The background of the slide is a photograph of several oil rigs silhouetted against a vibrant sunset sky. The sky transitions from a deep purple at the top to a bright orange and yellow near the horizon where the sun is setting. The rigs are dark, intricate structures with multiple towers and platforms. A semi-transparent dark blue horizontal band is overlaid across the middle of the image, containing the main title and subtitle in white text.

A history of the solar century so far:

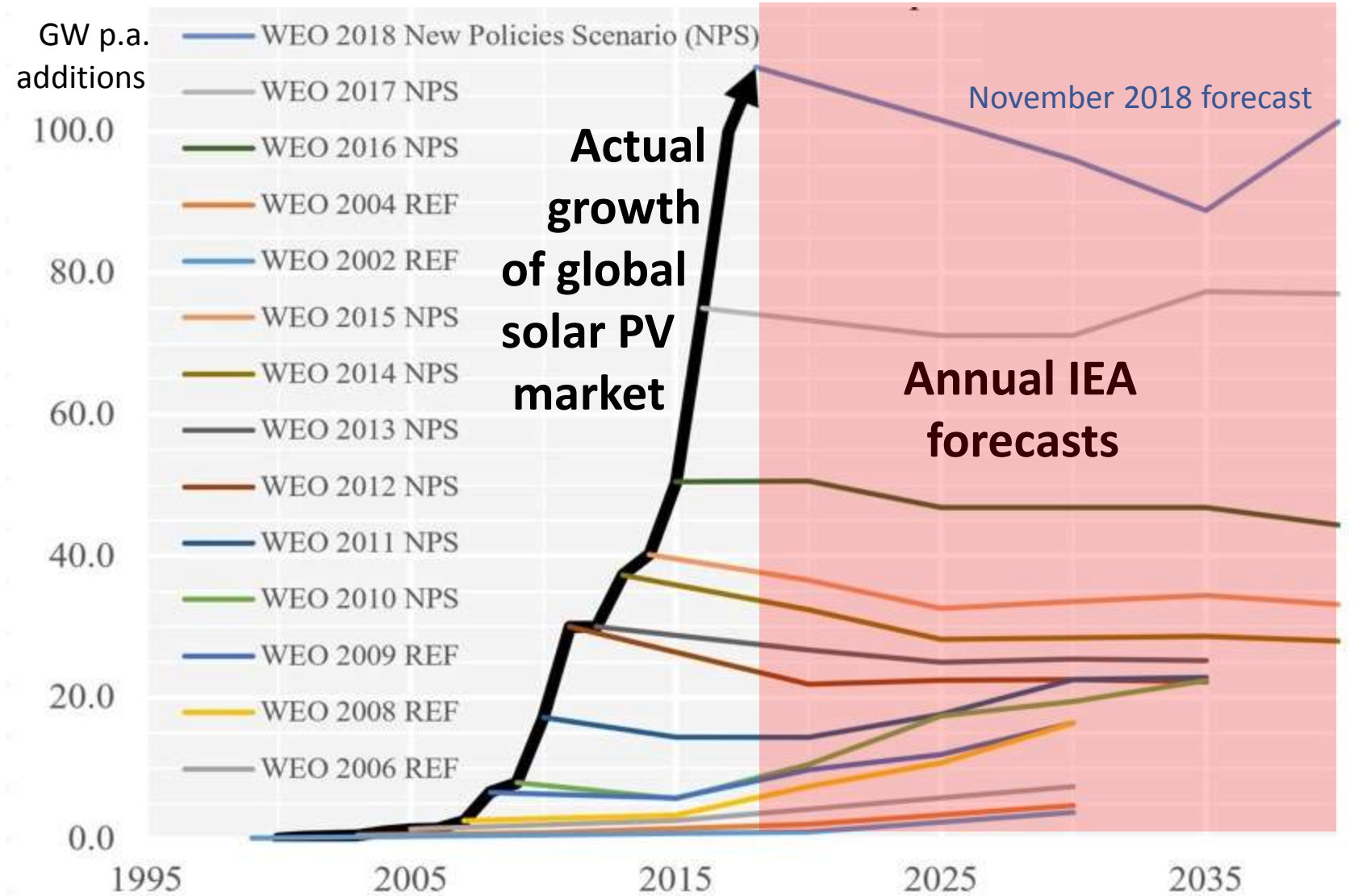
a tale of disruption, denial, and existential threat

Jeremy Leggett

17th September 2020

Premise for presentation:

Often groups of humans with strong systemic belief systems and/or cultures find it very difficult to act on change, or even acknowledge it, even when the need for it seems obvious to peers. The oil and gas industry has provided a spectacular example of this in the last 3 decades.



International Energy Agency annual forecasts of solar PV installed capacity In its World Energy Outlooks

A big, existential, question for the OGI:

How did we go from this in 2000....

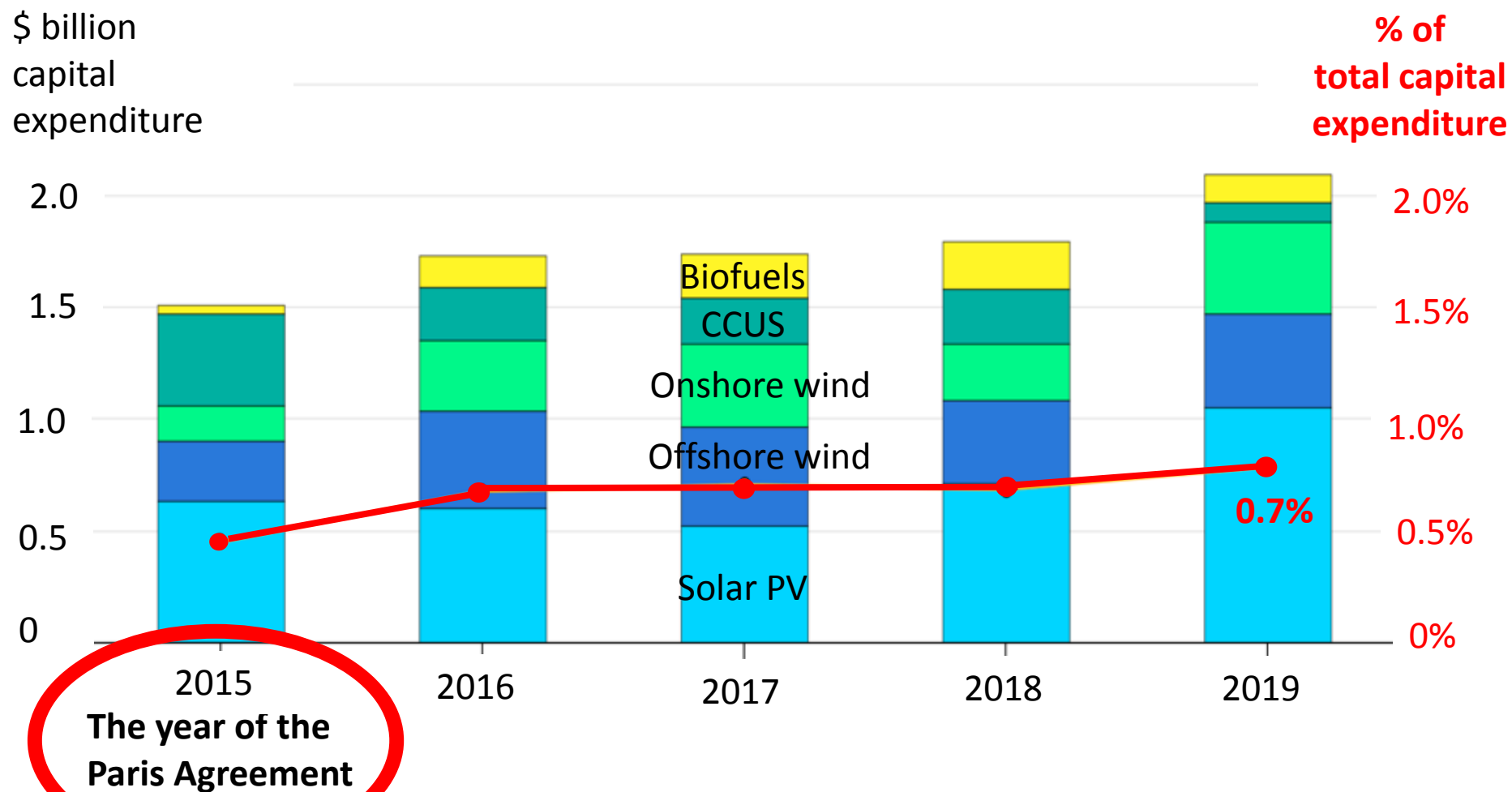
A major oil company accepting a trend with a huge implication and attempting a major strategic pivot.



A BP ad from a rebranding blitz in 2000

....to this
in 2020....

Less than 1%
of the entire
industry's capex
for renewables
fully four years
after the Paris
climate treaty.



