



Non-profit aiming to align capital markets with tackling climate change

James Leaton
Research Director

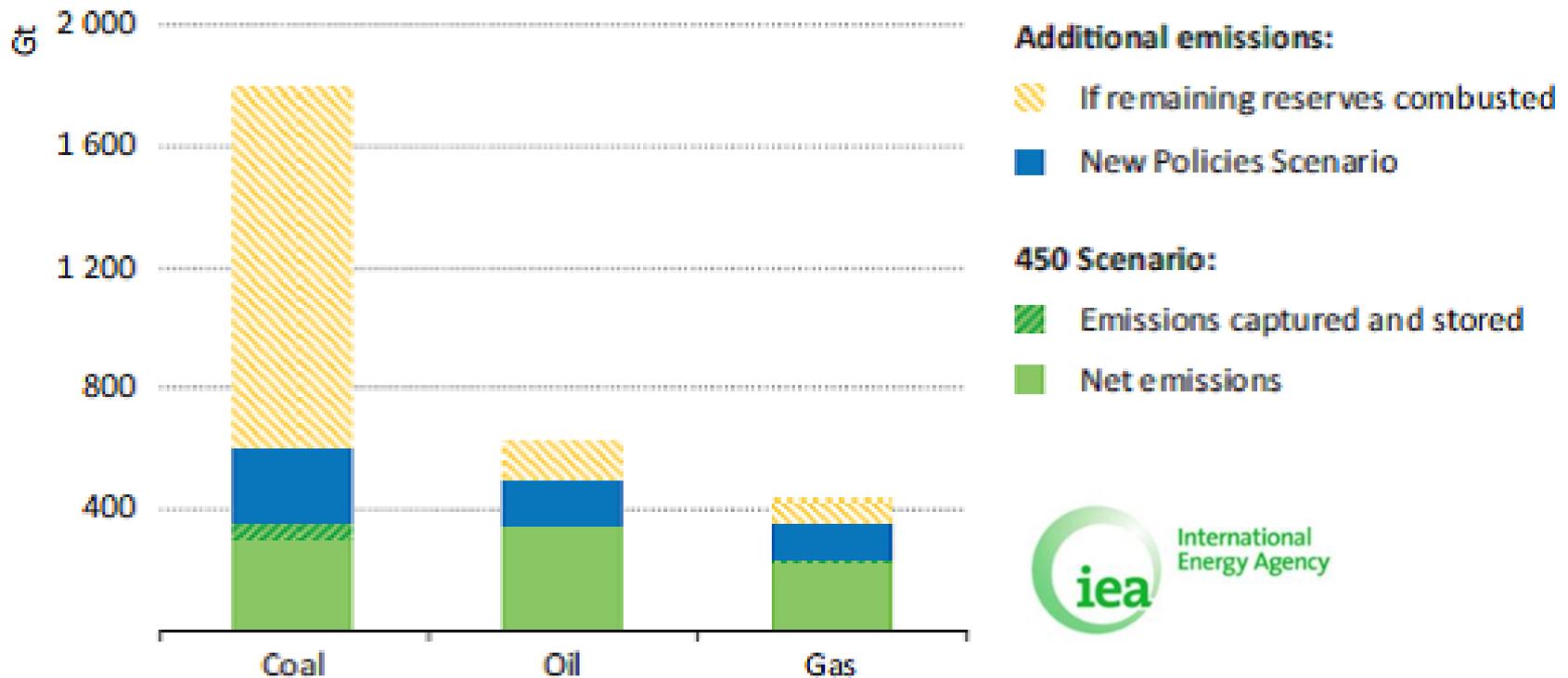


Focused on stocks of carbon not historical flows

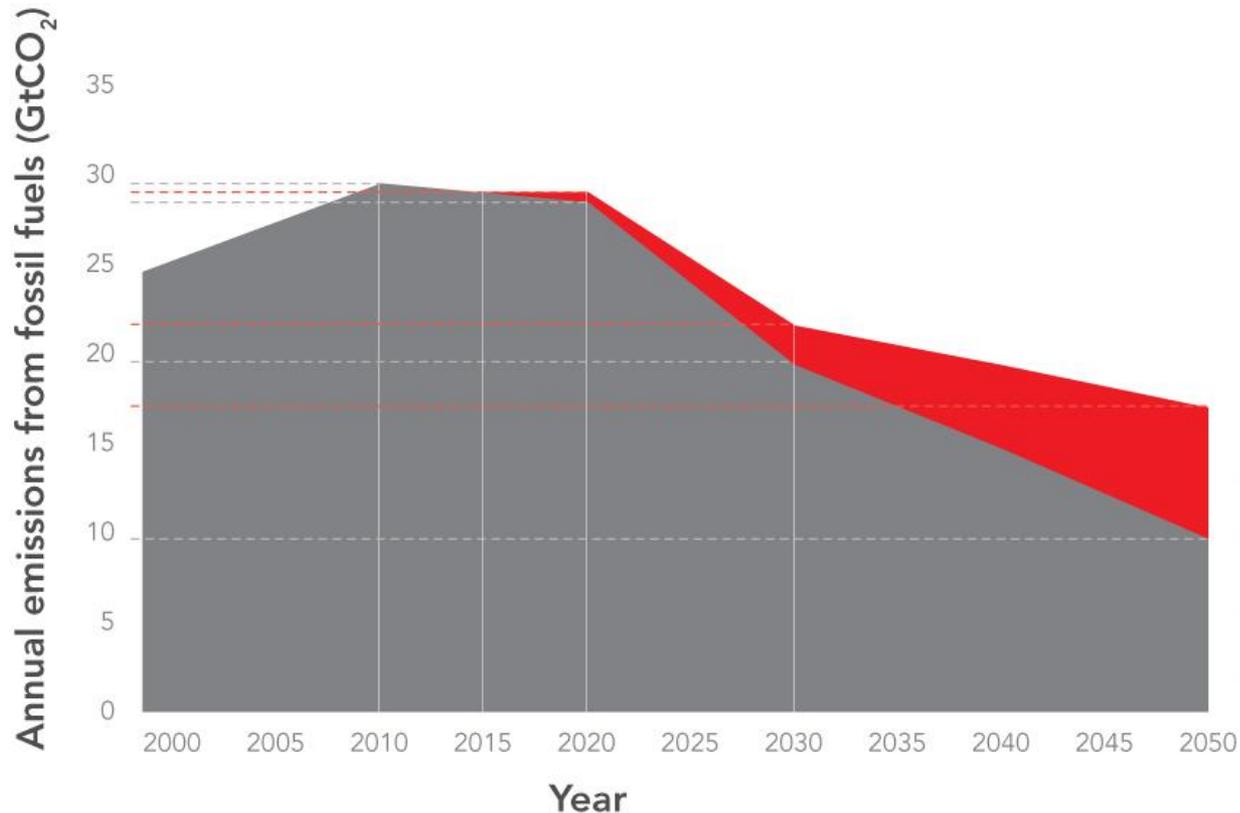


Carbon budget remaining – clear overhang

Figure 3.5 ▶ Potential CO₂ emissions from fossil-fuel reserves and cumulative emissions by scenario to 2050



