

7th November 2018

**Republic of the Philippines Commission on Human Rights
CHR-NI-2016-0001 In Re: National inquiry on the impact of climate change
on the human rights of the Filipino People**

Statement of Resource Persons, Mark Campanale and Andrew Grant

1) Preliminary Matters

My name is Mark Campanale, I am the Founder & Executive Director of the Carbon Tracker Initiative, a non-profit financial think tank based in London launched in 2011. My background is over 20 years in investment management for large financial institutions and financial markets research for the last ten years. I remain regulated by the Financial Conduct Authority in the United Kingdom.

I employed by Carbon Tracker to provide strategic advice on the direction of our organisation, engaging with financial institutions and working with Carbon Tracker's research team. Previously, I worked at Jupiter Asset Management and Henderson Global Investors. I hold a degree in Politics & Economic History from the University of York and a Master's Degree in Agricultural Economics from the University of London.

I am joined by Andrew Grant, Andrew joined Carbon Tracker in 2014 as a Senior Analyst, leading research on oil & gas and coal mining. He has authored a number of Carbon Tracker's major reports on these sectors, including the Carbon Supply Cost Curves series, scenario analysis of the oil refining industry in Margin Call, and exploring transition risk at the company level in 2 Degrees of Separation. Prior to joining Carbon Tracker, Andrew formerly worked at Barclays Natural Resources Investments, a private equity department of Barclays that committed capital across a range of commodities and related industries. Andrew has a degree in Chemistry & Law from Bristol University.

2) Substantive Matters

Following here is commentary relating to the presentation.

Slide 1: Cover Slide

Slide 2: Carbon Tracker, Who are we?

Carbon Tracker is an independent financial think tank that carries out in-depth analysis on the impact of the energy transition on capital markets and the potential investment in high-cost, carbon-intensive fossil fuels.

Its team of financial market, energy and legal experts apply ground breaking research using leading industry databases to map both risk and opportunity for investors on the path to a low-carbon future. It has cemented the terms "carbon

bubble”, “unburnable carbon” and “stranded assets” into the financial and environmental lexicon.

We would like the Commission to note that neither Andrew nor myself are scientists. Our backgrounds are in company and financial analysis.

Slide 3: The Carbon Budget

In Carbon Tracker’s first report, ‘*Unburnable Carbon, are the World’s Financial Markets Carrying a Carbon Bubble?*’ published in 2011.

See <https://www.carbontracker.org/reports/carbon-bubble/> looked at the world’s top 200 publically traded fossil fuel companies. We analysed the reserves and resources of the companies to assess the embedded CO₂ and compared these numbers against a carbon budget to 2 degrees of warming. Details on carbon budget can be found below but also here <https://www.carbontracker.org/carbon-budgets-explained/>

We found that:

- Already in 2011, the world has used over a third of its 50-year [carbon budget](#) of 886GtCO₂, leaving 565GtCO₂
- All of the proven reserves owned by private and public companies and governments are equivalent to 2,795 GtCO₂
- Fossil fuel reserves owned by the top 100 listed coal and top 100 listed oil and gas companies represent total emissions of 745GtCO₂
- Only 20% of the total reserves can be burned unabated, leaving up to 80% of assets technically unburnable

This slide illustrates that the remaining carbon budget to 2 degrees can be shared between oil, coal and gas. If global coal use declines quickly, this would leave more ‘carbon budget’ left for use by less carbon intensive fuels.

What do the oil majors say about the carbon bubble?

Shell: “*The issue of the bubble arises because the combined proven oil, gas and coal reserves currently on the books of fossil fuel companies (and governments in the case of NOCs) will produce far more than this amount of CO₂ when consumed*”.
<https://blogs.shell.com/2013/05/03/bubble/>

BP: “*We agree that burning all known reserves would probably cause global temperatures to rise by more than 2°C – and that addressing this issue will require the efforts of governments, industry and individuals. However, we believe that the unburnable carbon approach to assessing the impact of potential climate regulation on a company’s value oversimplifies the complexity of the issue and overstates the potential financial impact.*”

<https://www.bp.com/en/global/corporate/sustainability/the-energy-future/climate-change.html>

More information on Carbon Budgets can be found in Appendix 3

Slide 4 : _ When will we pass the Carbon Budget?

