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# Are oil and gas companies overstating their position?

A review of long-term oil price assumptions underpinning company balance sheets

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## Summary<sup>1</sup>

Based on our analysis of selected listed European oil and gas company financial statements, we believe **there may be a problem of systemic overstatement of capital and profits linked to overly optimistic long-term oil price assumptions that fail to take account of the international commitment to phase out fossil fuels<sup>2</sup>**. Critically, shareholders have almost no information on how sensitive reported assets and liabilities are to lower long-term prices. US company disclosures are often weaker than European peers, leaving shareholders in the dark about the current price assumptions they make, never mind providing sensitivity analysis. This means investors are unable to interpret their reported results or compare them to peers.

**Overstatement matters because it can lead to capital misallocation and, ultimately, capital destruction and cuts to dividends.** This is particularly concerning as the oil and gas sector grapples with decarbonisation – especially the global commitment to reach net zero emissions by c2070. It works against efforts to combat climate change as it will tend to encourage excessive investment into new fossil fuels.

No one knows for sure what future energy prices will be. But oil and gas companies must identify a long-term price to use in their accounts. This underpins reported capital, profit and dividends. The long-term price needs to look through cyclical ups and downs to structural demand and supply, taking into account decarbonisation. The long-term price needs to be prudent to protect against over-statement (required by law in several jurisdictions).

In their latest financial statements, the **eight companies reviewed (Royal Dutch Shell, BP, Total, Equinor, Eni, Repsol, Cairn Energy and Soco International) assume long-term oil prices of between \$70-80 per barrel (from 2020/21) rising at 2% per year thereafter.** These assumptions look structurally high. Taking account of decarbonisation commitments under the Paris Climate Accord, the International Energy Agency's Beyond 2 Degrees Scenario (B2DS) foresees a \$60/bbl oil price in 2060 (in 2016 prices)<sup>3</sup>;

the UK government uses a \$55/bbl oil price from 2035; while the think-tank Oil Change International believes a \$35/bbl is more realistic.

What is more striking is that the **companies themselves appear to accept that prices will be structurally lower.** Where disclosed, the price used in the same company's strategy and capex thresholds is generally \$50-60/bbl. Shell has determined that capex must cover its internal rate of return at \$40/bbl; BP recently announced its plan to be break-even for its overall business at \$35-\$40 by 2021. How can it be prudent to use \$70 to \$80 in company accounts, while at the same time using \$40 to \$60 in strategic planning and capital deployment?

**The materiality of using elevated oil prices is likely to be high.** According to the auditors and Audit Committees for the companies we reviewed, long-term commodity price assumptions are key inputs in testing the valuations of at least 60-75% of company assets, as well as important liabilities, and in turn impact profit. Depending on the company's history of investment, the productivity of its reserves and its cost profile, asset values may be resilient to a lower energy price world, but they also may not be.

The problem is that the companies disclose hardly any information on the sensitivity of their results to lower price assumptions. Hidden in Total's 2017 financial statements, they report that a 10% decline in the assumed oil and gas prices (so from \$80 to \$72 in 2020), would result in roughly a 50% reduction in its reported net income for that year. While manageable for a company with approximately \$114bn reported equity, this is not small beer. Does this mean that using the \$60 could wipe out all its profit? What about \$40? What does this mean for capital strength and dividends? How does Total compare to Shell, BP or Eni?

The paper further draws attention to the **inconsistency between the emphasis placed on decarbonisation as a strategic risk to the business in narrative disclosures in Annual Reports, and the lack of comment by**

<sup>1</sup>While this paper focuses on oil and gas companies, the questions it raises over potential overstatement may also apply to other businesses that are materially involved in the production and supply of fossil fuel-related products.

<sup>2</sup>This may also be true of gas price assumptions, but this paper focuses on the oil price.

<sup>3</sup>The IEA's Paris-consistent scenario work is their Beyond 2 Degrees Scenario (B2DS). This has been criticised for understating the true level of decarbonisation that would be needed, and thus potentially overstating the equilibrium price.

**the Audit Committee or auditors** on how they have considered decarbonisation in their stress testing of the financial statements. Likewise, decarbonisation is not generally mentioned in UK-listed companies' assessment of the oil and gas company's long-term viability. Royal Dutch Shell is the exception. In no case is information provided on results of stress testing work. Again, this leaves shareholders in the dark on what management describes as a core long-term threat.

**For US oil and gas companies, shareholders are starting from scratch;** they generally have no visibility of the long-term prices used to draw up financial statements. Investors are thus unable to compare results of different companies (are they comparing apples and oranges?). They are also in the dark over the capital strength and real profitability of their companies.