IEA compilation of data on the global oil and gas industry's capex allocations since the Paris Agreement, presented at Davos February 2020

...when the stakes
are so manifestly
high?

Big Oil's survival at stake in world where 'everything has changed'

Jobs versus dividends is next painful choice facing groups hit by slide in crude prices

ANJLI RAVAL
SENIOR ENERGY CORRESPONDENT

Gordon Ballard, head of the International Association of Oil & Gas Producers, has seen many downturns in his 38-year career. But they were all followed by recoveries. This time, he fears, things may be different.

"In the past, activity decreased then picked up again — each time, we saw it come back," he said. "Now it's not entirely clear if things just come back as normal. Everything has changed."

The coronavirus pandemic has crunched oil demand so hard that US crude prices fell below zero this week for the first time in history. With the industry in crisis, Mr Ballard sees two immediate challenges: continuing to get workers to offshore sites to keep operations running, and ensuring companies have the financial resilience to survive.

Big Oil already faced an uphill struggle ahead of the crisis. European majors such as Royal Dutch Shell and BP had promised shareholders they could do it all — become more efficient, produce oil and gas at higher margins, pay down debt and ramp up dividends, all as they transitioned to being cleaner-energy businesses. But a darkening global economic outlook was making their pledges trickier to deliver.

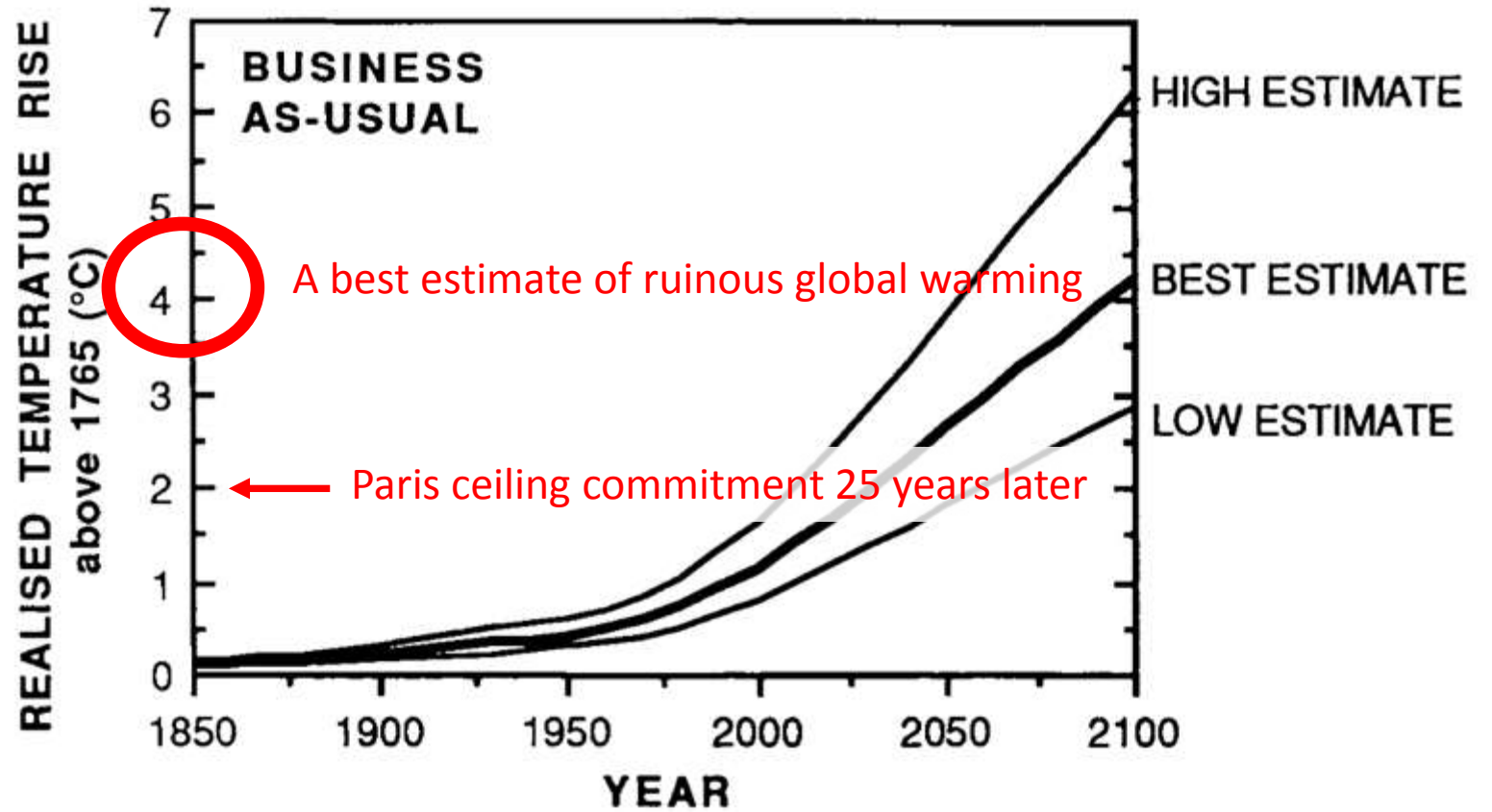
Coronavirus has now forced them to make trade-offs unthinkable just two months ago as they slash capital spending and operational costs, suspend share



Refining units are suffering as lockdowns and travel bans mean there is limited demand for fuels such as petrol and diesel — Anjali Raval/FT

Financial Times front page, 24th April 2020

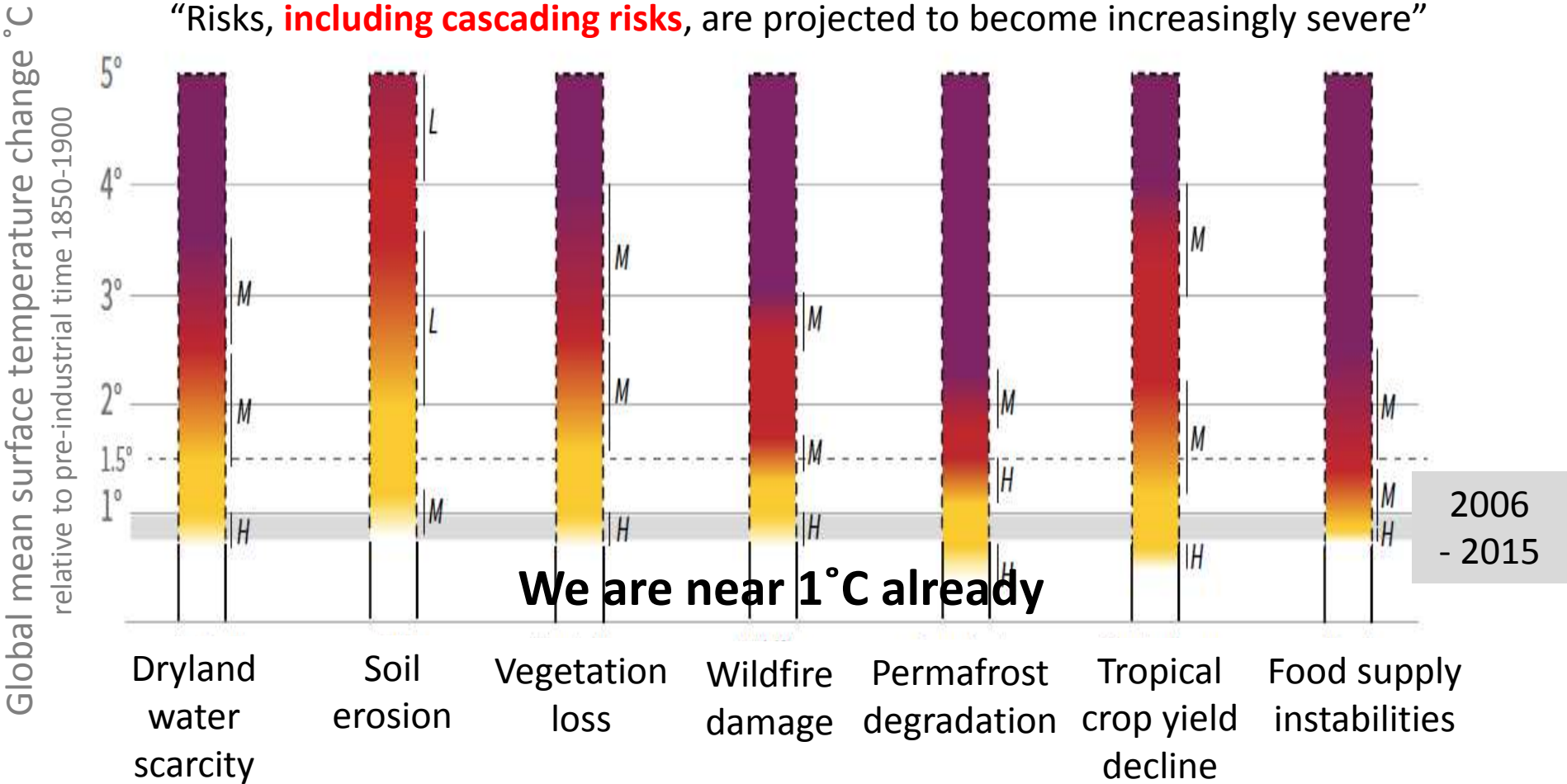
The journey started here, in May 1990, with a warning by scientists from dozens of countries that kick-started 30 years of UN climate negotiations involving almost every government on the planet.