Based on current emissions pathways, illustrated here by the IPCC projections, the carbon budget to 2 degrees will be broken around 2040 and 3 degrees around 2054. This might change if emissions can decline rapidly over the next decade.

More information on when the carbon budget is broken can be found here.
<https://www.carbonbrief.org/analysis-how-much-carbon-budget-is-left-to-limit-global-warming-to-1-5c>

Slide 5: The Carbon Bubble Continues to Inflate

Despite the Paris Agreement and Governor Mark Carney, Governor of the Bank of England's 'Tragedy of the Horizon' speech, 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.

This data is based on a 50% probability of avoiding 2 degrees, rather than a 66% probability.

In addition, this data represents 'proven' reserves and does not include the far greater 'resources' which is under development by the fossil fuel majors.

- Carney's speech can be found here
<https://www.bankofengland.co.uk/speech/2015/breaking-the-tragedy-of-the-horizon-climate-change-and-financial-stability>)
- Reserves, production and emissions data taken from BP's Statistical Review of World Energy 2018.
- 'Life' of reserves is defined by total annual proven reserves divided by annual production rates. Carbon budget years remaining is calculated as remaining carbon budget divided by annual emissions.
- Carbon budget data is for energy sector emissions only and was taken from the 2°C Scenario and Beyond 2 °C Scenario in the IEA's Energy Technology Perspectives 2017.
- Both scenarios provide a 2015-2100 carbon budget consistent with 50% chance of success. Carbon budget data for 2011-2014 was derived by adding annual energy sector emissions to the 2015 baseline.

- Analysis of the significance of ‘reserves’ and ‘resources’ is set out in this paper <https://www.carbontracker.org/reports/carbon-avoidance/>

A period of sharply lower oil prices has had very little impact on oil and gas reserves and prices have since increased in 2018. Carbon Tracker has not said that this ‘carbon bubble’ is a financial bubble; it simply represents an over-hang of fossil fuels – the bubble – which may or may not represent financial risks.

Some of the issues that have arisen include:

- Are there assets which are being valued in a manner inconsistent with the expected future scenario?
- Does the short-term bias of valuation models mean that the impact of lower-than-expected future demand is largely discounted out at present?
- Is the market capable of pricing in the complex set of factors which could affect demand and price?
- Do large diversified companies (eg mining stocks or oil majors) dilute the impact of a reduction in coal or oil revenues?
- Do current accounting rules capture the value and any potential impairment of assets in a consistent and useful manner, (eg compare mining vs oil; contrast IFRS and US GAAP)?
- If capital expenditure continues to be used to replace reserves could this lead to the inflation of a carbon bubble which would have to be corrected in a scenario of sudden drastic action to prevent dangerous climate change?

Although it is well established that there are greater amounts of fossil fuels available than can safely be burned, it does not necessarily follow that there are material valuation implications for most listed companies at present.

Valuations tend to be based on near term cashflows, which are less likely to be affected by climate-related factors. However, exposure will vary and some companies will be better positioned to withstand weak future demand fossil fuels than others. A significant proportion of fossil fuel projects outside the carbon budget are related to future projects, which companies still have time to cancel – the less that energy transition risks are factored into company planning now, the greater chance of value impacts in the future.

A number of financial institutions have published research on this issue, including HSBC, Citi and Morgan Stanley. In 2015, Citigroup estimated that the up to \$100 trillion of fossil fuel assets risked stranding under scenarios aligned with the Paris goals. See <https://cleantechnica.com/2015/08/26/citigroup-predicts-100-trillion-in-stranded-assets-if-paris-summit-succeeds/> We encourage further research in this area to ensure that the market understands the different scenarios and prevents a carbon bubble being inflated.