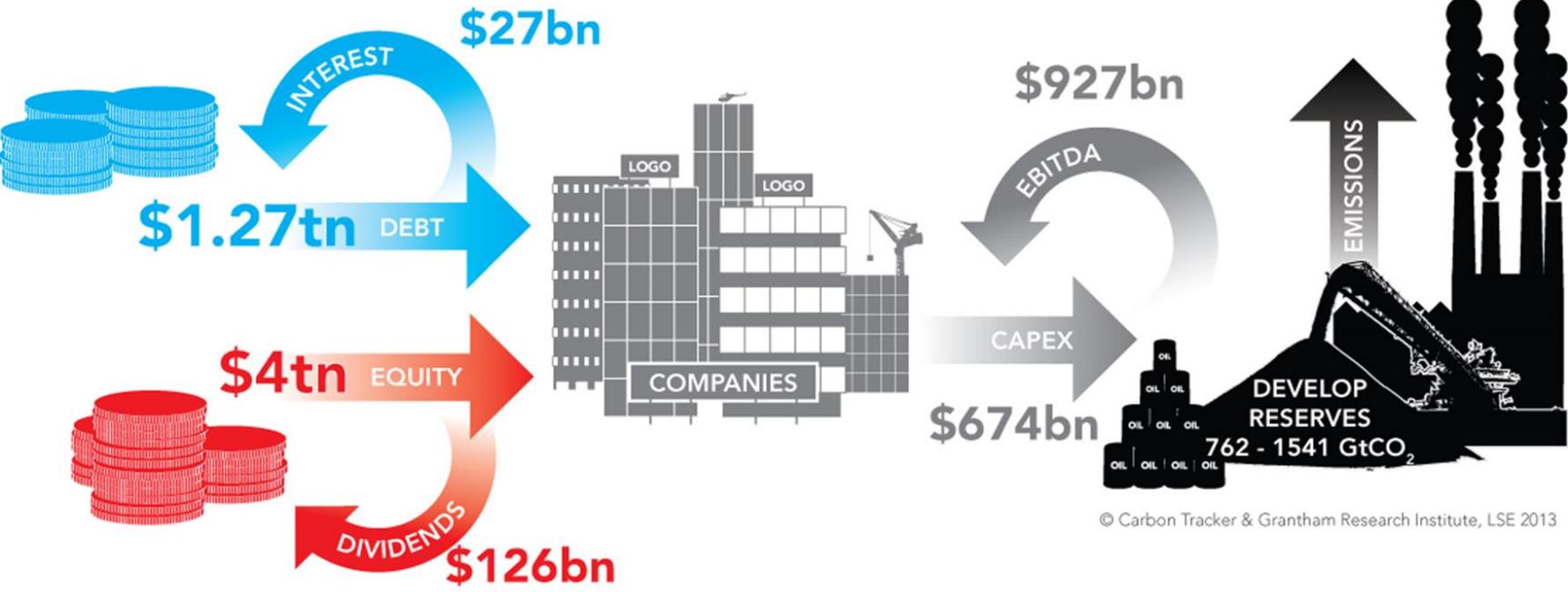
CCS – late to the game



CCS gives only a **125GtCO₂** budget extension to 2050 on top of **c900GtCO₂** budget = 14% uplift with 3800 projects, mainly post-2030.

- CCS under IEA 'idealised' scenario
- Unabated fossil fuel emissions (2°C scenario)

Established link between emissions & capital flows

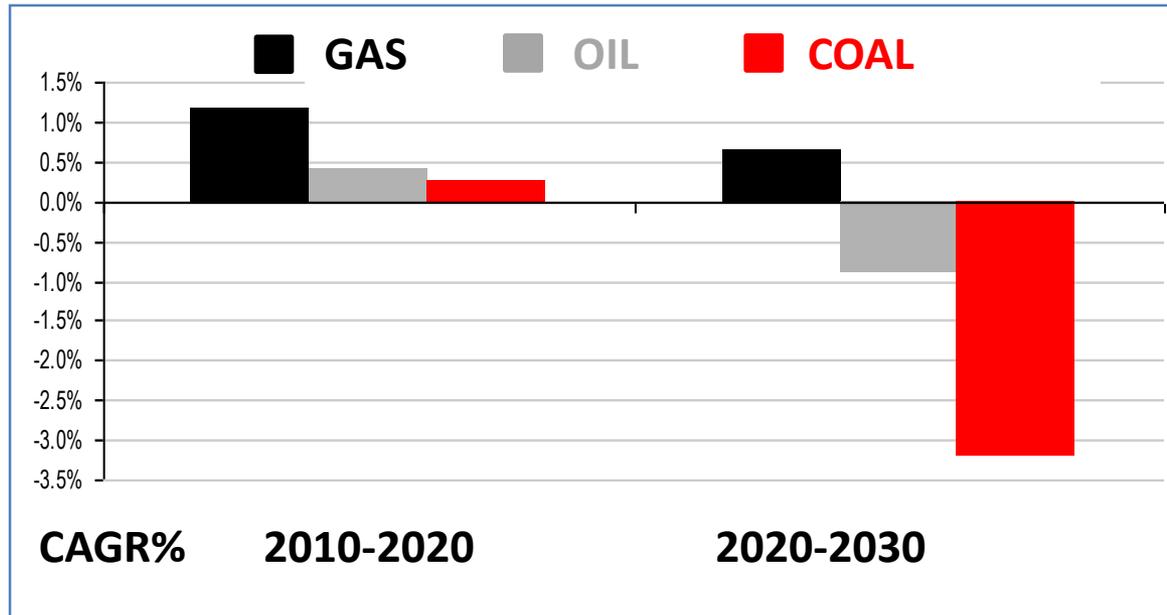


© Carbon Tracker & Grantham Research Institute, LSE 2013

Coal vs Oil vs Gas – competition has started

“Our message is that there is a fundamental difference between the various forms of fossil fuels, and I think that knowledge is lacking in this debate. It’s coal that really needs, in a wise way, to be phased out.”