The lack of disclosure and the possibility of accounting overstatement demand shareholder, creditor and regulatory attention. The paper ends with **recommended actions:**

- Directors of oil and gas companies need to satisfy themselves the key accounting assumptions are prudent in a world that is transitioning to zero net emissions. Sensitivity analysis to lower oil prices should be disclosed to shareholders.
- External auditors need to strengthen their stress tests, and provide additional disclosures to shareholders to justify their opinion that company accounts provide a true and fair view of the entities' economic health, as well as a

sound basis for dividend payments.

- Regulators need to clarify director and auditor duties under accounting and capital maintenance laws. They should promote the disclosure of commodity price assumptions that are important to the interpretation of the financial statements.
- Accounting standard setters should be encouraged to support the disclosure of key assumptions; and to ensure comparable and prudent reporting that takes account of decarbonisation aligned with the Paris Accord. Continuation of the International Energy Agency's price scenario work consistent with implementation of the "well below 2°C goal" will be important.
- Shareholders must demand transparency, and should vote against directors and auditors at companies with opaque and aggressive accounts that put shareholder capital at risk.

**These accounting disclosures should be an integral part of reporting linked to the Task Force for Climate-related Financial Disclosures.**

With any structural change, expectations take time to adjust. Decarbonisation demands a fundamental re-wiring of the global economic system. While company narrative disclosures to shareholders appear to recognise this fact, their accounting numbers do not. This puts shareholders and creditors at risk. It also works against efforts to combat climate change. We believe the proposed actions in this paper will catalyse a faster and smoother adjustment, which is – at the end of the day – in all of our interests.



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## 1. Introduction

### **Oil and gas prices are critical to companies' reported capital strength and performance**

Oil and gas companies' long-term commodity price assumptions are key to the value of the largest assets reported on their balance sheets including property, plant & equipment (PPE), joint ventures (JVs), goodwill (GW) and deferred tax assets (DTAs). They may also be important for values assigned to long-term investments and receivables. On the liability side, oil and gas prices matter to Decommissioning and Remediation (D&R) provisions (also known as Asset Retirement Obligations) through their impact on reserve life, and thus the timing of the eventual liability. Other liabilities, like pension obligations that depend on assessments of the sponsor's viability, may also be impacted. Changes in asset and liability values then feed through to a company's profit & loss account, notably through changes to depreciation and amortisation charges and impairments.

### **Prices are highly uncertain, and thus a material reporting risk**

The problem is that future prices are uncertain. Relatively small imbalances in the market can lead to sharp changes in price, as we saw in 2014-15 when a market disequilibrium of roughly 2mn barrels a day (c3% total) contributed to prices falling from over \$100/bbl to less than \$30/bbl. For this reason, auditors routinely identify long-term commodity price assumptions as key risks to the reliability of oil and gas company accounts<sup>4</sup>.

### **Company accounts are required to be prudent to protect capital**

In many jurisdictions (including Europe), capital maintenance regimes are supported by prudent accounting rules. To ensure directors do not pay dividends out of shareholder capital, the accounts must not overstate what this capital is. These rules

protect both shareholders and creditors, and thereby underpin trust in financial markets<sup>5</sup>.

### **Companies should be even more cautious in the face of decarbonisation**

Management teams and auditors should be even more cautious today than in the past due to powerful structural shifts underway in the market, which are likely to result in downward pressure on prices.

First, the global commitment to keep temperature increases to 'well below' 2°C as agreed in the 2015 Paris Climate Accord means the world's net carbon emissions must come down to zero by 2070, and a 1.5°C target sees the deadline moving to between 2045 and 2060<sup>6</sup>. Governments have implemented a range of policy measures to decarbonise the global economy, and are committed to ratcheting these up<sup>7</sup>. Indeed, if these goals are not achieved, the physical manifestations of climate change will become more pronounced, potentially leading to more aggressive policies to decarbonise.

At the same time, technological innovation – notably in renewables and electric vehicles – is accelerating the move away from fossil fuels as cleaner alternatives become cheaper and more accessible<sup>8</sup>.

Also, just as expectations of ever-increasing demand for oil and gas need to be revised, the rise of US shale on the supply side is arguably eroding the power of the Organisation of Petroleum Exporting Countries (OPEC) cartel to influence prices. As demand falls and cheaper sources of supply come on stream, OPEC may be less able to prop up oil prices in the way it has over the last 40 years. This does not mean OPEC will shrink as a proportion of overall supply – in fact, at low prices OPEC members will likely become even more dominant as other sources of fossil fuels become uncompetitive. The point, however, is that OPEC's pricing power could be weaker<sup>9</sup>.

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<sup>4</sup>These disclosures by auditors can be found in auditor extended reports to shareholders published alongside financial statements.

<sup>5</sup>Rules on capital maintenance are outlined in the EC's 2nd Directive, which prohibits distributions out of capital. In the UK, the Companies Act 2006 also prohibits distributions to shareholders out of capital.