Carbon Tracker does not guarantee the accuracy of the data.

Slide 6: Fossil Fuel Reserves Held by Listed Companies

Carbon Tracker's report 'Unburnable Carbon, are the financial markets carrying a carbon bubble?' in 2011 looked at 200 fossil fuel companies listed on different stock exchanges around the world.

The diagram set out in this slide illustrates the location of these stock exchanges, of which in 2011, the most significant were London, New York and Moscow. The bubbles represent the relative size of the CO₂ for coal, oil and gas, stock exchange by stock exchange.

The methodology employed then, which is still relevant in 2018, is:

1. Company-level: Reserves x carbon factor = carbon dioxide potential.
2. Exchange-level: Sum of company carbon dioxide potentials = Exchange total.
3. Global-level: Sum of exchange totals > Global carbon budget.

Even after 7 years from the first report in 2011, these numbers in 2018 continue to not add up.

In 2011, Carbon Tracker recommended that financial regulators should:

1. Require reporting of fossil fuel reserves and potential CO₂ emissions by listed companies and those applying for listing.
2. Aggregate and publish the levels of reserves and emissions using appropriate accounting guidelines.
3. Assess the systemic risks posed to capital markets and wider economic prosperity through the overhang of unburnable carbon
4. Ensure financial stability measures are in place to prevent a carbon bubble bursting.

As of 2018, following the creation of the Taskforce for Climate Related Financial Disclosures, set up by Governor Mark Carney and Mayor Bloomberg at the request of the Financial Stability Board, points 3 and 4 are being addressed. See <https://www.fsb-tcfd.org/>

Points (1) and (2) remain unaddressed. In 2013, Carbon Tracker wrote to the Financial Accounting Standards Board (FASB) see <https://www.carbontracker.org/reports/carbon-trackers-letter-to-financial-accounting-standards-board-fasb-april-2013/>

In this document, we did not request FASB to pass judgment on the future viability of fossil fuel reserves, but rather, we urged them to recognize the need for disclosure sufficient to permit investors to make this determination for themselves.

Carbon Tracker's analysis addresses how the requested disclosure:

- improves the usefulness of financial reporting by providing relevant and faithfully represented financial information;

- alleviates a significant deficiency in current financial reporting;
- improves the quality of disclosure with verifiable, timely, and understandable financial information that incorporates the increasing risk to fossil fuel reserve valuation; and
- provides benefits to users of financial information that far outweigh the cost of collection and disclosure.

Carbon Tracker's request was rejected by FASB. In 2018, Carbon Tracker helped lead a call for a new global registry of fossil fuel projects calling for every owner and developer to publish the embedded CO₂ in their reserves (P1) and resources (P2) so that the risks associated with their development could be better understood.

See <https://www.theguardian.com/commentisfree/2018/oct/23/fossil-fuel-non-proliferation-treaty-climate-breakdown>

Slide 7: Low demand scenarios include new O&G

Carbon Tracker recognises the complexity of assessing how much of the “proven” oil, gas and coal reserves might be developed in future years. This is a function of factors including including, but not limited to, the ability to extract these fossil fuels based on signals of price and demand.

This slide illustrates that unless oil and gas demand falls significantly in line to meet the goals of the Paris Climate Agreement, current demand projections suggest further investment in new production may occur.

Based in International Energy Agency modelling:

- Demand declines (1-2% p.a.) more slowly than natural field production decline (c.4-7% p.a. absent further investment), implying the need for some new projects
- Reserves numbers alone do not tell whole story, as the timing of production needs to match demand
- Carbon Tracker uses the production profiles and costs of potential projects to allocate risk

We recognise that the existing proven reserves of fossil fuels exceeds the available carbon budget to two degrees. Carbon Tracker is not aware of any international agreements that seek to limit the supply of fossil fuels to ensure that production does not exceed the scientific carbon budget to 2 degrees.