Statoil CEO, Financial Times, 26 September 2014

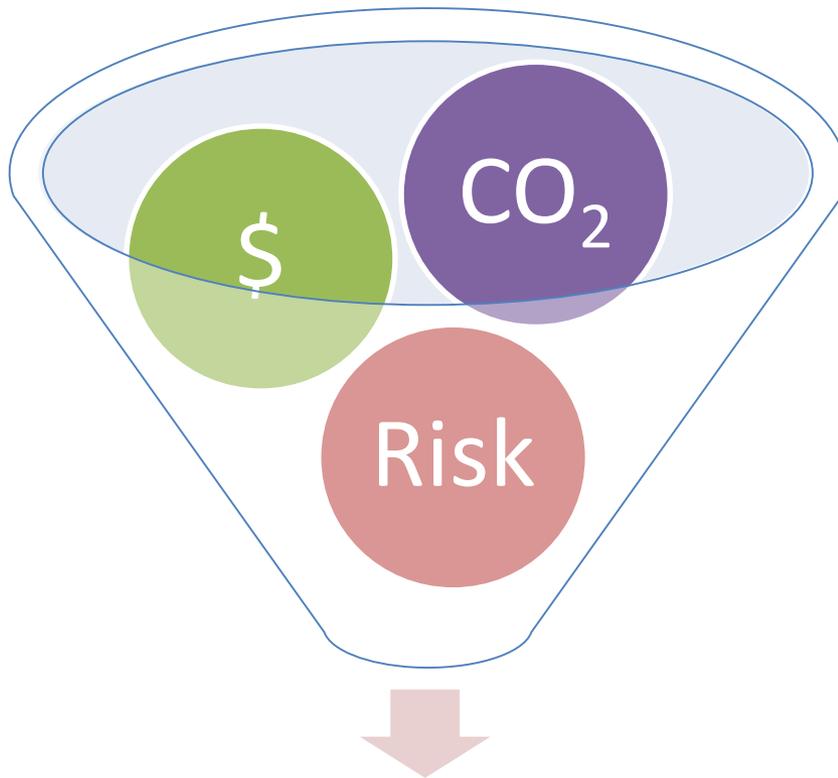


- Impact on price?
- Coal most exposed due to potential for substitution?



“Only 20% of global coal reserves can be developed by 2050 without CCS in the 450 scenario” (IEA Redrawing the Energy Climate map 2013)

Identify potential capital expenditure at risk Dealing with oil, coal and gas separately



CAPITAL EXPENDITURE TO REVIEW

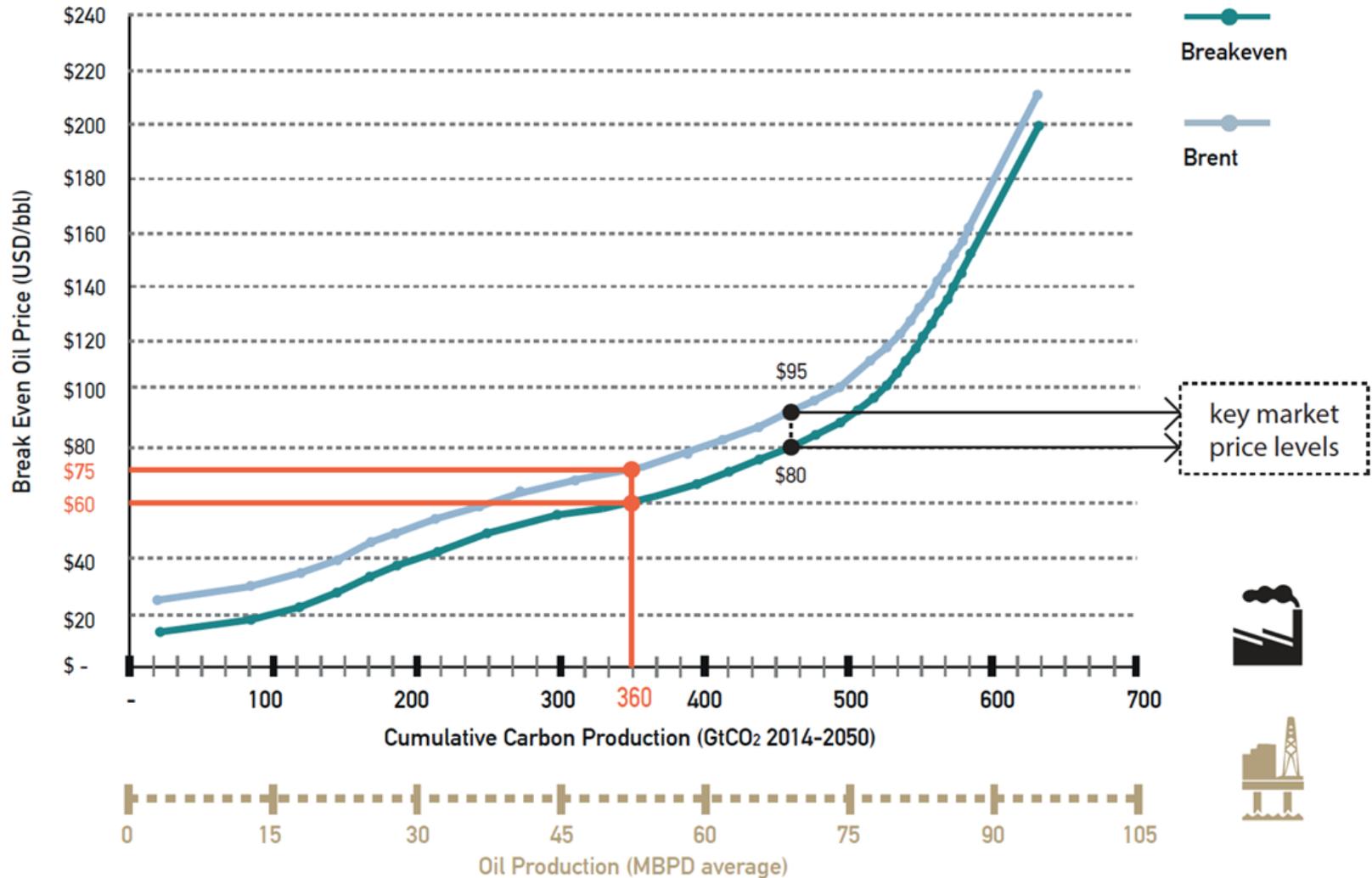
\$ = Cost to produce a good return for investors