Source: Intergovernmental Panel on Climate Change, first report, 1990

Front page headlines included "Race to Save Our World": Daily Express
"Thatcher urges global action on environment": Financial Times. etc.

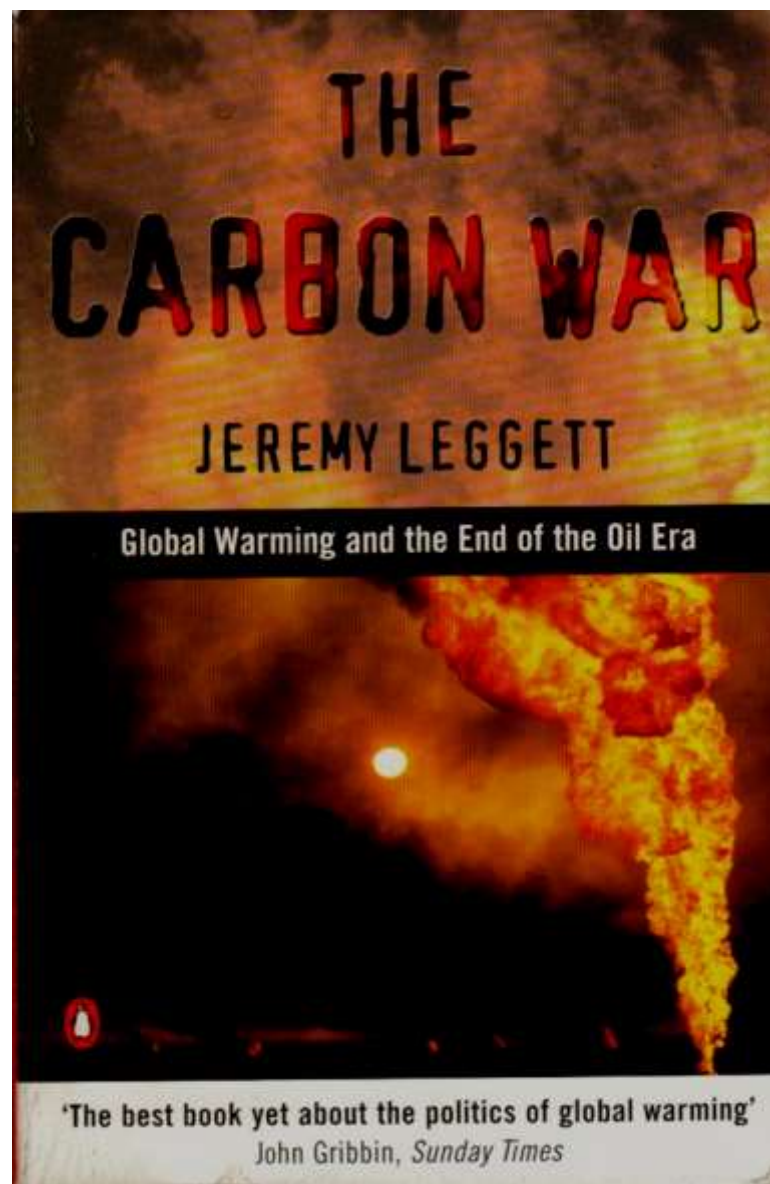
IPCC 2019: Above 1 degree C of global average temperature rise, risk of ruinous environmental and economic damage soars



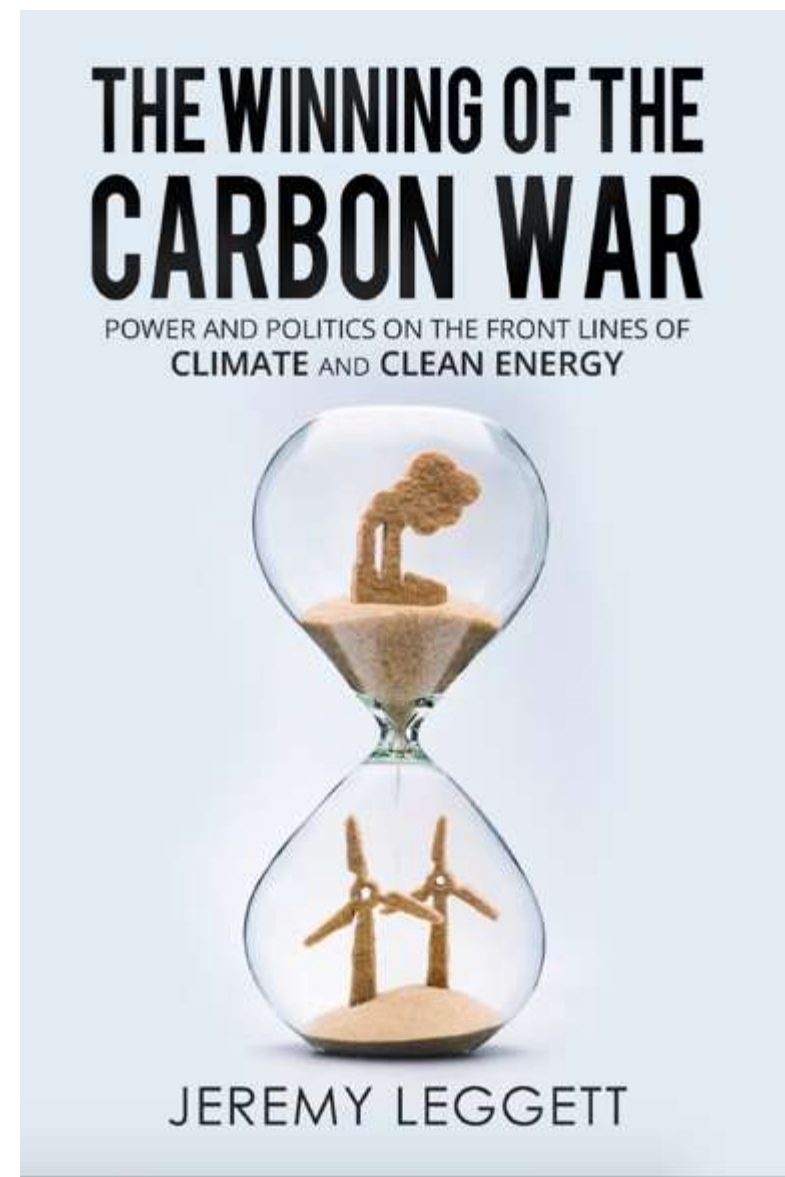
Yellow is moderate risk. Red is high risk. Purple is very high risk.

Levels of IPCC confidence in assessments: H is high, M is moderate, L is low.

I argue in eye-witness accounts of the history that if BP had not accepted the risk of global heating in 1996, including the implications for business models, the first of the two international climate treaties (Kyoto Protocol, 1997) would not have proved negotiable.