Carbon Tracker notes that individual nations have banned future oil & gas exploration, or have put in place regulations that seek to ban fossil fuel development in the future, or to divest their state investment funds from fossil fuels. For example:

- New Zealand: <https://www.theguardian.com/world/2018/apr/12/new-zealand-bans-all-new-offshore-oil-exploration-as-part-of-carbon-neutral-future>

- France: <https://www.independent.co.uk/news/world/europe/france-ban-emmanuel-macron-oil-gas-exploration-2040-latest-global-warming-climate-change-a8121031.html>
- Ireland: <https://www.thejournal.ie/fossil-fuel-divestment-bill-4124211-Jul2018/>

Slide 8: Lower demand implies lower cost supply options only

- 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

This slide suggests that as the carbon budget is running down as emissions rise and carbon dioxide accumulates in the atmosphere year by year, there will need to be a cut-off point from which no new fossil fuel production for combustion should occur.

Carbon Tracker has looked at future fossil fuel supply for all production, to estimate where this threshold occurs. We use cost break-even prices, assuming a 15% internal rate of return (IRR) to develop a 'cost curve' to plot projects against each other and the carbon budget. We refer to this as a 'carbon cost curve.' The line of the cost curve represents many thousands of individual global oil projects with different costs of production.

We can then intersect differing warming thresholds as illustrated in the graph for scenarios developed by the International Energy Agency known as 'Beyond 2 Degrees Scenario'; 'Sustainable Development Scenario'; and 'New Policies Scenario'. See <https://www.iea.org/etp/explore/>.

Carbon Tracker uses the analysis set out in this slide to demonstrate that oil projects located on the cost curve above these scenarios will not be needed and companies should not progress these projects.

Slide 9: Oil & gas dominates upstream capex risk

Carbon Tracker has modelled future production of oil and gas under different warming scenarios between 2018 and 2025; also the capital expenditure associated with these levels of production.

- Significant fossil fuel investment to support remaining production is required even in low-carbon scenarios, but materially less
- 1.75°C requires \$0.7tr less than 2°C, which requires \$0.9tr less than 2.7°C
- Oil & gas account for over 90% of capital expenditure in intervals between scenarios

Carbon Tracker concludes that significantly less capital is necessary than otherwise planned, against at or below 2 degrees warming scenarios. Carbon Tracker

analyses this in more depth in our report ‘2 Degrees of Separation’ which can be found in Appendix 1.

Slide 10: Higher risk capex mostly private-sector

Carbon Tracker is frequently asked about a comparison of the scale of state-owned fossil fuel projects by volume, versus those owned by stock exchange quoted companies, such as Shell or Exxon, or other privately held entities.

Whilst most fossil fuels by volume in absolute terms are owned by governments, we find that a high proportion of fossil fuels on the high end of the production cost curve are owned by corporations, thus making them most vulnerable to lower demand scenarios.

- Despite distribution of reserves, majority of affected capital expenditure is held by private sector
- Disproportionate ownership of high cost assets by corporations
- Non-listed, state owned entities own just 12% of oil & gas capex in 1.75°C to 2.7°C gap

The source of this data is the International Energy Agency and Rystad Energy. Carbon Tracker is a subscriber to data provided by Rystad Energy.

Slide 11: Company level distribution of capex

Following from slide 10, where we look at the relative exposure of state versus corporate owned fossil fuel production, Carbon Tracker has looked company by company at which entities own the highest cost fossil fuels.

- Exposure to high-risk projects varies by company
- Capital expenditure is POTENTIAL – much still hasn’t been sanctioned, so there remains flexibility not to progress
- Success in navigating the energy transition will be driven by management behaviour from now on

Carbon Tracker concludes that investment to support future production, whilst based on scenarios for future energy demand, is a conscious decision made by the boards of corporations. Boards and management decide which demand scenarios to adopt. For example, oil majors including Shell, BP and Exxon use scenarios for demand which would involve oil production which, if burnt, would create emissions that breach the Paris climate agreement.