<sup>6</sup>Rogelj, J., G. Luderer, R. Pietzcker, E. Kriegler, M. Schaeffer, V. Krey and K. Riahi, "Energy System transformations for limiting end-of-century warming to below 1.5C", Nature Climate Change, 21 May 2015.

<sup>7</sup>This is the commitment made under the Paris Accord to review progress every 5 years and take more robust action to achieve the 'well below 2°C' target where necessary.

<sup>8</sup>Recent IEA projections make clear how the transition to EVs and renewables continues to outpace their forecast. See, for instance: IEA, 2018, "Global EV outlook 2018 – towards cross-modal electrification"; IEA, 2017, "Renewables 2017: a new era for solar power". There is also a range of other technological breakthroughs around autonomous driving, artificial intelligence, bio-plastics, 3D printing and nanotechnology, which are expected to contribute to lower oil consumption (see a summary meta study by 2°ii, 2018, "The bigger picture – the impact of automation, AI, shared economy...on oil demand").

<sup>9</sup>Another dynamic pressing on OPEC in a shrinking market defined by the Paris Accord, is that there is a clear date at which demand could dry up almost entirely. The rational course of action for the largest oil and gas suppliers could well be to extract as much of their reserves as possible before the window closes. This could mean sharply lower prices. None of this, of course, is certain, but it is worth considering.

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## **Oil and gas price assumptions need to be properly scrutinised**

Despite their importance, too few investors appear to be reviewing, or even aware of, these key price assumptions. This needs to change. Shareholders, in particular, need to have:

1. Transparency over the price assumptions;
2. Confidence that the numbers are prudent; and
3. An understanding of the sensitivity of the business's capital and performance to different price scenarios.

Without transparency, it is difficult to interpret or compare companies' economic position and outlook.

## **This paper sets out what we know, and what we need to know about company accounts**

This document outlines why oil and gas price assumptions matter to company accounts; and draws together the commodity price assumptions being used by some of the largest European oil and gas companies (US companies tend not to disclose this information) as a basis for comparing them with internal and external benchmarks.

The analysis highlights a lack of consistency between companies, which undermines comparability, and also raises important questions over whether oil and gas companies are potentially overstating their positions. This question is especially pertinent as the world embarks on unprecedented efforts to decarbonise. This ought to be of concern to investors, creditors and regulators. The paper ends with a number of recommended actions.



## 2. Why oil and gas price assumptions matter & should be disclosed

### a) Oil prices feed into major balance sheet valuations, raising the risk of material write-downs

From the extended Auditor Reports for European oil and gas majors, it is clear that executives' long-range oil and gas price assumptions (normally from around 2020/2021), as well as production expectations, margins and discount rates, are critical to several balance sheet and profit & loss (P&L) account items, including<sup>10</sup>:

1) PPE, GW and JVs – impairment tests for these items depend on a long-term oil price to determine future expected cash flows, and thus the net present value of assets. Higher price assumptions will tend to increase the calculated net present values and lower impairments (as long as the asset carrying value is below the net present value, no impairment is recognised).

2) DTAs – depend on the company earning future taxable profits on a sufficient scale to be able to realise these assets in the relevant jurisdiction. A reduction in future profitability could result in a write-down in DTAs.

3) Depreciation expenses – depend on the life of assets, so shorter lives due to lower oil and gas price assumptions (that lower the economic life of reserves), result in higher depreciation expenses, and thus lower reported profits. This effect needs to be set against any impairments (outlined above), which would bring down depreciation. Because oil and gas companies

are capital intensive, depreciation represents one of the most significant costs.

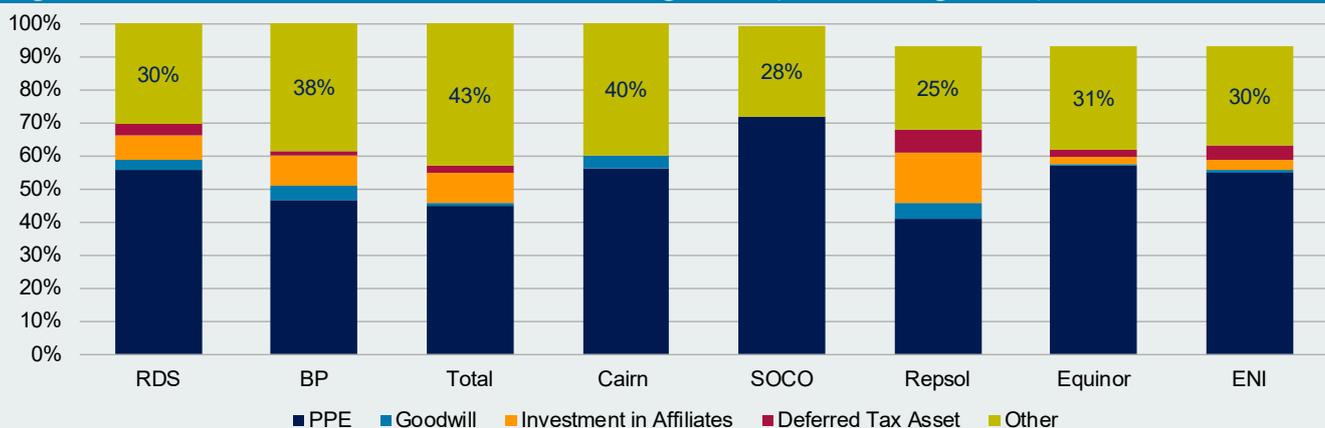
4) D&R provisions (also known as Asset Retirement Obligations)<sup>11</sup> – these liabilities are affected by the date at which operations at particular sites cease. If these dates are brought forward, e.g. due to lower than expected oil/gas prices, then the present value of D&R would generally rise as would amortisation. This may also impact any D&R liabilities that may be retained following asset disposals<sup>12</sup>.