1989 - 2000



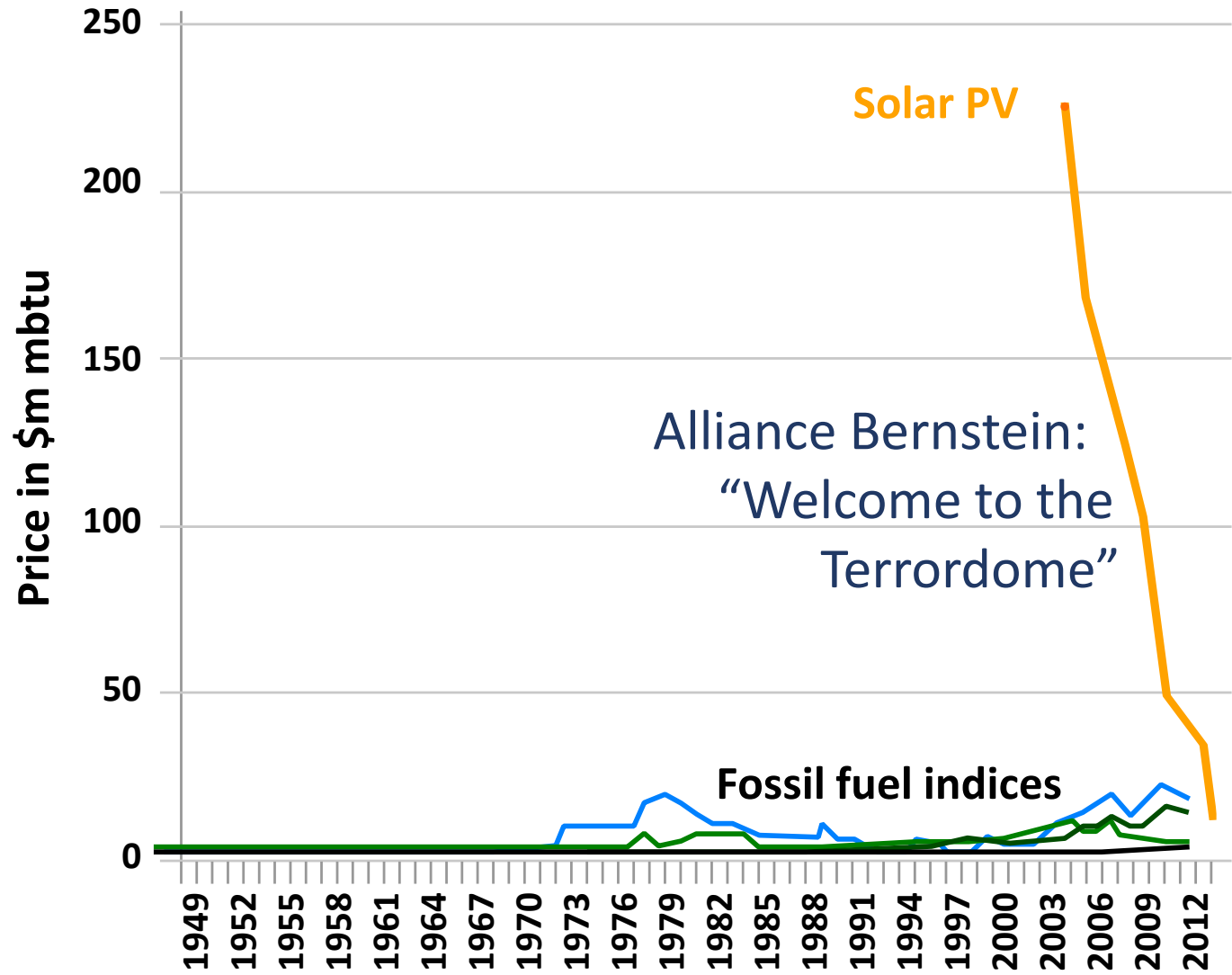
2013 - 2015

But BP's pivot did not last long in "the new age of oil exploration."



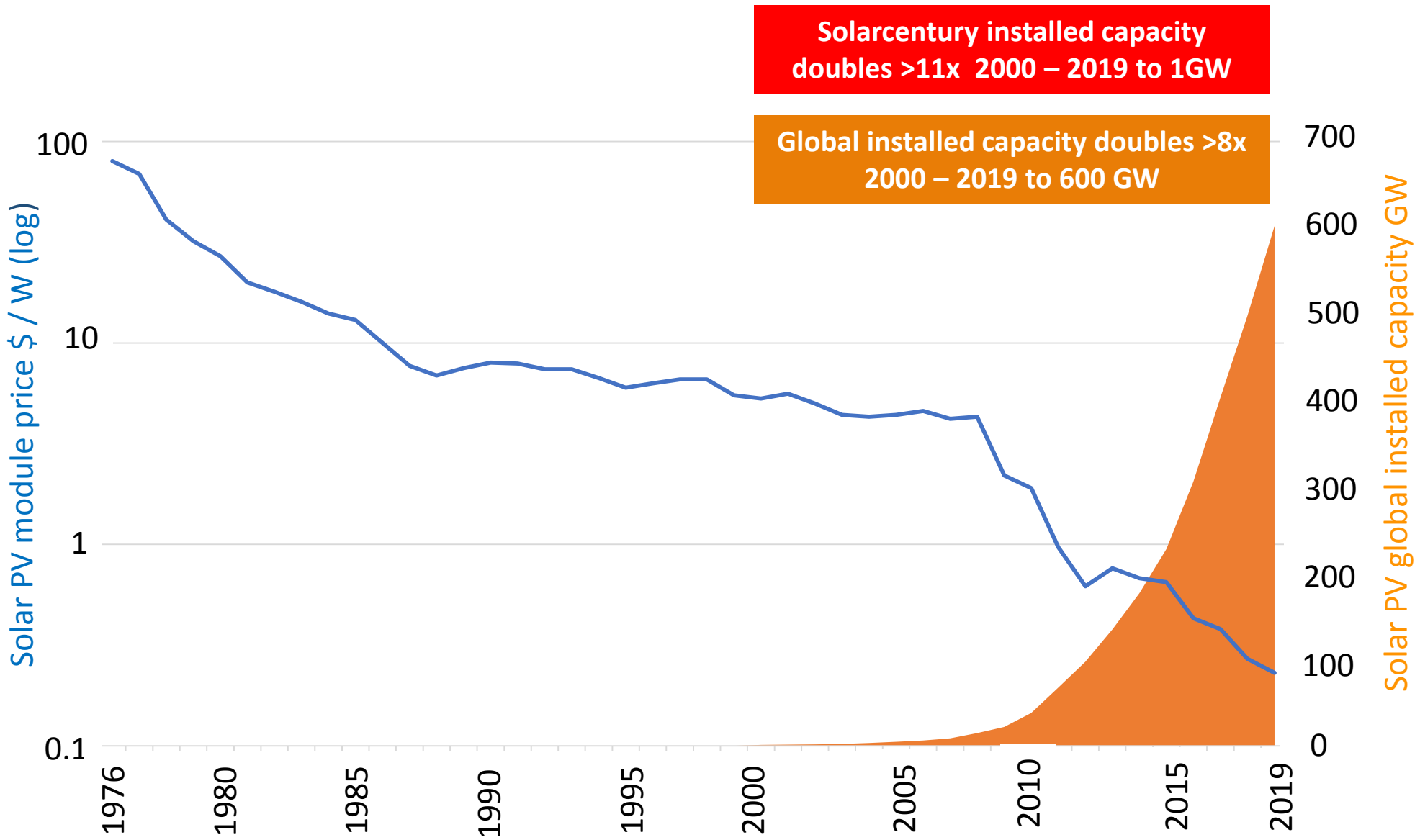
Business magazine front covers in 2001

BP's initial enthusiasm for solar in 2000 proved to be bang on the money.

