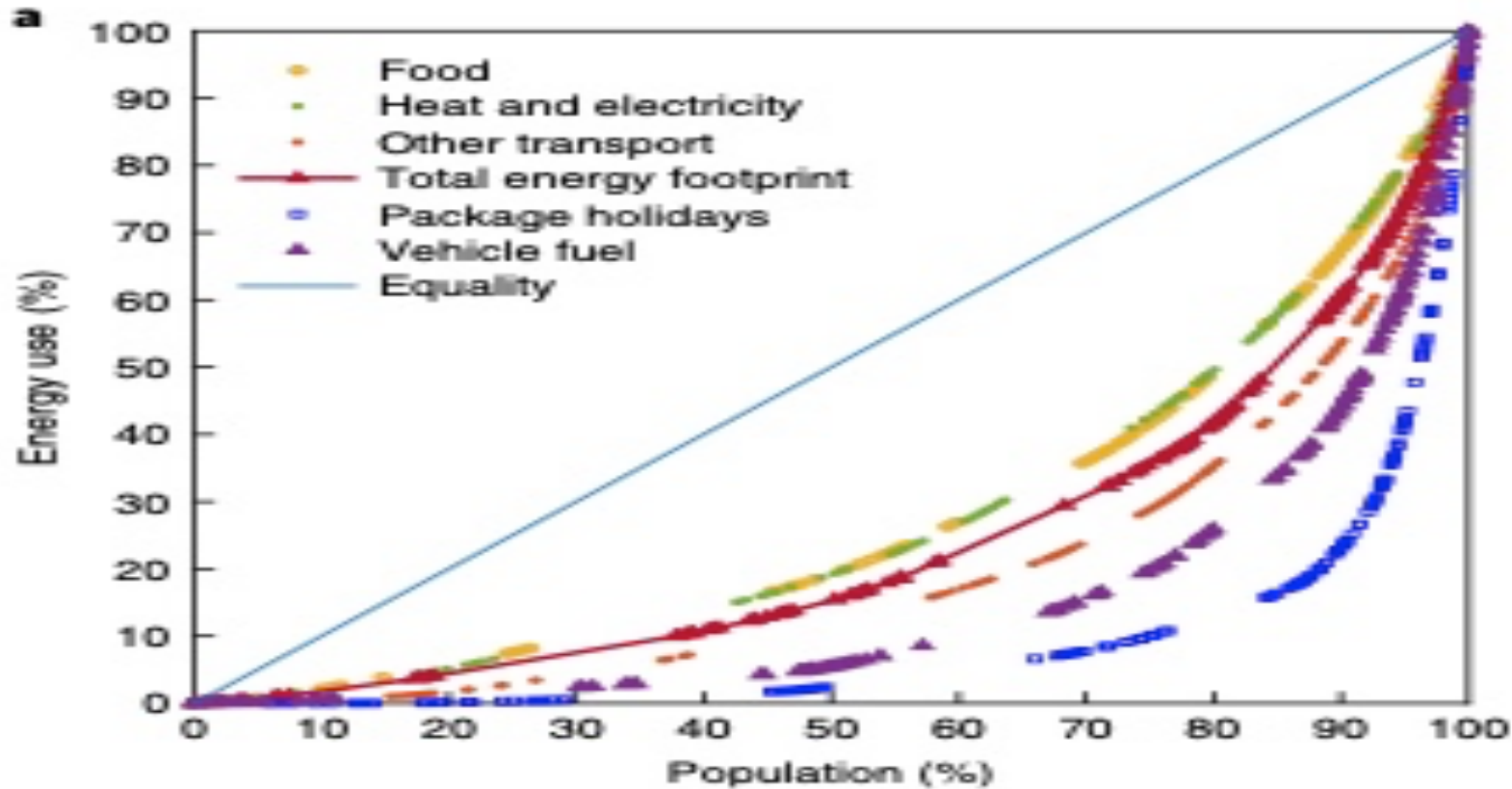
Energy-related CO₂ emissions and reductions by scenario