Other accounting items that could be impacted by lower oil price assumptions include<sup>13</sup>:

1) Long-term investments and receivables – there is little disclosure on the sensitivity of long-term investments and receivables to the long-term oil and gas price assumptions, but it is reasonable to suspect it could be material if these investments/receivables are linked to fossil fuel-related businesses. The credit risks of trade debtors in the fossil fuel supply chain may rise significantly in a lower price environment. Likewise, valuations of such entities could be hit.

2) Revenue recognition on long-term contracts (for instance Liquefied Natural Gas - LNG) – often revenue recognition accounting standards involve assumptions to anticipate future commodity prices, which can then permit some of the revenue to be recognised earlier than the cash is received. Where long-term contracts fix the volume to be supplied, but not the price, there is

Figure 1: FY17 Balance sheet asset breakdown for largest European oil and gas companies<sup>14</sup>



Source: Sarasin & Partners using Bloomberg data, 21 May 2018

<sup>10</sup>This paper focuses on commodity prices, but scrutiny of discount rates and other assumptions is also needed.

<sup>11</sup>Detailed analysis by lawyer and accountant Greg Rogers on asset retirement obligations reported by oil and gas companies globally suggest that this is an area of systemic understatement in annual accounts (see Rogers, G. and C. Atkins, "Environmental disclosure report card: oil and gas decommissioning liabilities 2003-2014"). This is a further area that deserves shareholder scrutiny as they seek transparency on the real risks embedded in their companies.

<sup>12</sup>For instance, the sale of oil sands where the seller retained certain liabilities linked to D&R.

<sup>13</sup>There may well be other impacted line items, such as Available for Sale assets, or tradable securities, but it is difficult to determine from the outside how material these could be. Hence the need for more detailed company disclosure.

<sup>14</sup>Equinor was formerly Statoil.

a risk of over-stating these sales<sup>15</sup>.

3) Pension obligations – If lower future oil prices worsen the companies’ prospects, then it would be appropriate to consider how this might feed into pension obligation calculations. Pension trustees, for instance, may demand a higher level of contribution to offset the higher perceived risk. This could manifest itself through higher cash outflows to the pension scheme<sup>16</sup>.

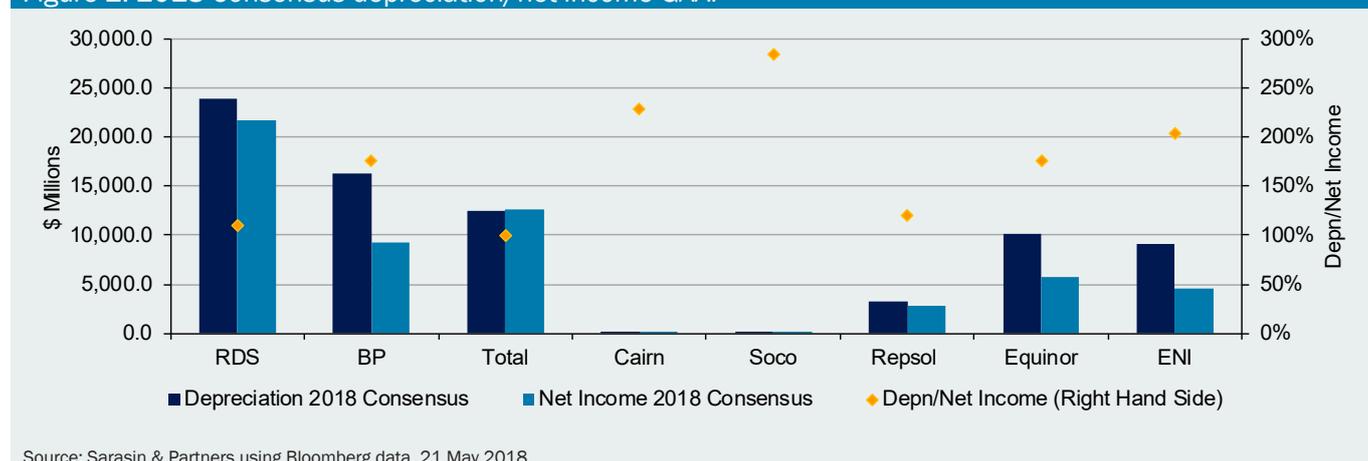
The figures that follow give a sense of the materiality of these balance sheet and P&L items for the eight European oil and gas companies, and thus why it matters to shareholders that we understand the price assumptions on which these are based. Taking PPE, JVs, GW and DTA together, these represent between