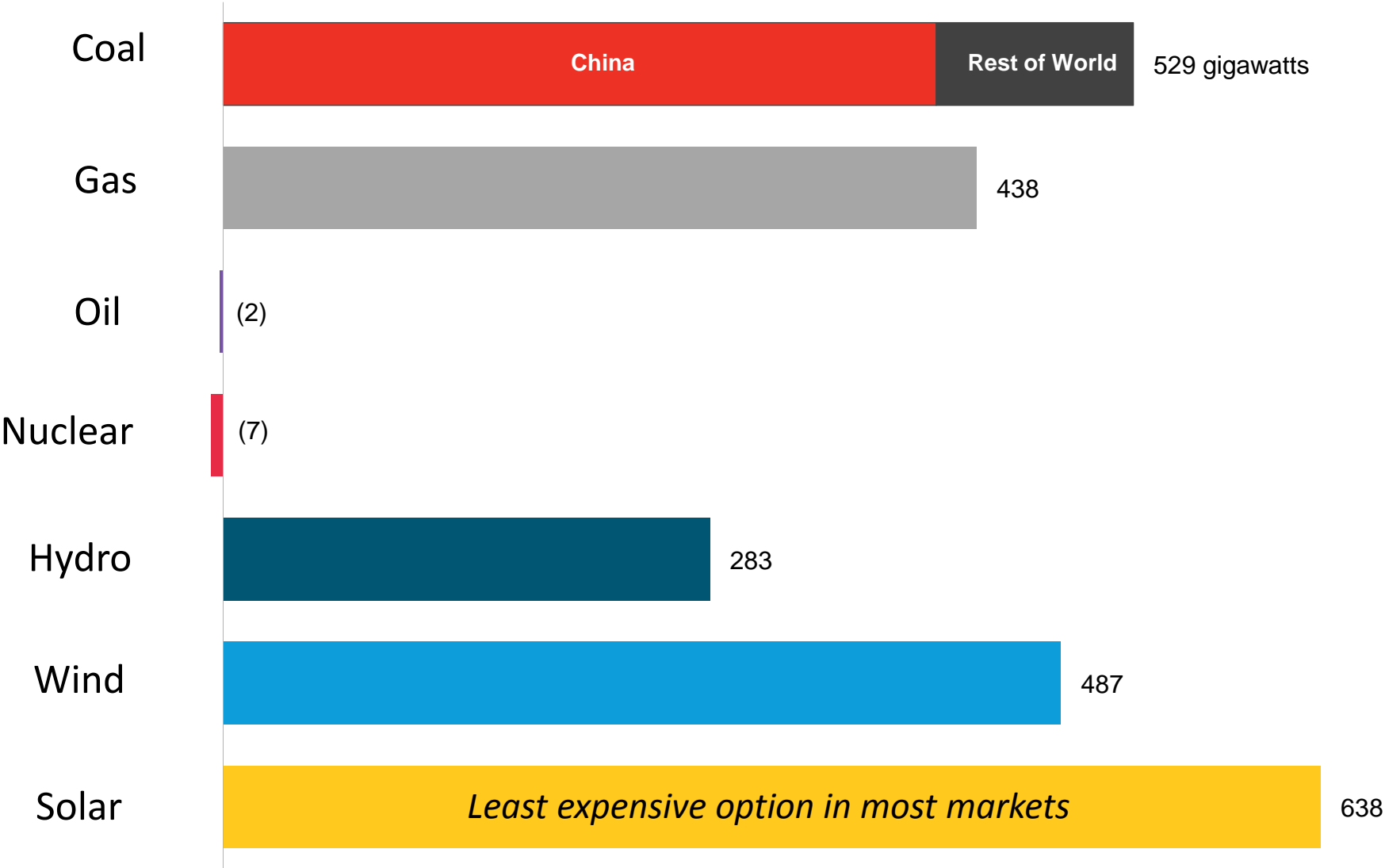


Solarcentury has ridden “the terrordome” to exponential growth with £28 million of venture capital since 2000.

Imagine what BP, Shell et al could have done had they started with serious intent then.



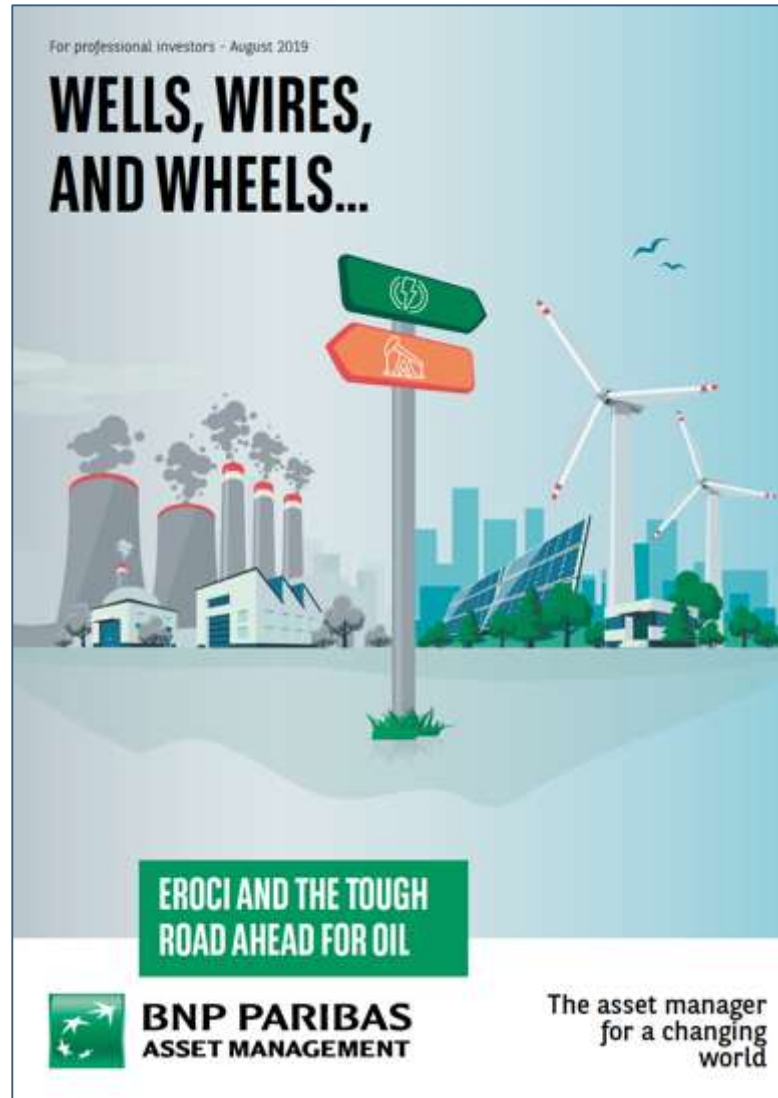
And now....



Power generation capacity additions, 2009 – 2019

Source: Bloomberg NEF

The cost advantages of solar and wind meant that Energy Return on Capital Invested was increasingly killing oil demand for gasoline and diesel vehicles even before the Covid crisis hit.



“To get the same amount of mobility from gasoline as from new renewables in tandem with EVs over the next 25 years would cost **6.2 to 7 times more.**”

“The economics of oil for gasoline and diesel vehicles versus wind- and solar-powered EVs are now in **relentless and irreversible decline, with far-reaching implications** for both policymakers and the oil majors.”

4th August 2019

How can an industry be so systemically blind to existential risk for so long?

Among a list of reasons, one stands out: the fact that investor norms have encouraged them to be so.



Financial reporting long eschewed climate risk. Short-termism, excess in remuneration and other anti-social behaviours in capital markets have favoured a ruinous status quo.



A year after the Paris climate treaty Glencore Chairman and ex BP CEO Tony Hayward assures pension funds that it is fine to keep investing in oil and gas, and even coal.

e.g. as a very senior PR industry executive
on Big Oil's payroll told me in private:
“They are using black arts to try and kill you”

Among the “other
antisocial
behaviours”,
unaccountable
lobbying and PR
tacticsexecuted
very effectively.