- BP is projecting a 24% increase in oil use by 2035
- Exxon expects a 27% increase by 2040
- Shell’s ‘Current Outlook’ of 2016 forecasts an increase of 37% to 2040
- OPEC proposes a 54% increase to 2040

Sources:

ExxonMobil (2016) [The Outlook for Energy: A view to 2040](#)

BP (2016) [BP Energy Outlook 2035](#)

Shell (2014) [Carbon Asset Risk response](#)

OPEC (2015) [World Oil Outlook](#)

Carbon Tracker has published the 'Energy Transition Blueprint' which sets out a series of questions that Boards and managements should consider when conspiring future production and aligning business models with climate goals. See <https://www.carbontracker.org/reports/companyblueprint/>

Appendix I – 2 Degrees of Separation

Retrieved from: <https://www.carbontracker.org/reports/2-degrees-of-separation-transition-risk-for-oil-and-gas-in-a-low-carbon-world-2/>

2 degrees of separation – Transition risk for oil and gas in a low carbon world

20 June 2017

Explore the report webpage: [2degreeseparation.com](https://www.2degreeseparation.com)

This report, produced by Carbon Tracker, Principles for Responsible Investment (UN PRI) and leading institutional investors, is the first to rank 69 of the biggest oil and gas industry companies according to the extent of their exposure to the low-carbon transition. It provides a way of understanding whether the supply options of the largest publicly traded oil and gas producers are aligned with demand levels consistent with a 2°C **carbon budget**, and will equip investors with the authoritative information they need to challenge companies on their investment strategy and approach to climate risk.

It finds that across the oil and gas industry \$2.3 trillion of upstream projects – roughly a third of business as usual projects to 2025 – are inconsistent with global commitments to limit climate change to a maximum 2°C and rapid advances in clean technologies.

The study offers a sophisticated tool to investors to align their capital allocation decisions with the company's exposure to climate risks.

KEY FINDINGS

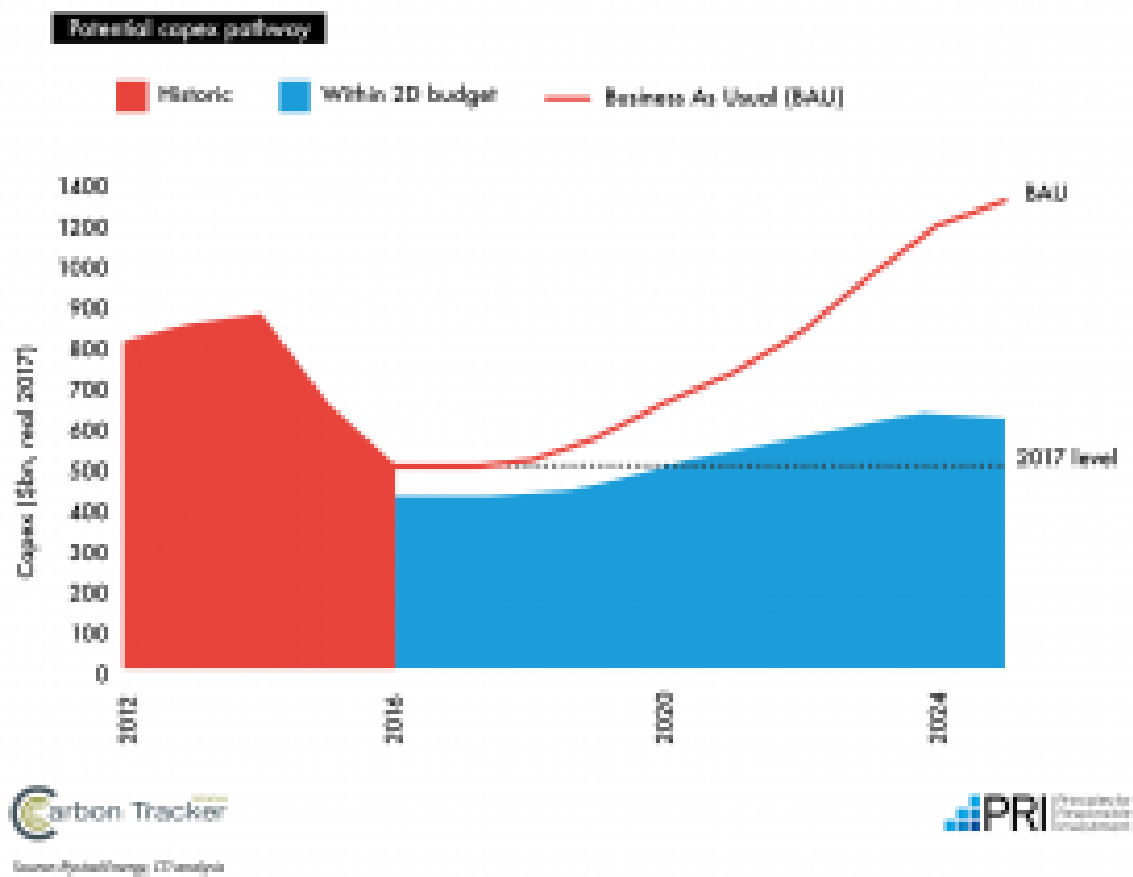
Carbon budget alignment: company by company