60-75% of total assets reported by the identified companies. Within ‘other’ it is possible that items like long-term investments and receivables would also be impacted by lower oil and gas price assumptions, as noted above.

Looking at Figure 2, it is also clear that depreciation is extremely material, accounting for between roughly 100% and 275% of net income. A small percentage change in depreciation would have a magnified impact for net income.

Figure 3 demonstrates that D&R provisions are also material for many of these companies, notably for Shell, Equinor, Cairn Energy and Soco International where they represent between 10-25% of total liabilities.

Figure 2: 2018 Consensus depreciation/net income GAAP<sup>17</sup>



Source: Sarasin & Partners using Bloomberg data, 21 May 2018

Figure 3: FY17 Decommissioning provisions as a percentage of total liabilities



Source: Sarasin & Partners using Bloomberg data, 23 May 2018

<sup>15</sup>It is difficult to know exactly what proportion of contracts have a flexible price, but we believe it may be significant.

<sup>16</sup>There are complex rules governing pension obligation accounting, as well as technical pension obligations determined by pension fund trustees. The former may impact company accounting of pension liabilities, the latter cash flows. LCP, a leading actuarial firm, has highlighted the need for climate risks to be taken into account by pension fund trustees: <https://insight.lcp.uk.com/acton/attachment/20628/f-060a/1/-/-/-/LCP%20guide%20to%20climate%20risk%20for%20pension%20schemes.pdf>

<sup>17</sup>We use 2018 consensus numbers since 2017 negative net income leads to less useful information on the relative importance of depreciation for these companies performance.

So, optimistic price assumptions can result in overstated assets, understated liabilities, and thus overstated shareholder equity. A risk for shareholders is that where long-term oil and gas price assumptions are eventually reduced, earnings are potentially hit by impairments and/or higher depreciation and amortisation, and equity is written down<sup>18</sup>.

The problem is that while auditors draw shareholders' attention to the importance of commodity price assumptions, few give precise data on the sensitivity of company results to lower price scenarios.

One such disclosure is buried in the notes to Total's 2017 financial statements. This states that if assumed long-term oil and gas prices were reduced by 10% (so from \$80 to \$72 in 2020), Total's net income in 2017 would fall by approximately half due to impairments<sup>19</sup>. No information is provided about potential impacts for recurring income.

While not a sensitivity disclosure, Shell reduced its long-term price assumption in its 2017 financial statements from \$80 to \$70 and did not report any related impairments. This suggests that the carrying value of its assets were sufficiently below the estimated net present values at \$70. In other words its asset profile appears more resilient than Total's to lower prices. The trouble is there is no further

disclosure as to what would happen at \$60 or lower prices.

### **b) Non-cash write-downs reduce reported capital strength and may impact cash dividends**

Although impairments and depreciation and amortisation are non-cash items, they are important because: 1) they reduce the reported capital strength of an entity (in the extreme they can result in insolvency), and can raise the cost of capital; and 2) they can curtail dividend paying capacity of companies. In most of Europe dividend distributions can only be made from distributable reserves, and these must take account of impairments and foreseeable liabilities to protect against insolvency<sup>20</sup>. The accounting adjustments can therefore have cash impacts for shareholders.

### **c) Optimistic oil price assumptions may result in capital misallocation**

Behavioural impacts are also important to consider. If reported capital is lower, there will be less to deploy to new investments. Capital tends to flow towards activities that are thought to generate the highest economic returns. Any overstatement of profit from oil and gas production could therefore result in more capital being deployed into these activities than warranted, raising the risks of future impairments. In



<sup>18</sup>These impacts are distinct from short-term movements in the oil and gas prices that directly affect income and cash flows, which of course are also important.

<sup>19</sup> See Total SA 2017 Annual Report and Accounts, Note 3 to the Consolidated Financial Statements: "a variation of (10)% of the oil and gas prices over the long term plan would have an additional negative impact of approximately \$4.9 billion in operating income and \$4.2 billion in net income, Group share."