CO₂ = potential CO₂ emissions

Risk = project type, eg oil sands, LNG, lignite

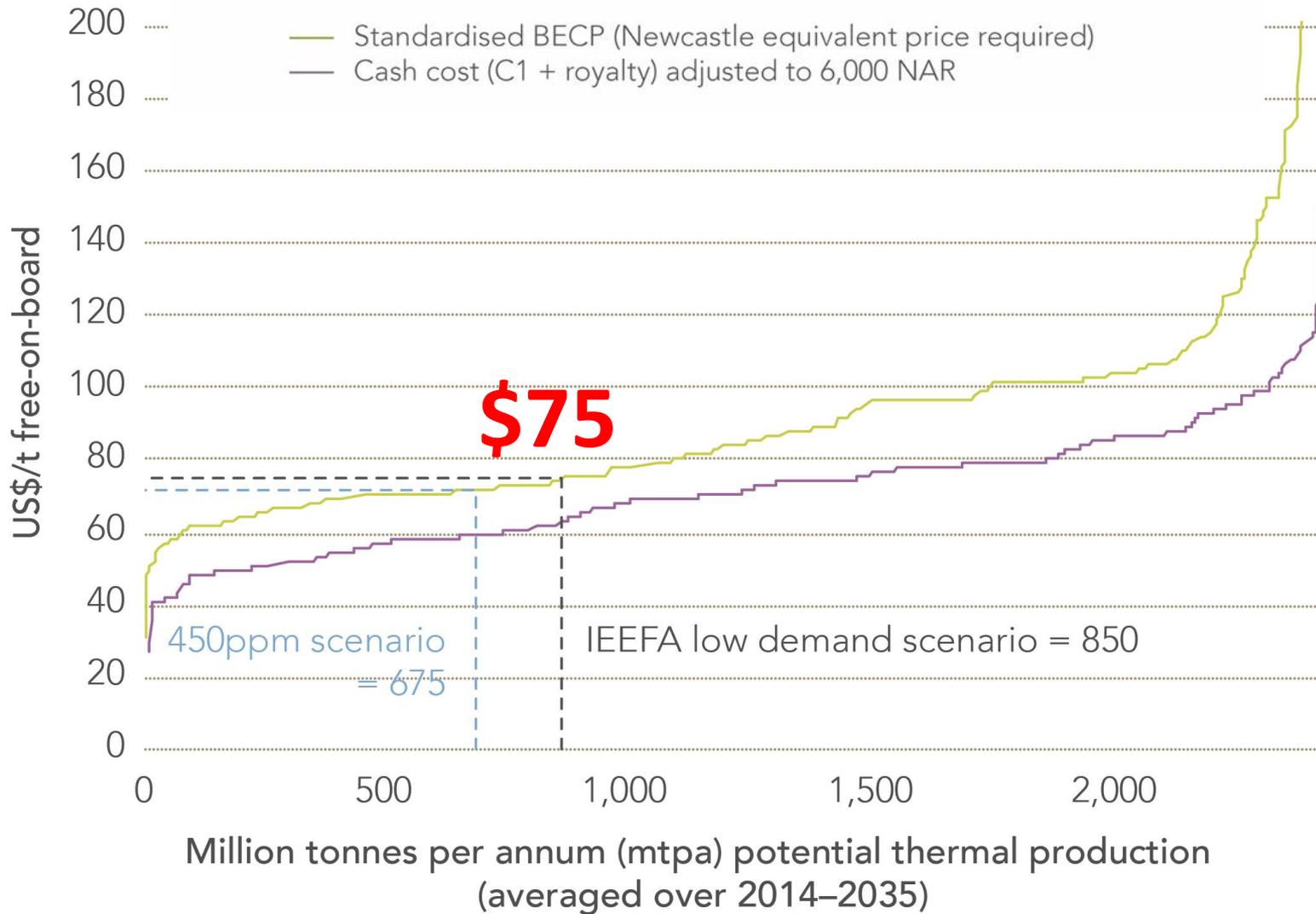
Output:
Breakdown by price, geography, oil type and company