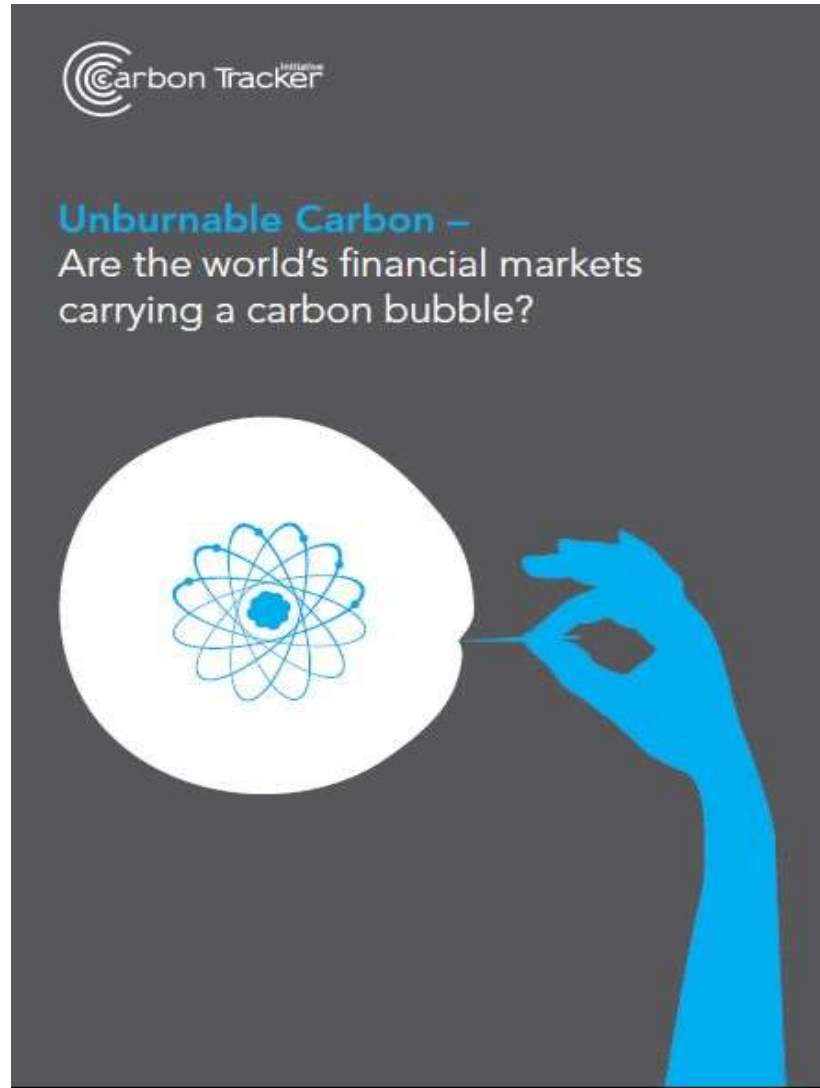


MailOnline

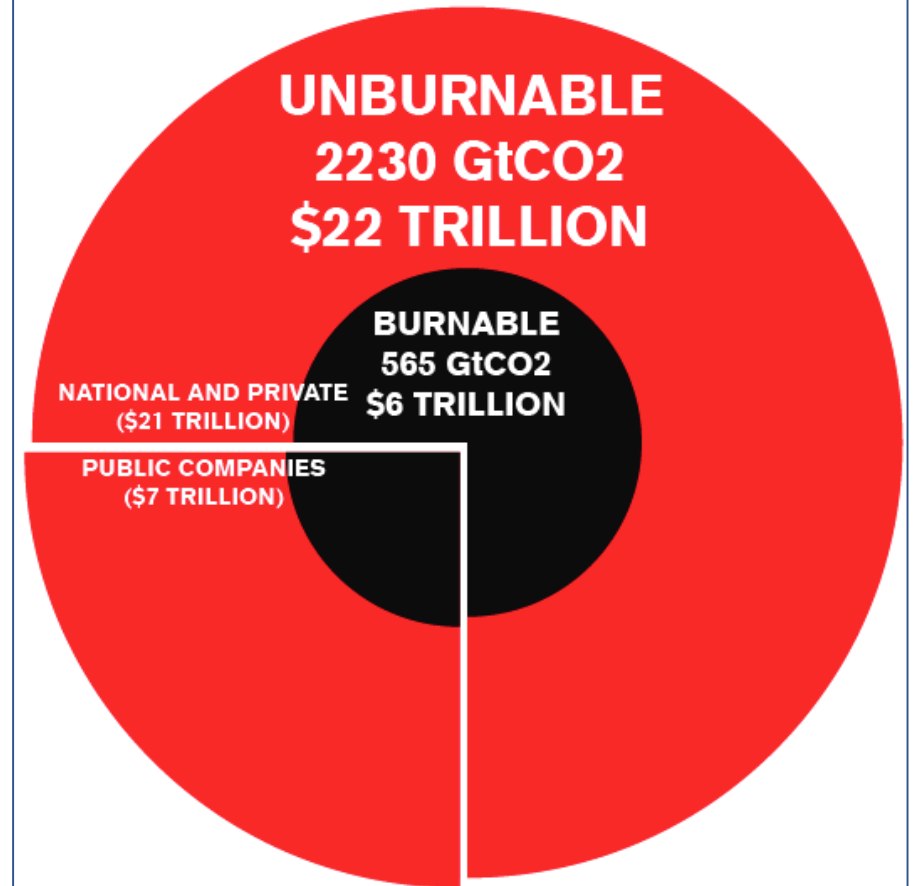
Cash cut for solar farms that blight
countryside: Energy minister set to
announce review of subsidies

In 2011, with the advent of Carbon Tracker's first report, this began to change.

Analysts began to speak of a "carbon bubble" of "unburnable carbon" that can lead to "stranded assets".



**Proven fossil fuel reserves:
2,795 GtCO₂ \$28 trillion**



Unusable reserves: it's hot air, say analysts

By Steve Johnson

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"I think it's a bollocks subject. I'm not interested in this kind of subject. I think this is complete hot air."

These were the words of one sellside oil and gas analyst when asked about a recent report by the Carbon Tracker Initiative (CTI) which argues that, because of global warming, much of the world's stock of hydrocarbon reserves can never be burnt, if we are to avoid runaway climate change.

Financial Times, 31st July 2011.

The OGI and its supporters launched a trenchant counter attack.

But by 2013, the arguments of Carbon Tracker's analysts, and by then many others pushing the same line, were beginning to find serious traction.

Protests and profits

An anti-fracking protester at a drilling test site near Salford. BlackRock's move suggests the fight against fossil fuels is entering the financial mainstream. *Getty*



Fossil fuel reserves held by companies listed in London
Gigatonnes of CO₂

Total	105.5
Oil	51.52
Coal	49.35
Gas	4.63

Source: Carbon Tracker

BlackRock's FTSE deal shuns fossil fuel companies

By Pillita Clark, Environment Correspondent

BlackRock, the world's biggest fund manager, has teamed up with London's FTSE Group to help investors avoid coal, oil and gas companies without putting their money at risk.

In a sign that a global campaign against fossil fuels is entering the financial mainstream, companies that extract or explore for such fuels are excluded from a new set of indices specifically bar fossil fuel companies. A precise list of excluded companies has not been released but some of the best known names on the London Stock Exchange will be targeted, from oil and gas producer BP to coal miner BHP Billiton.

The groups that are included range from tech companies such as Apple, Google and Microsoft to a number of large US banks and pharmaceutical companies such as Johnson & Johnson of the US and Switzerland.

Others have reached different conclusions. The fossil fuel industry stands to lose \$28tn of gross revenues during the next 20 years if countries ever reach a meaningful deal to crack down on climate change, European financial services

When a small tank named CarbonTracker started publishing reports on something it called the "carbon bubble" three years ago, few took too much notice, writes Pillita Clark.

Today, there is much debate about its idea that more than \$670bn is invested annually in fossil fuel assets that could plummet in value if governments try to curb fossil fuel holdings, said Kevin Bourne, a FTSE managing director.

"This is one of the fastest moving debates I think I've seen in my 30 years in markets," he said.

A US campaign modelled on the 1980s anti-apartheid divestment movement has led several small colleges and endowments in that country to sell out of their fossil fuel holdings.

But larger groups, including Harvard University, have resisted pressure to

"So far it's been relatively niche players that have divested and that is why this launch is game-changing," said NRDC executive director Peter Lehner.

Still, hurdles remained when it came to large pension funds shifting big pots of money away from the fossil fuel industry, said Craig Mackenzie, investment director at Aberdeen Asset Management. "The question is, 'will going fossil free have an investment performance impact?' and

'Carbon bubble' drives debate

\$28tn

Financial Times, 29th April 2013.

Among the converts was the Bank of England: “Climate change is the biggest issue for the futureinvestors must be given the data to “invest accordingly” - Mark Carney, Governor.



15th September 2015

Meanwhile, in the face of increasingly alarming emerging impacts and scientific advice, plus mounting public concern, key governments finally committed to meaningful action on emissions.

FINANCIAL TIMES

TUESDAY 9 JUNE 2015 WORLD BUSINESS NEWSPAPER UK £2.50 Channel Islands £2.80 Republic of Ireland €3.00

Tiger Mums tamed
China's rethink on pro-growth strategy
cramped by NOTEBOOK, PAGE 12

Why is Isis winning?
How coalition airstrikes have failed to
deter the jihadis — BIG READ, PAGE 11

Wired workers
Using wearable gadgets to
keep tabs on staff — PAGE 14

G7 in historic accord to phase out fossil fuel emissions this century

◆ \$100bn pledge to poor countries reaffirmed ◆ Huge challenge for energy companies

Briefing

- **Cameron's return on 'Brexit' vote**
David Cameron has retracted a threat to ministers that they would have to quit if they wanted to campaign to leave the EU, scuppering an apparent bid to force discipline on Tory eurosceptics. — PAGE 3
- EDITORIAL COMMENT, PAGE 12; GIDEON RACHMAN, PAGE 13

Apple launches music streaming service
Apple has made its biggest push into digital music since it began selling downloads on iTunes 12 years ago, launching a streaming service that will compete with the likes of Spotify. — PAGE 17

Ex-Centrica chief to lead oil and gas push
Former Centrica chief Sams Laidlaw is to take the helm of a private equity push into oil and gas that is backed by Carlyle and CVC Capital Partners and is to spend up to \$5bn. — PAGE 17- LOMBARD, PAGE 22; NORTH SEA DEALS, PAGE 23

Relief as Tories shelve paid leave drive
The prime minister's plans to revive his push to give bigger companies' employees three days of paid leave each year for voluntary work are being quietly axed, to the relief of some business leaders. — PAGE 2

Bids invited for military fire service
Companies including Serco, Babcock and Capita have been invited to bid to run the military fire and rescue services, the latest Ministry of Defence outsourcing deal in its search for savings. — PAGE 4

Syngenta rejects fresh Monsanto move
US agricultural seeds and chemicals company Monsanto's latest move in its pursuit of a "tax

**PHILITA CLARK
STEFAN WAGSTYL — PHOTOGRAPHY**

The Group of Seven industrial powers has agreed that the world should phase out fossil fuel emissions this century, in a move hailed as a historic decision in the fight against climate change.

G7 leaders meeting in Bavaria, Germany, said that in line with scientific findings, "deep cuts in global greenhouse gas emissions are required with a decarbonisation of the global economy over the course of this century".

The leaders of the US, Germany, France, the UK, Japan, Canada and Italy said they supported cutting greenhouse gases by 40-70 per cent by 2050 from 2010 levels — the first time they have backed such a precise long-term target.

Angela Merkel, the German chancellor, said that the cuts would have to be at the upper end of this target because "40 per cent is clearly not enough".

The leaders also reaffirmed a pledge to mobilise \$100bn a year from public

...and up to 70% cuts by 2050

9th June 2015

Against expectations, 195 nations agreed a treaty aiming to decarbonise the global economy.