Source: IEA

Justice and energy use

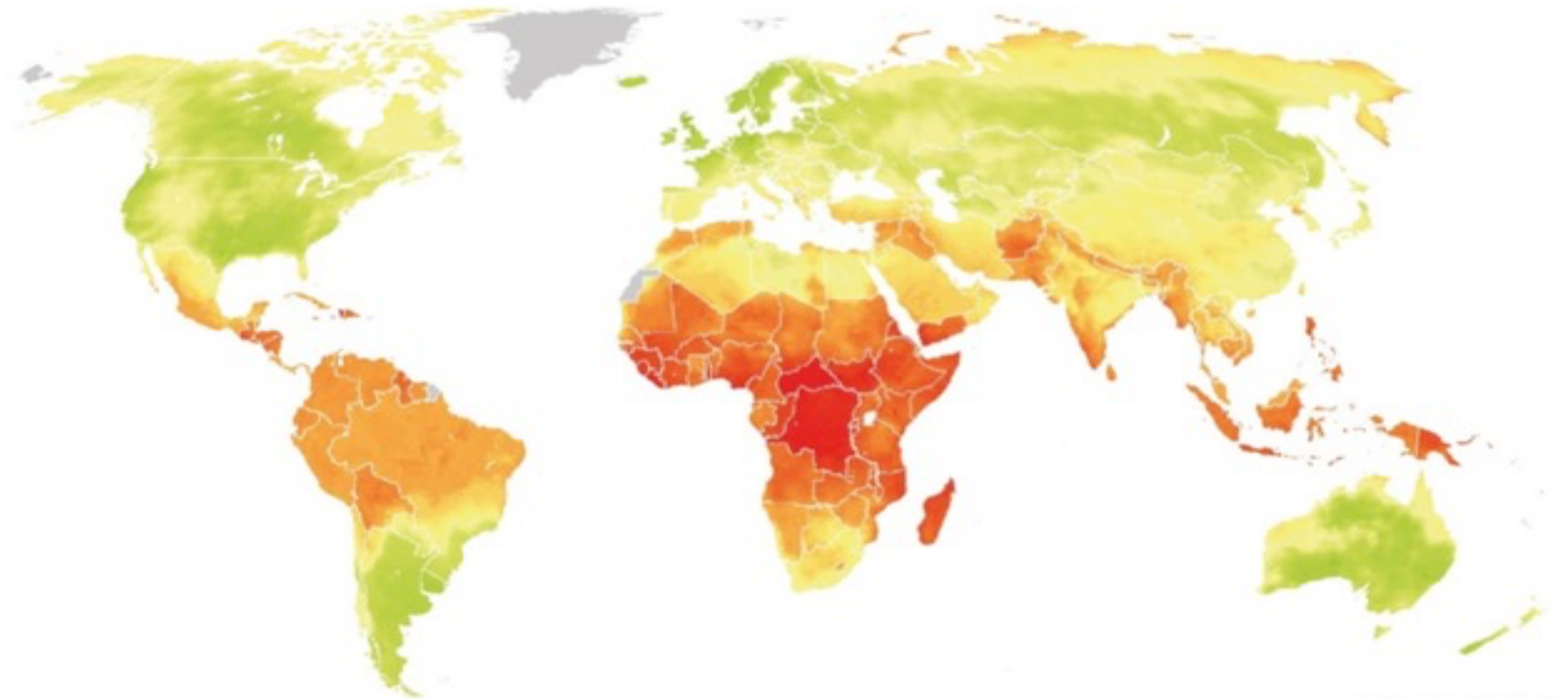
Share of energy used by share of population