Carbon Supply Cost Curves: Oil

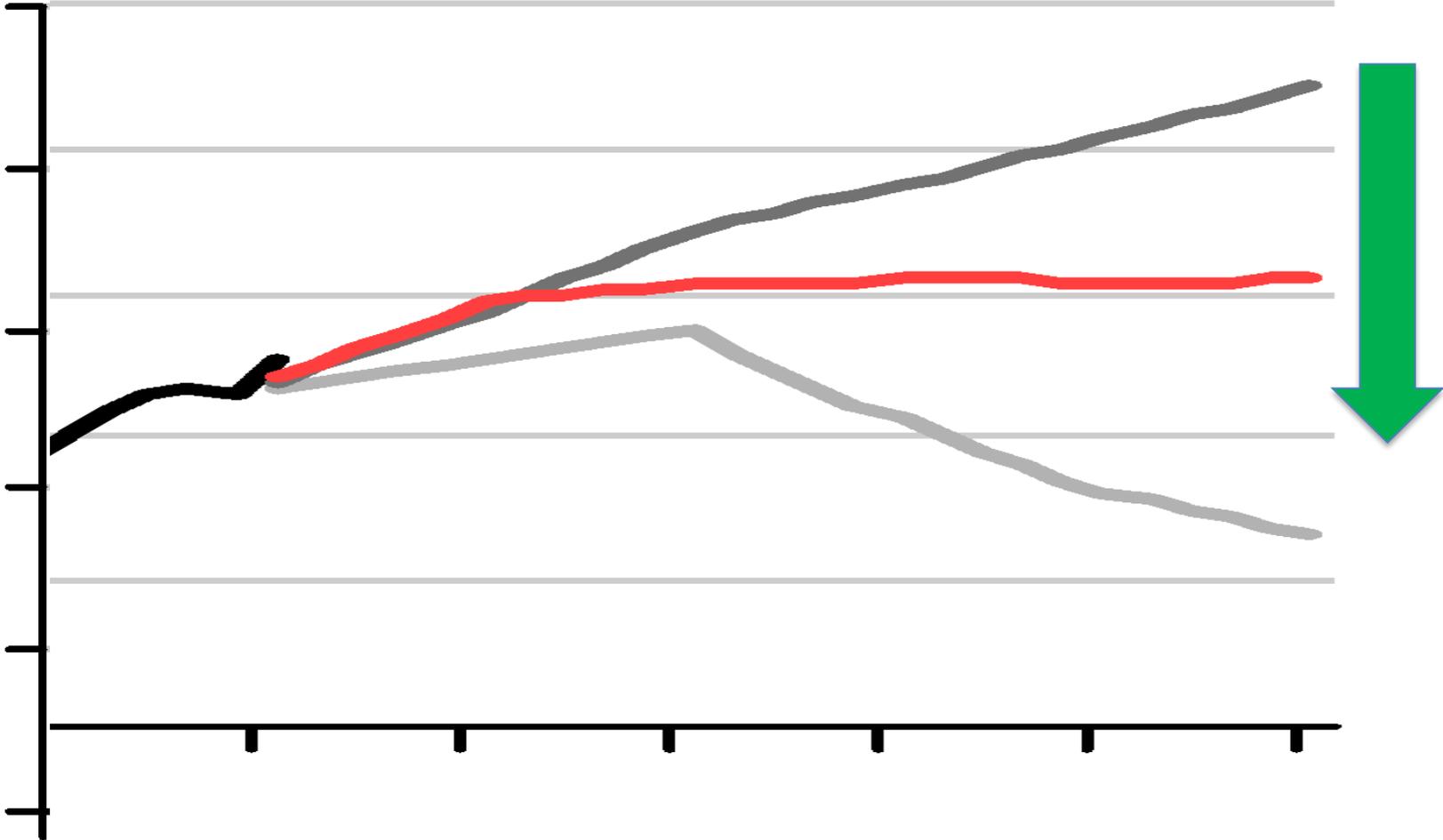


Seaborne coal – most relevant for listed companies

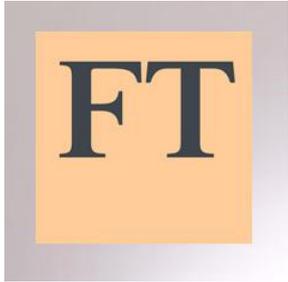
Prices around current levels – no recovery



Dealing with uncertainty – use direction of travel



Probability of outcomes



*I believe humanity is making risky bets in the climate casino. I think it is likely that humanity will continue to make these risky bets. In that case ExxonMobil will be proved right. But it is always possible that humanity will wake up and make the needed investments in rapid change, driven by the magic of the market and technological innovation. If that happened, fossil fuel reserves would indeed be stranded. Investors beware: the risk of that cannot be zero.
Martin Wolf, Financial Times, June 2014*

The
Economist

*Shell, Exxon and carbon:
The elephant in the atmosphere
The investors may be correct that managers are betting their firms on high oil prices, that this is a gamble and that applying a discount to the value of their investments may make sense.
July 2014*

Challenging assumptions – energy sector future

Business as usual or....

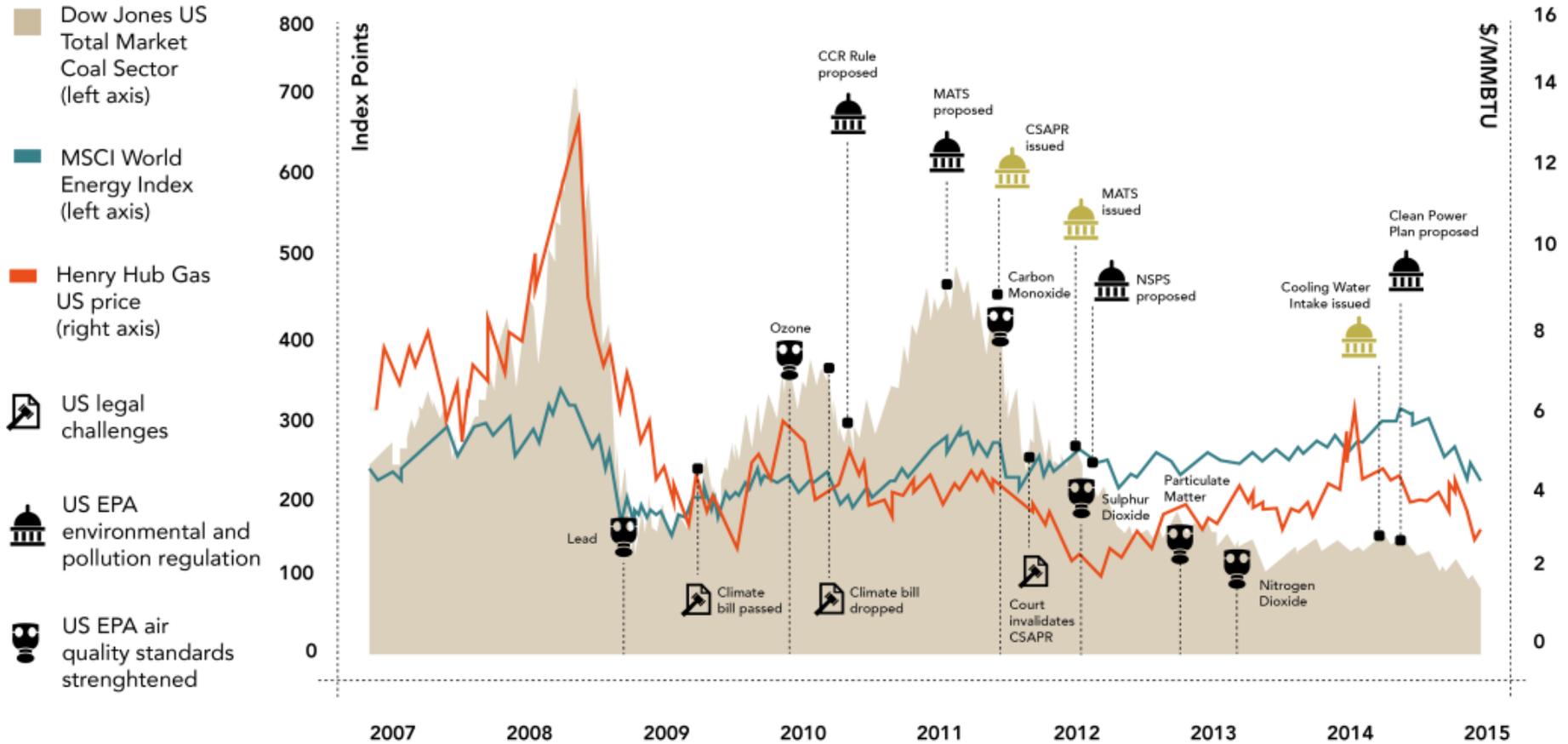
- GDP growth rates
- Oil prices
- Chinese coal demand
- Renewables costs
- Electric vehicles
- Storage technology