<sup>20</sup>It is worth noting that all companies are also required to deduct any capitalised development costs from distributable reserves in determining capital available to pay dividends. We could not see this calculation presented to shareholders, and it is a matter worthy of further scrutiny.

### Box 1: US companies do not appear to disclose long-term oil and gas price assumptions

Based on a review of the latest financial statements for Exxon Mobil, Chevron and Anadarko, there appears to be no disclosure of the long-term commodity price assumptions that these companies use.

This means that shareholders are unable to:

1) compare company results as one of the most important underlying assumptions for their accounts may not be the same; and

2) judge capital strength as they have no idea how prudent their commodity price assumptions are.

Based on the disclosures that Exxon provides, caution is warranted. Exxon explicitly states that it will not reduce its long-term oil price assumption unless there is a prolonged period of low prices, and even then they make no commitment to lowering the price they use:

*"When the industry experiences a prolonged and deep reduction in commodity prices, the market supply and demand conditions may result in changes to the Corporation's long-term price or*

*margin assumptions it uses for its capital investment decisions. To the extent those changes result in a significant reduction to its long-term oil price, natural gas price or margin ranges, the Corporation may consider that situation, in conjunction with other events and changes in circumstances such as a history of operating losses, an indicator of potential impairment for certain assets."* [Exxon 10K, note on critical accounting policies: Impairments].

Whilst it is sensible to use a long-term structural price, this needs to take account of foreseeable structural changes to demand and supply in the market.

Exxon identifies demand and supply as the foremost risk factor in its Management Discussion & Analysis, and climate change further down the laundry list of risks. However, in its financial disclosures linked to how it thinks about the long-term commodity prices with regard to impairment assessments, it makes no mention of decarbonisation. This raises questions over whether its accounts do indeed "present fairly, in all material respects, the financial position of the Corporation" as stated by their auditor, PWC.

the extreme, heavy write-downs could threaten these businesses' solvency.

#### **d) Share prices may be hit**

Share prices would also be hit if write-downs and/or dividend cuts are not anticipated. If the market is surprised by the impairments, analysts will adjust their expected cash flow numbers to a more difficult market environment, and this will bring down their fair value estimates. Likewise, a cut to dividends that lowers companies' dividend yields and other closely watched dividend metrics would likely result in reduced shareholdings by income seeking investors.

Against this backdrop, visibility of managements'

assumed oil prices and sensitivity to lower prices is critical for shareholders to be in a position to form a view on the resilience of the business to different price scenarios, and to compare the company's reported results with peers. Creditors also need to know their capital is protected.

Disclosure of price assumptions is currently lacking in certain companies, most notably in the US (see Box). For European majors, which generally offer only limited disclosure in the notes to the accounts<sup>21</sup>, the question shareholders need to ask is whether the assumptions used are internally consistent and prudent, and what lower prices would mean for capital strength. We turn to these points subsequently.

<sup>21</sup>Until this year, RD Shell also did not disclose this assumption. Following engagement by Sarasin & Partners, including a formal complaint to the Financial Reporting Council, Shell have this year included their long-term oil and gas price assumption (see Table).

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### 3. Current price assumptions of European oil majors

As already stressed, oil prices are inherently volatile and we do not seek to predict a specific price in this paper. But companies must use a price when they draw up their accounts. By law in most jurisdictions, these accounts must not overstate capital or performance.

In the UK, the Financial Reporting Council issued guidance in the autumn of 2017 to extractive companies that they should disclose to shareholders their long-term commodity price assumptions<sup>22</sup>.

In addition to using prudent assumptions, to strengthen confidence shareholders should have visibility around the sensitivity of reported capital strength and performance to lower prices. This is particularly important given global efforts to decarbonise our energy systems to the point that the world achieves net zero carbon emissions by around 2070.

To get a sense of the degree of prudence applied by European oil and gas majors, we examine:

- **Internal consistency:** how assumptions used in the financial statements compare with assumptions used in the company strategy, and/or in capex approval processes.
- **Inter-company consistency:** how assumptions used in the financial statements compare to other oil and gas majors. This also has ramifications for the comparability of accounts.
- **Consistency with historical averages and Paris-aligned price projections,** how assumptions used in the financial statements compare to long-term price averages, and future scenarios taking account of the structural reduction in demand that will be required to meet the Paris goals.



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<sup>22</sup>Financial Reporting Council guidance for the disclosure of commodity price assumptions by extractives in a letter to Audit Committee Chairs and Finance Directors, October 2017.

## Internal and inter-company inconsistency

The table below demonstrates how companies are using different long-term oil and gas price assumptions, often even when they have the same auditor (we return to the responsibility of the auditor subsequently). For the companies reviewed, long-term price assumptions range from \$70-\$80/bbl, and all are assumed to increase with inflation by c2% per year thereafter. The divergence in assumptions means that direct comparisons of these companies' financial reports may be misleading<sup>23</sup>.