Source: Nature Energy

Justice and climate change

Verisk climate vulnerability index

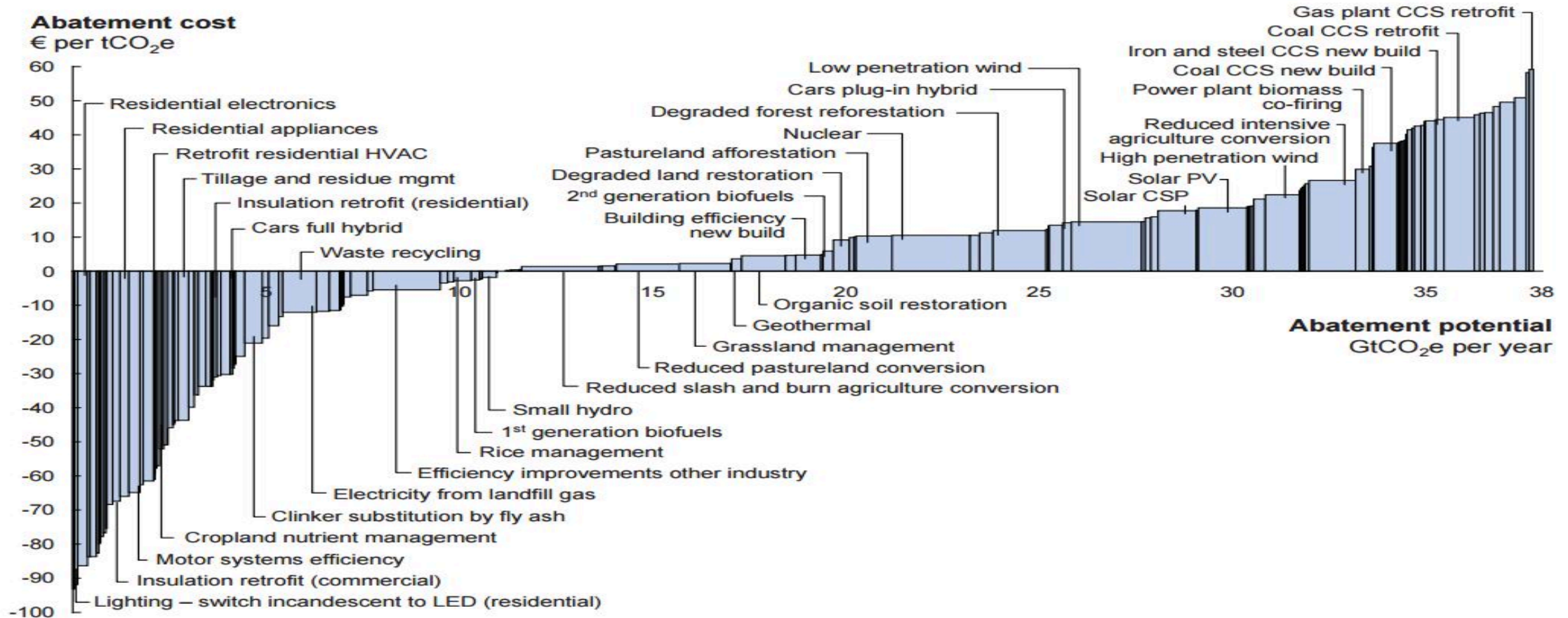


© Verisk Maplecroft 2016

Source: Verisk Maplecroft

Marginal abatement costs

Global GHG abatement cost curve beyond business-as-usual – 2030

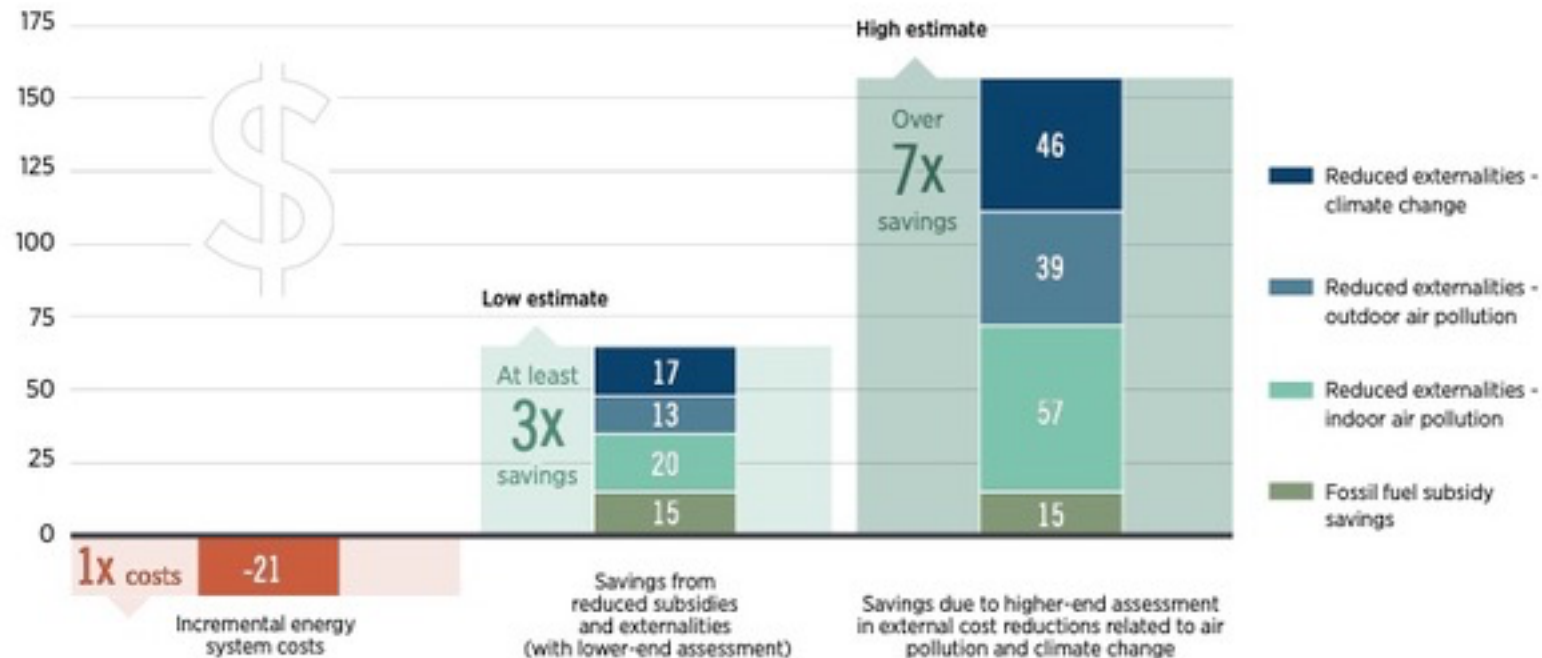


Note: The curve presents an estimate of the maximum potential of all technical GHG abatement measures below €60 per tCO₂e if each lever was pursued aggressively. It is not a forecast of what role different abatement measures and technologies will play.