....already shifting

- China lower
- Volatility up
- Peaked in 2014
- LCOE parity some mkts
- ? – range increasing
- ? Tesla breakthrough

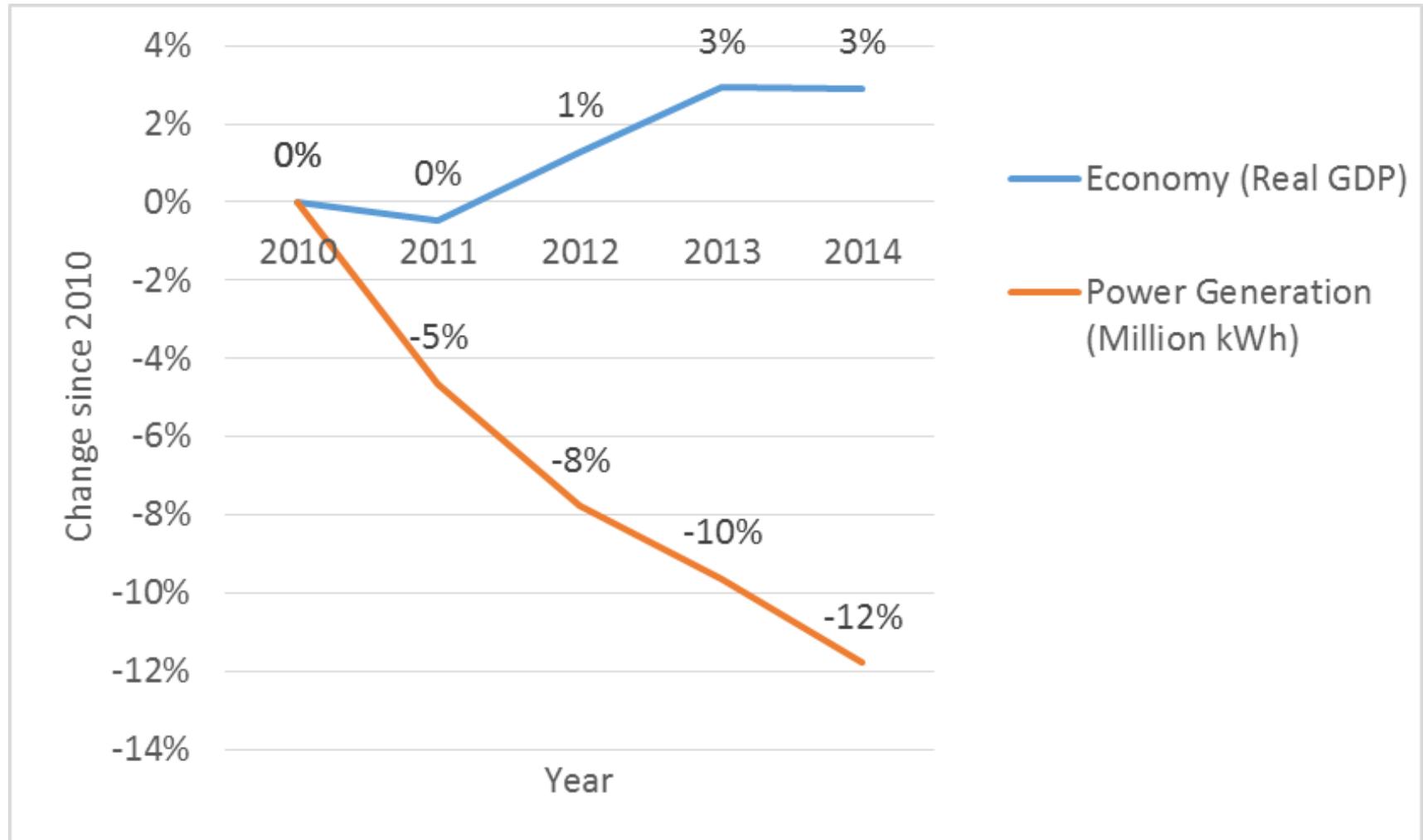
US Coal Crash – Gas prices & EPA measures

Sierra Club estimate of timeframe over which 180+ proosed coal plants project have been cancelled