The table also shows that even within companies, the assumptions being used for strategies or capex approval as disclosed in companies' narrative reports

or strategy presentations tend to be lower, often significantly so, than the accounting numbers (the exceptions are Repsol and Eni, which state that they use their long-term planning assumptions in their accounts).

While it is encouraging that companies are reflecting future downside price risks in their strategies, this divergence between different price assumptions appears to run contrary to requirements for both consistency and prudence.

The lack of disclosure of how asset values would be impacted by lower prices, e.g. sensitivity analysis, adds to the difficulty for shareholders to understand the risks embedded in their businesses<sup>24</sup>.

**Table 1: Long-term oil price assumptions used in latest financial statements of European majors**

COMPANY	FINANCIAL STATEMENTS ASSUMPTION PER BBL	STRATEGY & CAPEX PRICE ASSUMPTIONS	AUDITOR	SOURCE & COMMENT
<b>RD SHELL</b>	\$70	Strategy: \$60 Capex \$40	EY	2017 annual report and accounts (ARA); reduced by \$10/bbl from 2016
<b>BP</b>	\$75	Strategy: \$55; plan to breakeven \$35-\$40 by 2021	EY in FY2017; Deloitte from 2018	2017 ARA; no change from 2016
<b>TOTAL</b>	\$80	Strategy: \$50-\$60  Capex: at \$60 must achieve IRR 15%, stress tested at \$50 and \$40 (break-even)	Joint audit: EY and Deloitte	2017 ARA; no change from 2016
<b>CAIRN</b>	\$70	Capex tested at \$60 and \$50/bbl	PWC	2017 ARA; no change  PWC note: price is at upper end of reasonable range
<b>SOCO</b>	\$71		Deloitte	2017 ARA
<b>Equinor (formerly Statoil)</b>	\$77	Break-even falling below \$50/bbl - new generation portfolio c\$21/bbl	KPMG	2017 ARA; from 2025 reduced from \$78/bbl; 2030 \$80 unchanged
<b>ENI</b>	\$72	IRR targets linked to long-term price assumption of \$72	EY	2017 ARA/Form 10-K
<b>REPSOL</b>	C\$75 (2021) rising to \$97.5 (2026)	Consistent with strategic plan	Deloitte	2017 ARA; based on IEA and EIA forecasts

Source: Latest company annual reports; long-term prices generally start in 2020/21, and rise at c2% per annum going forward to reflect inflation

<sup>23</sup>As one of the key goals for international accounting rules is to ensure comparability, this is a matter that should be of interest to the accounting standard setters as well as accounting and audit regulators.

<sup>24</sup>In certain cases, auditors state that they have undertaken sensitivity analysis, but the results of this are not disclosed to shareholders.

### Company oil prices are above historical averages

While the past is not necessarily a guide to the future (and indeed we believe that fundamental structural shifts are underway that means we need to be more cautious about oil demand going forward – a topic we cover below), it is nevertheless useful to consider the historical context.

Below we provide a long-run (1861-2016) oil price chart in 2016 real prices, using data from BP's 2017 Statistical Review. It shows the volatility we have highlighted in the market, and also that over the entire period the average oil price was just \$35/bbl. If we look at the pre-OPEC period, the average falls to \$25/bbl.

Oil and gas companies' long-term price assumptions of \$70-\$80/bbl in 2020/21 rising by c2% per annum thereafter appear elevated when put in a longer-term historical context. The question is whether these prices are credible as structural equilibrium prices (taking out the cyclical volatility in the market) given the efforts underway to lower fossil fuel consumption.

### Company oil prices are above the IEA's Paris-aligned price trajectories

Inevitably, there will be considerable uncertainty with any scenario analysis that seeks to understand how the Paris Climate Accord could impact long-term oil prices. Nonetheless, the effort is necessary since