This new analysis provides a way of understanding whether the supply options of the largest publicly traded oil and gas producers are aligned with demand levels consistent with a 2 degree Celsius (2D) carbon budget. By allocating the carbon budget to potential oil and gas projects, through applying the economic logic of a carbon supply cost curve, it is possible to identify which companies have the highest exposure to potential capital expenditure (capex) to 2025. This report provides a snapshot of the potentially unneeded capex spend for 69 global oil and gas companies – highlighting for the first time, the wide- ranging degree of exposure amongst companies in the sector.

Excess capex

The analysis shows that:

- US\$2.3trn – around one third – of potential capex to 2025 should not be deployed in a 2D scenario compared to business as usual expectations.
- Company level exposure varies from under 10% to over 60% when considering the largest 69 publicly traded companies.
- Around two thirds of the potential oil and gas production which is surplus to requirements in a 2D scenario is controlled by the private sector.



pathway
Share image:

On the rebound?

Capital expenditure has dropped in recent years as a response to the lower oil price. In order to align with a 2D scenario, the level of capital deployment should not rebound from 2016 levels across the industry as a whole. Under a business as usual scenario, with rising prices, investment ramps up again. This would create financial exposure to projects not consistent with peaking emissions in the near future.

2D scenario

This analysis utilises the oil and gas demand levels indicated by the International Energy Agency’s (IEA) World Energy Outlook 2016 450 scenario as a proxy for a 2D scenario. For the period 2017-2035, this equates to a total carbon budget for oil and gas of 320Gt of CO2, split 59% for oil and 41% for gas. This is at the higher end of the range of carbon budgets that could be applied, as it only provides a 50% probability of a 2D outcome. If one were to try and align with limiting global warming to below 2D, or apply a higher likelihood of the outcome

then this would provide an even tighter constraint on future oil and gas supply and demand.

Identifying the potential winners and losers

This analysis focuses on the metric: “percentage of potential capex outside 2D budget”. This can effectively give investors a sense of what proportion of the company’s investment plans may fail to deliver an acceptable return in the scenario of a world limited to 2°C global warming outcome (i.e. which project capex is within budget and which is “unneeded”). This can be interpreted in different ways according to investment strategies and policies.