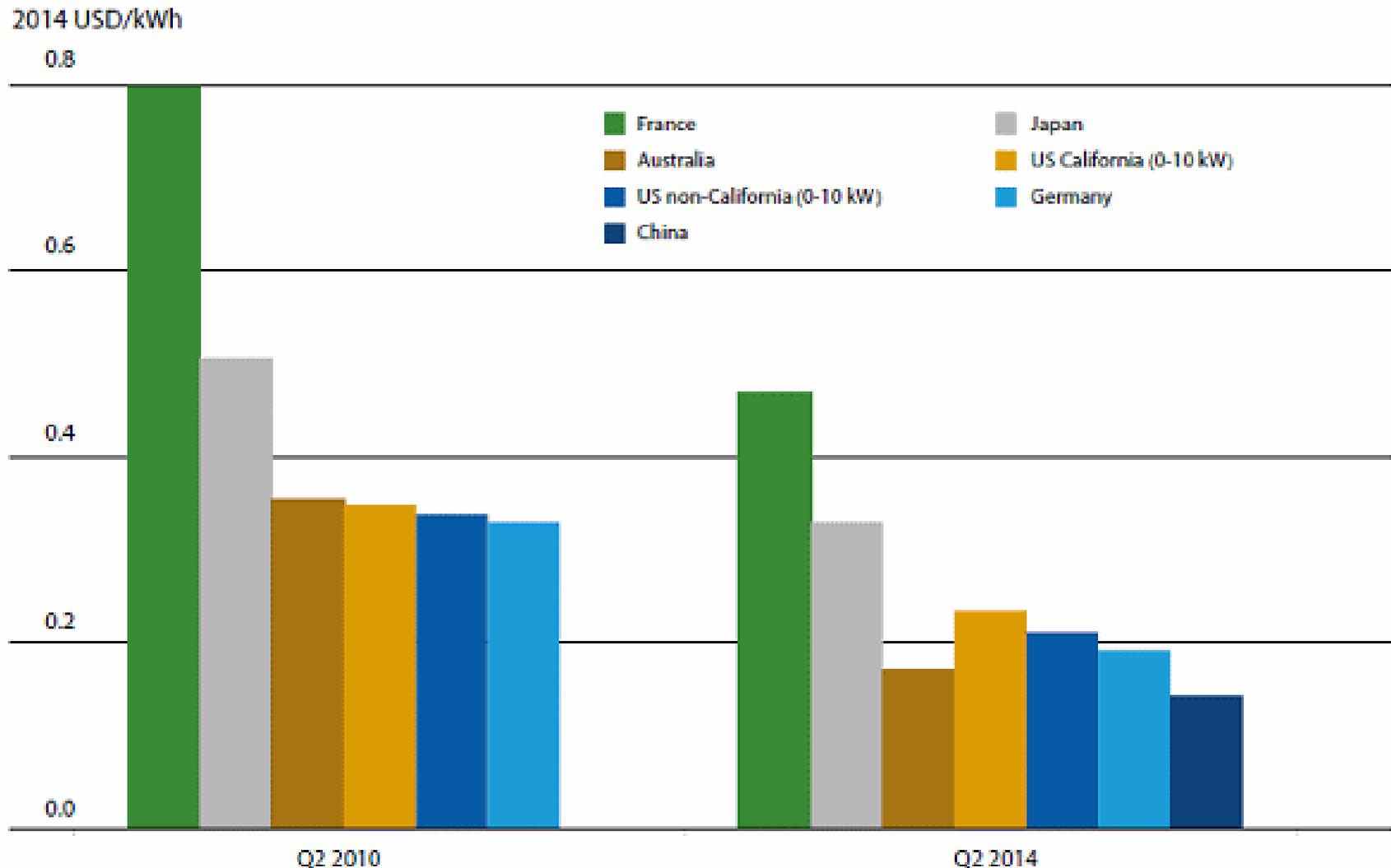
GDP and Power Generation decoupling in Japan

Energy efficiency improves energy security



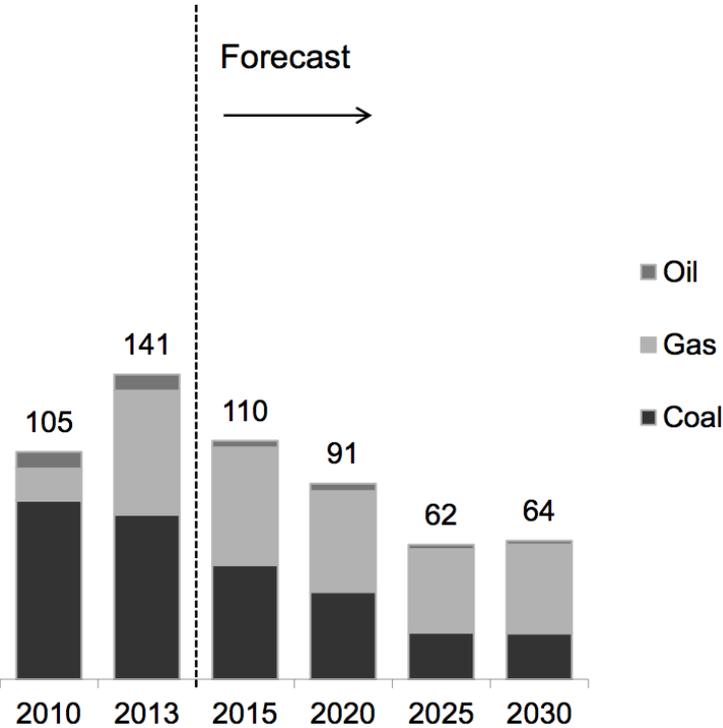
Costs of solar coming down rapidly – need to keep up

FIGURE 2.6: LEVELISED COST OF ELECTRICITY OF RESIDENTIAL SOLAR PHOTOVOLTAIC SYSTEMS BY COUNTRY, 2010 TO 2014

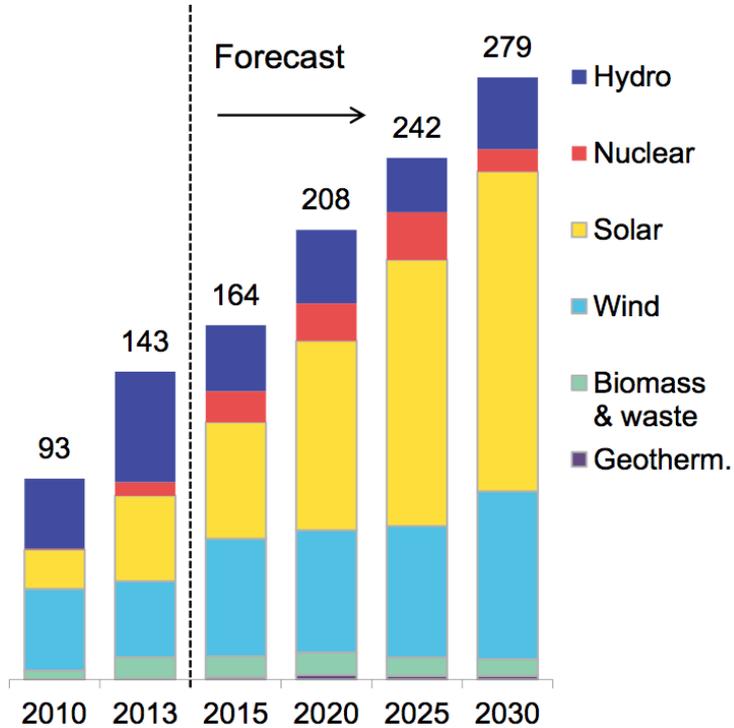


BloombergNEF – fossil fuels just lost the race with renewables – the beginning of the end?