Source: Global GHG Abatement Cost Curve v2.0

Source: McKinsey

Cost savings of energy transition

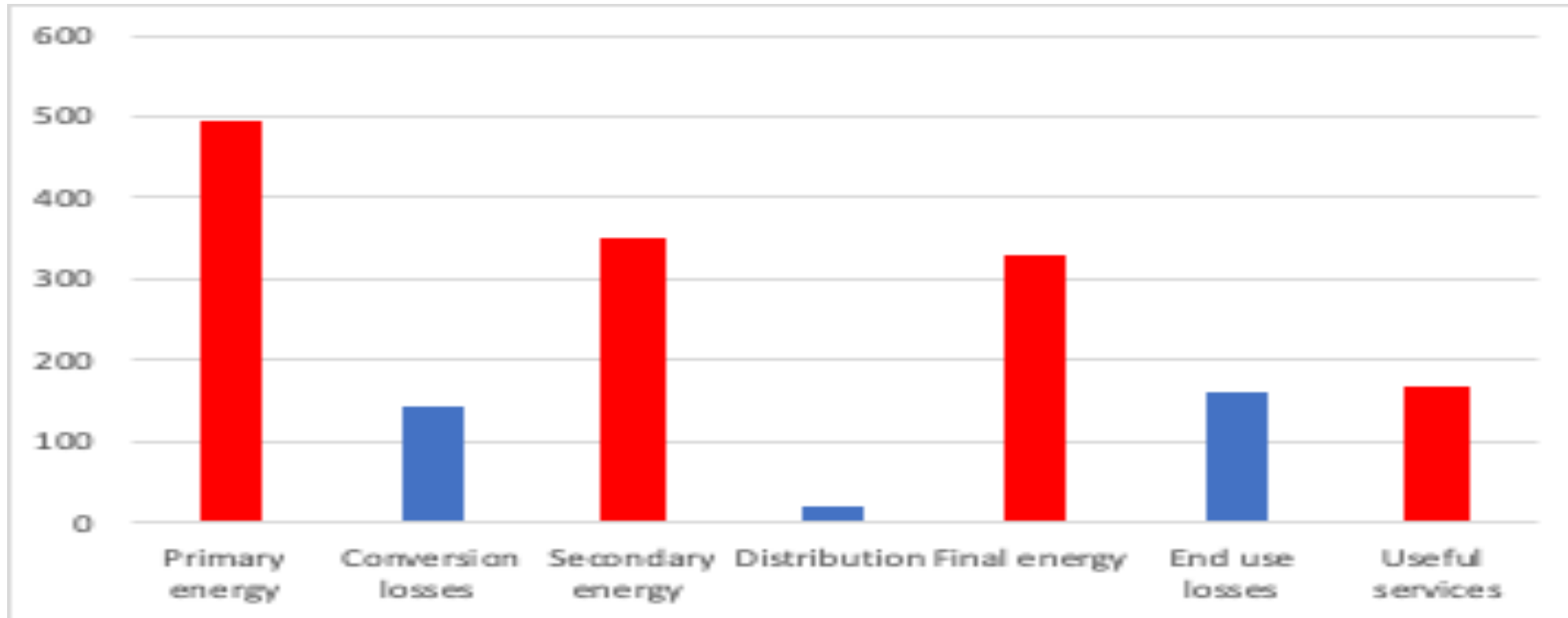
Costs and savings for the period 2016-2050 for the REmap Case, compared to the Reference Case (USD trillion)



Source: IRENA

Efficiency of the fossil fuel system is low

Energy production to useful services (EJ)



Source: IIASA

Disclaimer

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