Many analysts profess that changing attitudes in the capital markets were a key factor in this.



12th December 2015

With the creation of the Taskforce on Climate-related Financial Disclosure in Paris, the momentum towards consideration of climate risk grew.



12th Apr
2018

Shell sets out energy transition strategy, telling investors they see little chance of stranded assets

Still the oil and gas industry dug in.



Ben van Beurden
CEO

By 2030 75% of proved + probable oil & gas reserves will be produced, with demand higher than it is today. Oil demand still 50-60 mbd in 2070.

10th Oct
2018

“BP chief brands ‘stranded asset’ fears misguided”

“I believe the more serious systemic risk comes from underinvestment in oil and gas exploration and production - not overinvestment.”



Bob Dudley, BP CEO, Petroleum Executive of the Year, keynote speech at the Oil and Money conference.

11th Sep
2018

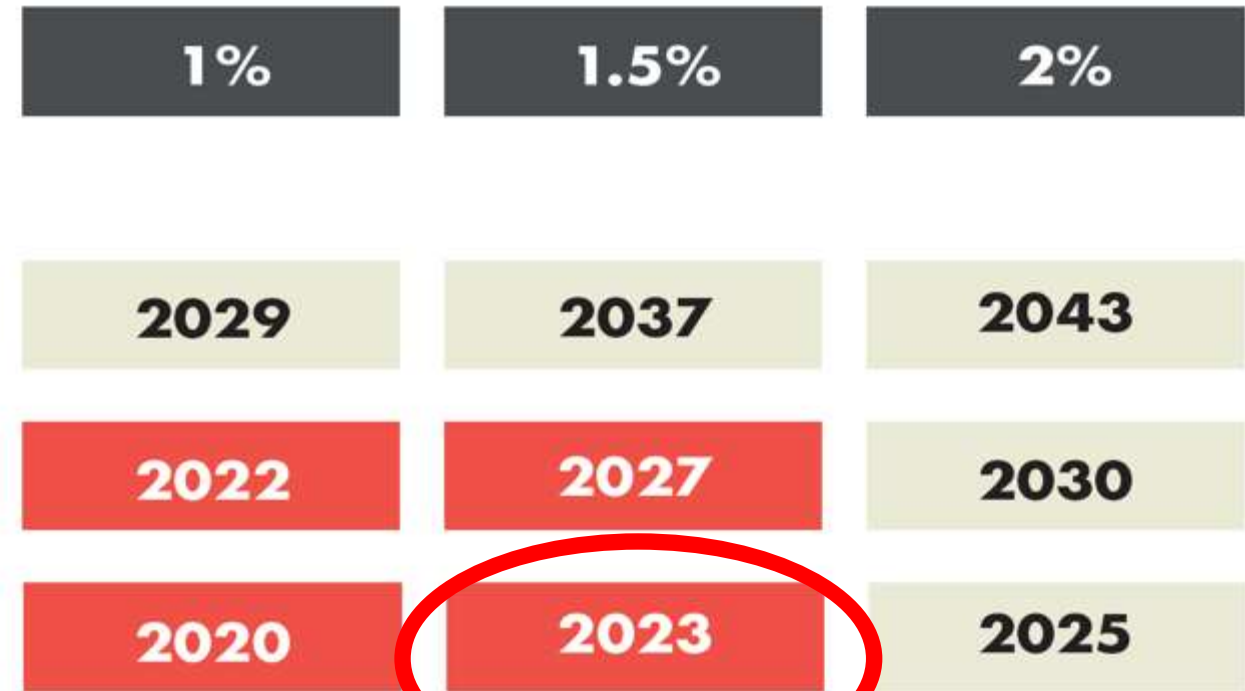
“Fossil fuels will peak in the 2020s as renewables supply all growth in energy demand”

Meanwhile Carbon Tracker’s analyses were becoming increasingly granular.

Solar PV and wind supply growth



Global energy demand growth from 2018



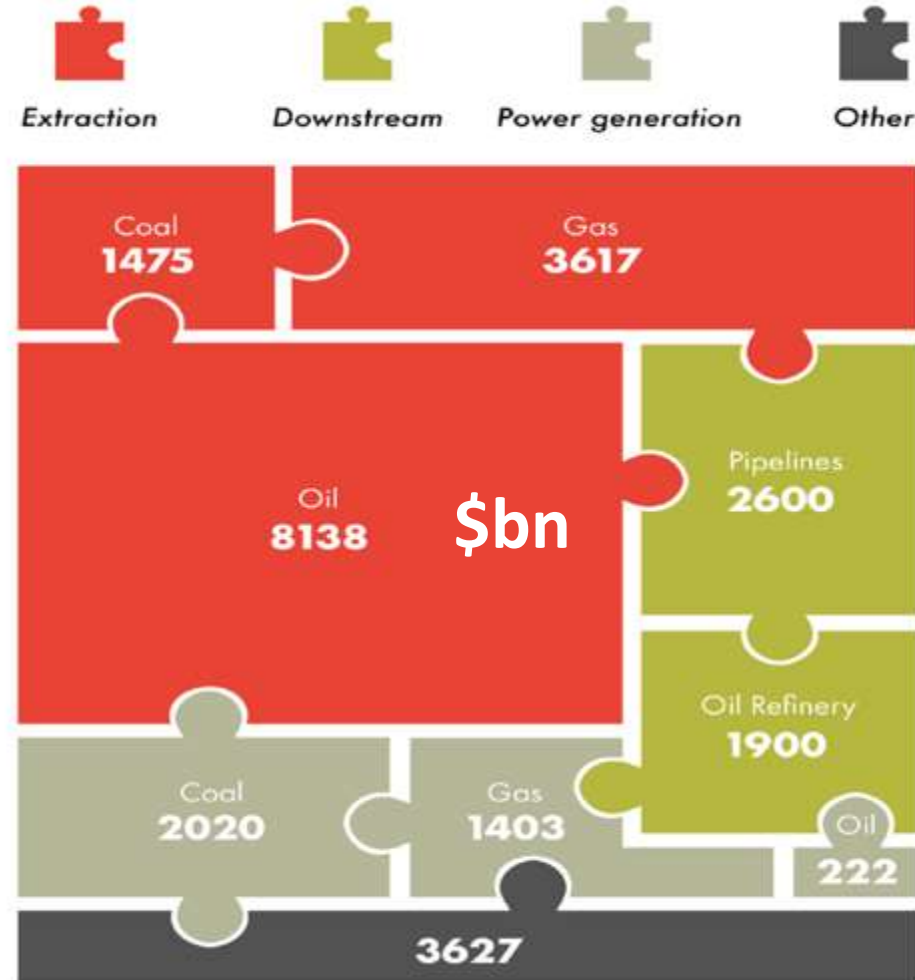
Most likely

Carbon Tracker’s latest report estimates peak years for different growth rates of renewables & global energy demand, and warns of “trillions of dollars in stranded assets” across the corporate sector & in petro states.

11th Sep
2018

c\$25 tn past infrastructure investment means peak demand poses “systemic risk to financial markets”

Companies in other sectors increasingly profess to find the analysis compelling – and the antidotes less daunting than the OGI considers them to be.



- Russia is one of 12 countries where fossil fuel rents account for 10% or more of GDP
- Entire sectors will struggle to make this transition. They can expect price declines, greater competition, restructuring, stranded assets and market derating.

Companies making up to a quarter of equity indexes & debt markets will be hit, incl. banking, capital goods, transport and automotive sectors.

Capital markets processes have begun to turn on oil and gas, deepening their crisis.

Opinion **Lex**

Climate change: the bigger short

Shorting opportunities start with hydrocarbon suppliers followed by holiday groups and airlines

YESTERDAY

10 

Characters in financial blockbusters such as *The Big Short* are hard-boiled in testosterone. Climate change presents a bigger opportunity than subprime bonds, though it is tough to imagine hedgies crying “short the hell out of that sucker and save the planet!”