FOSSIL FUEL



CLEAN ENERGY

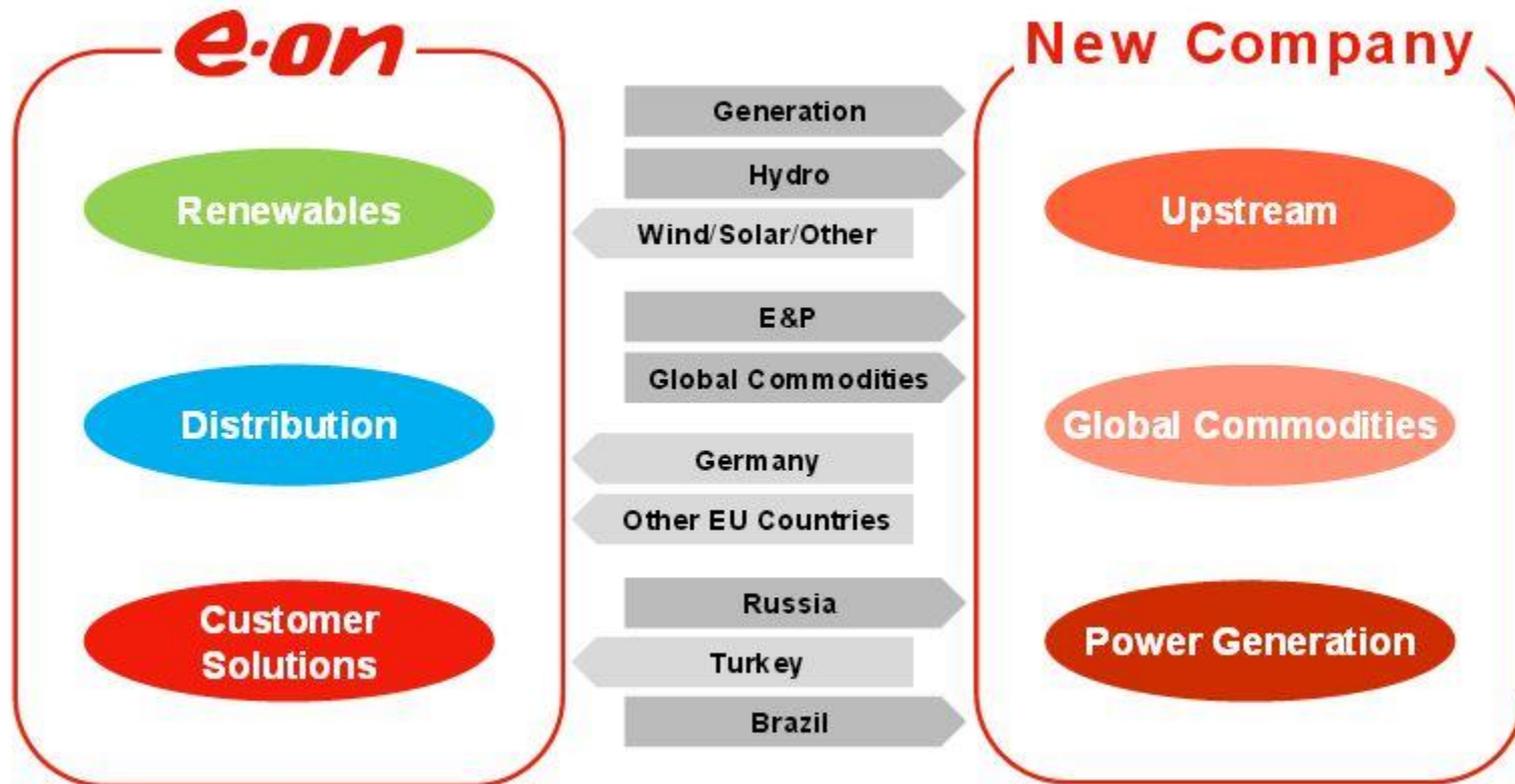


Power generation capacity additions (GW)

EU Utilities changing structures & business models e.g RWE, Vattenfall, e.on

Splitting fossil fuels/ and renewables:

Two leading companies for two energy worlds



Distinct opportunities, mindsets and capabilities

Fundamental challenges to business models

- Independent oil producers were betting on high prices (\$100+/bbl) persisting
- Coal exporters are betting on the recovery of a market in structural decline
- EU Utilities have failed to adapt to shrinking customer base and cheaper renewables
- US Coal miners have been hit by cheap gas and a series of EPA measures on pollution
- US & China Agreement includes joint efforts to develop solutions at scale

There is a huge opportunity to develop the new energy systems for a low carbon future – the risk is getting left behind.

Investors want to know who are the winners and losers going to be?



Investors still bear scars from the failure of big, old, strong companies that didn't survive the IT transition. But they got rewarded by those that did.

Investor responses to decarbonize

– a range of options

Carbon Asset Risk Engagement
– Shell & Exxon public responses making it a public debate eg CERES, IIGCC

Shareholder resolutions – more planned on reducing capex (eg Chevron)

Internal assessment of stranded asset exposure – eg Allianz

Reduce exposure to largest coal and oil sands producers and coal power generators – eg Storebrand

Develop new low carbon / fossil free indices – eg MSCI, FTSE/Blackrock

No new investments in coal production or transport, including share issues – eg HESTA, Australia

Can you trust following the market?

- “Action needed to tackle market myopia”
 - Andrew Haldane, Bank of England





Thank you.

James Leaton
Research Director
jleaton@carbontracker.org

[@carbonbubble](https://twitter.com/carbonbubble)
carbontracker.org