In terms of risk management, some investors may prefer a degree of optionality – but the higher the level of unneeded capex, the more growth strategies would have to be tempered. For investors seeking to align with a 2D scenario, it is clear that some companies are better positioned than others.

Find more [here](#).

Appendix II – 2 Degrees of Separation Update

Retrieved from: <https://www.carbontracker.org/reports/2-degrees-of-separation-update/>

2 Degrees of Separation: Company-level transition risk July 2018 update

17 July 2018

This report updates our **2 Degrees of Separation** report, published in June 2017

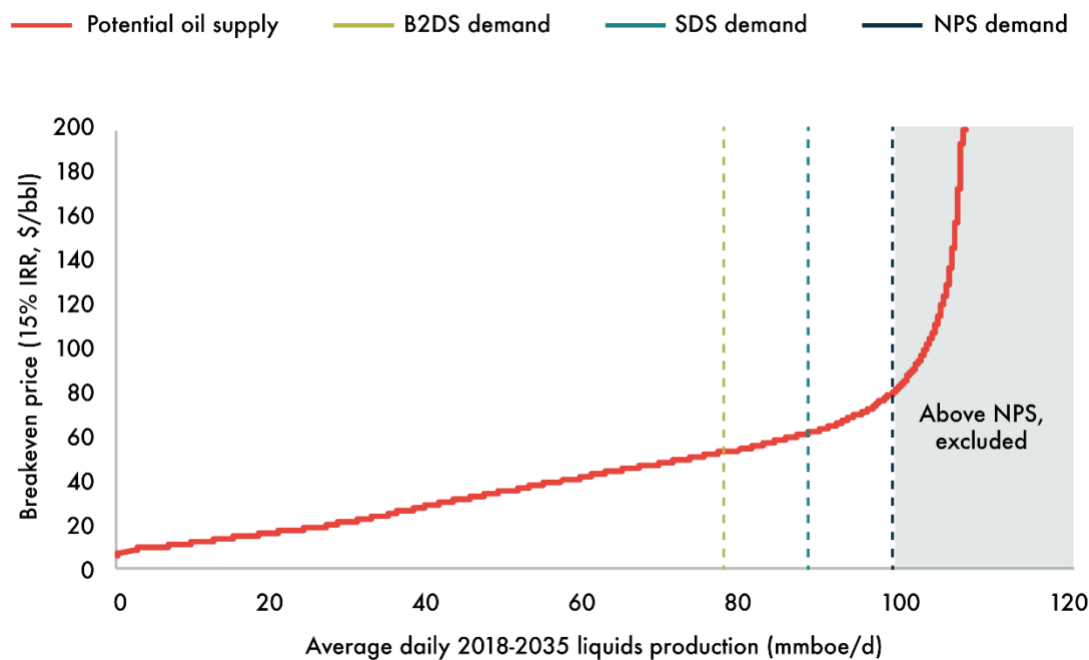
2 Degrees of Separation laid out a framework for estimating relative transition risk to a universe of major oil & gas producers, looking through the lens of capital expenditure that might in future be committed to high cost projects that would be outside a 2°C pathway for their products – a 2°C “budget” in aggregate.

Methodology Updated

In response to user feedback, we have made some tweaks to the methodology. In general, these are consistent with the methodology used in Carbon Tracker’s report **Mind the Gap**, published in March 2018.

2 Degrees of Separation used a single climate outcome as a benchmark – a 2°C scenario based on the IEA’s 450 Scenario. This report uses the IEA’s Sustainable Development Scenario (SDS), which has replaced the 450 Scenario. This update also includes a 1.75°C global warming scenario based on the IEA’s Beyond 2 Degrees Scenario (B2DS).

We have also limited the inclusion of high-cost projects in this iteration. We have done this by limiting our curves of potential supply by reference to another IEA scenario – the New Policies Scenario (NPS). The NPS is the IEA’s central scenario, assuming no further climate policy developments beyond those already enacted or announced, and is consistent with a temperature rise of 2.7°C (again, based on a 50% probability). Any high-cost projects above this level have been assumed not to go ahead and therefore excluded from the main metrics in this analysis.