Financial Times, 3rd July 2019

April - August
2020

Carbon Tracker predictions playing out

Oil Companies Are Collapsing, but Wind and Solar Energy Keep Growing 7th April, New York Times

Renewables Are the Only Winners in Historic Decline in Energy Demand 30th April, Bloomberg

Renewables sector shrugs off devastating effects of coronavirus 7th May, Financial Times

Clean power stocks outperform fossil fuel peers during pandemic 28th May, Financial Times

BP to take up to \$17.5bn assets hit after cutting energy price outlook 15th June, Financial Times

Seven top oil firms downgrade assets by \$87bn in nine months 14th August, Telegraph

Oil Companies Wonder If It's Worth Looking for Oil Any More 17th August 2020, Bloomberg

14th Sep
2020

“BP can thrive without oil,
boss vows”

The Telegraph

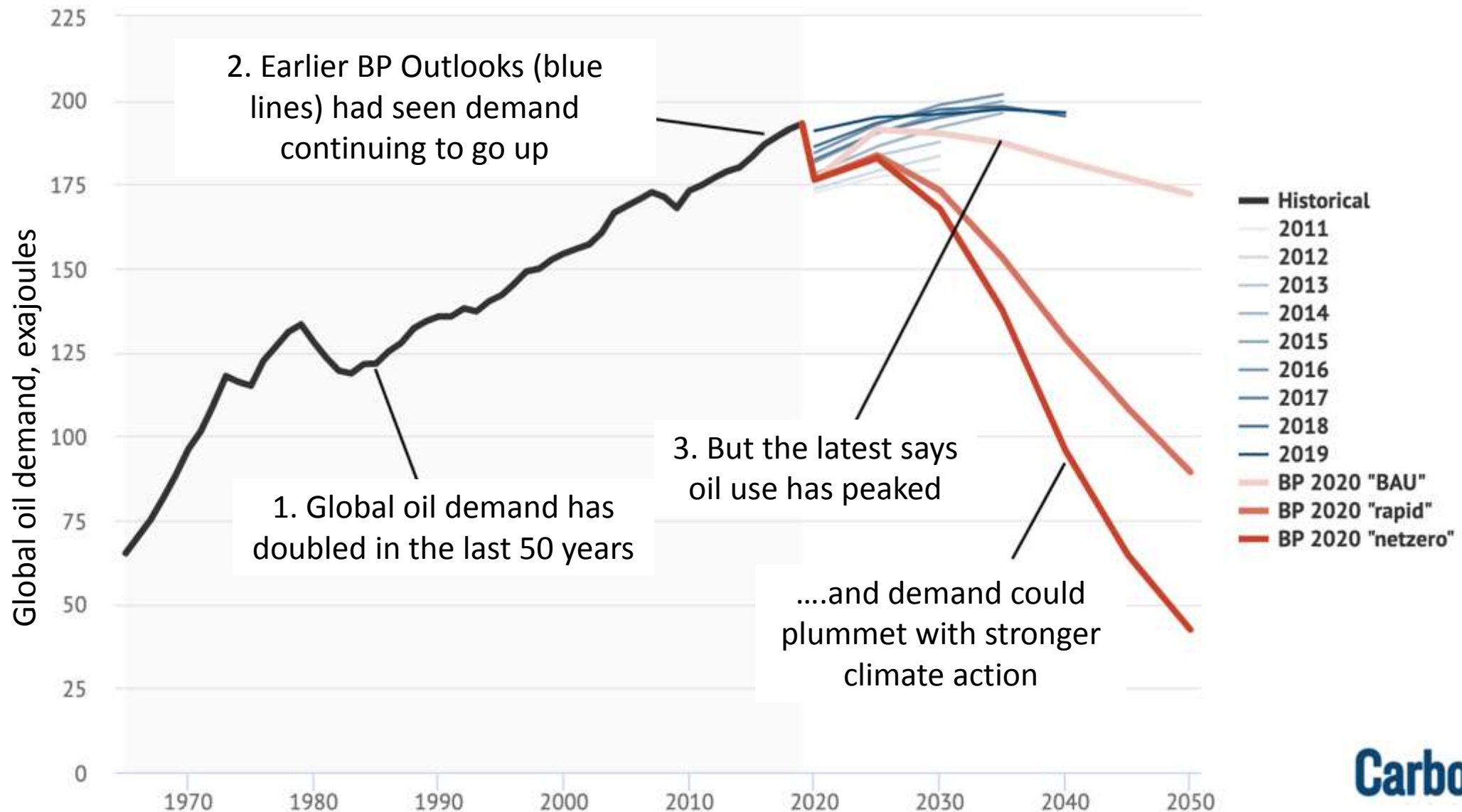
BP’s 2020 World Energy Outlook finally comes close to final acceptance that the rebranding 20 years earlier was sound strategy in the face of the remorseless megatrends.



“BP’s top brass tried to persuade investors that its plans to quit fossil fuels were credible as they warned that the days of oil were numbered.”

BP now concedes that oil demand has already peaked – and could soon plummet

Last year's World Energy Outlook saw peak oil still being 15 years away

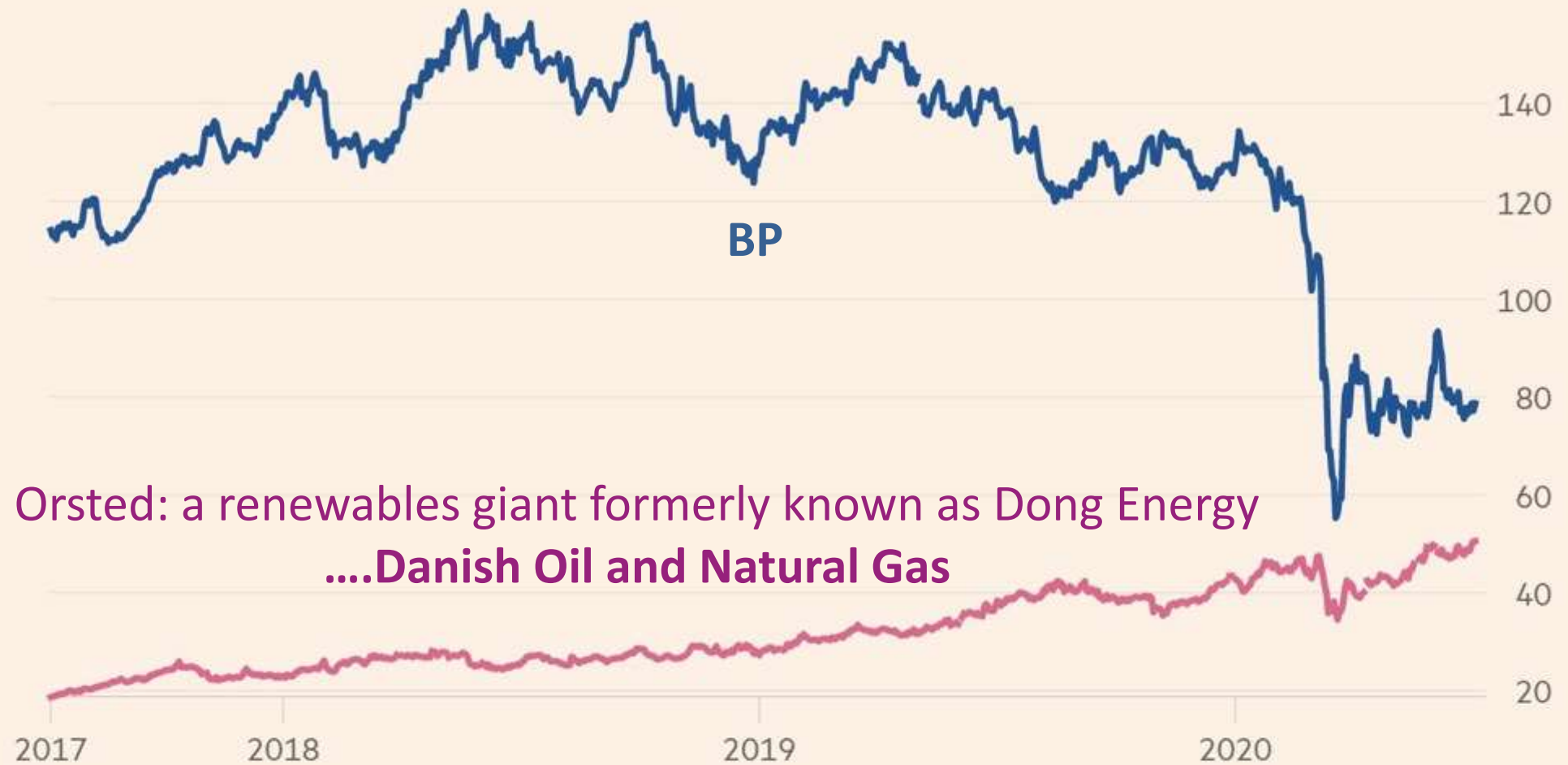


It is wrong to think that oil and gas companies are incapable of system change.

But most if not all oil majors have probably left it too late now.

Orsted's valuation is closing in on that of BP

Market capitalisation (\$bn)




Source: S&P Capital IQ
© FT

Financial Times, 7th July 2020.



Where will
it end?

Amid the dangers,
there are huge
opportunities in
many sectors amid
the system change
finally underway in
energy.



HSBC Pollination Climate Asset Management

[Home](#) > [Investment expertise](#) > [Sustainable investments](#) > **HSBC Pollination Climate Asset Management**

 **HSBC** |  POLLINATION

Nature *is* capital

The first large-scale investment opportunity to protect nature, and your returns.

“The simple truth is understood: failing to invest in the resilience of nature means failing to invest in the resilience of the economy.
Nature is now the most fertile investment we have.”