KEY FINDINGS

The nearly year and a half period since the last data update demonstrates the effects of corporate activity and a continued feed-through of industry cost deflation into the data. The latter factor has resulted in significant reductions to the marginal breakeven costs (used as the dividing line between in/out of a given budget) in some markets, but with effects varying throughout industry. This may be manifested for example in a project which was previously considered inside

the budget now being forced out by competitive supply having experienced greater reductions in costs.

Accordingly, as would be expected, there have been some material moves in relative positioning since the previous 2 Degrees of Separation report (see report for full table).

Reasons for these movements for a given company vary, but generally fall into one or more of several broad themes:

Category	Relative exposure improvement	Relative exposure worsening
Corporate activity	Asset divestment, particularly of non-core positions	Acquisition of new projects outside budget
Data update	Reduction in individual project breakeven costs, sometimes related to improved resource estimates, resulting in project moving inside the budget Deferral of capex on high-cost projects beyond 2025 timeframe Reduction in capex for projects outside budget	Reduction in marginal industry breakeven cost (demarcating in/out of budget) resulting in projects that were inside the budget now being outside Upwards revision to breakeven cost estimates
Methodology	Exclusion of high-cost projects outside NPS	Lower than average proportion of high cost assets outside NPS excluded

Appendix 3

Carbon Budgets

At the 2015 UNFCCC Paris COP, world governments confirmed their intention to limit global warming “well below 2°C” and pursue efforts to “limit the temperature increase to 1.5°C”. The upper limit of 2°C is a frequently used reference point for delineating a carbon budget. The nature of climate science means that the probabilistic scenarios used produce a range of budgets depending on the parameters applied to the models. In selecting / using a budget, people should be aware of:

- What the probability of the delivering the desired global warming outcome is: 50%, 66%, 80%? The more likely the scenario is to achieve the outcome, the smaller the carbon budget will be.
- What time period is covered: The IPCC AR5 budgets start in 2011, meaning some of those budgets have already been used up.
- What assumptions are made for certain climate variables: Climate sensitivity is one variable that can significantly impact the size of the carbon budget. As is the degree to which net-negative emissions are deployed.

- Does the budget cover just energy-related emissions, such as those used by the IEA, or are other industrial, agricultural, landuse change, etc. emissions covered as well?
- Is the budget for CO₂ only or all greenhouse gases? Some budgets are just for carbon or carbon dioxide (check the units); others cover all 6 greenhouse gases and are expressed in CO₂e (equivalent). Does a CO₂ only budget assume a high or low effort to reduce other greenhouse gases?

Our first analysis applied the Meinhausen et al. paper (2009) (Potsdam Institute) published in Nature which was peer reviewed research comparing a carbon budget based on a synthesis of the latest climate models available at the time. In response to feedback, our second analysis included some updated carbon budgets developed by the Grantham School of Climate Change and the Environment at LSE, led by Lord Stern. These provided carbon budgets which varied some of the factors in the bullet points above to test different levels of global warming (1.5 – 3°C).

Carbon budgets continue to be a popular approach to frame the challenge of keeping global warming to ‘acceptable’ levels. The IEA regularly publishes ‘energy-sector only’ carbon budgets to deliver 2C and well below levels of warming in its World Energy Outlook. Carbon Tracker has applied these in its scenario analysis, as they provide a detailed demand picture. The IPCC AR5 (2013) is now the most cited ‘total’ carbon budgets – meaning energy sector emissions plus land use, land use change and forestry plus industrial sector emissions. Our carbon supply cost curves use the IEA 450 scenario allocation of the budget to each fuel – coal, oil and gas – to test which projects are within the budget.

Signed:

Mark Campanale
October 28, 2018

Andrew Grant
October 28, 2018