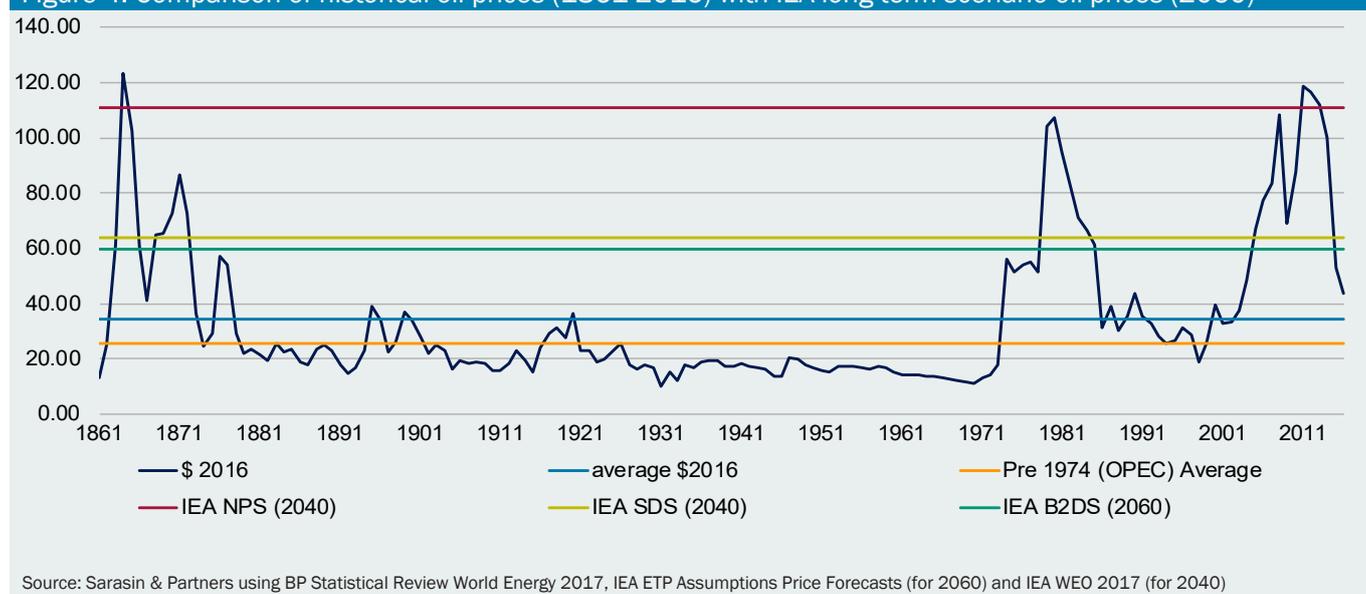
expected prices and their direction of travel is a key input into the reporting of results today, and – as highlighted above – capital allocation decisions for tomorrow. If companies fail to take account of decarbonisation, they risk over-allocating to new oil and gas reserves.

As one of the leading international research bodies tracking and modelling changes in the energy sector, the IEA's efforts in this area are extremely important. They currently produce several price scenarios. We include the base case scenario, the New Policy Scenario (NPS), and two of their lower emission scenarios in the chart on the previous page.

The NPS reflects existing policy commitments to decarbonisation, which are currently envisaged to result in a roughly 3 °C temperature increase by 2100, so well above the Paris commitment and what scientists have determined as consistent with planet stability<sup>25</sup>.

The first lower emission scenario is the IEA's Sustainable Development Scenario (SDS), which models prices where demand falls to provide a 50% chance of meeting a 2 °C cap on temperature increases. The second is its Beyond 2 Degrees Scenario (B2DS), which models prices for a 50% chance of keeping temperatures to a more ambitious 1.75 °C<sup>26</sup>.

Figure 4: Comparison of historical oil prices (1861-2016) with IEA long-term scenario oil prices (2060)



<sup>25</sup>The IEA estimates the NPS will deliver a 2.7 °C warming by 2100, but others estimate the implementation of the Nationally Determined Contributions (which is close to what the NPS assumes) will result in warming of 2.7 °C – 3.3 °C. See for instance UNEP, 2016, "The emissions Gap Report 2016: A UNEP synthesis report", November, and <https://climateactiontracker.org/global/temperatures/>

<sup>26</sup>The IEA's Paris-aligned scenarios have been criticised for using demand trajectories that could result in the world over-shooting its Paris goals (see Box).

## Box 2: Reasons IEA Paris-aligned price scenarios could be over-stated<sup>27</sup>

The IEA's SDS and B2DS have been criticised for over-stating the long-term demand for oil and gas, and thus prices.

First, the IEA has been accused of underplaying demand-side reductions needed to ensure alignment with Paris commitments. The SDS's assumed 50% probability of meeting a 2°C target is deemed too weak with the goal of ensuring the world keep temperatures "well below 2°C" agreed in Paris; a higher probability of success should be used. Although the B2DS assumes a two-thirds probability of achieving a 2°C cap, and a 50% probability of reaching 1.75°C, critics remain concerned that there is still a one-third chance of exceeding this. As yet, the IEA has not produced a scenario for a 50% chance of reaching the 1.5°C target agreed in Paris.

Second, both scenarios are also criticised for depending too heavily on either a large roll out of Carbon Capture and Storage and/or nascent negative emissions technologies, which may prove unrealistic<sup>28</sup>.

Third, the IEA's assumptions for non-energy emissions (e.g. from land management and industrial processes) are criticised for being unrealistically low, which creates more space for higher energy-related emissions and thus fossil fuel demand<sup>29</sup>.

If demand for fossil fuels needs to be brought down more quickly than the IEA estimates, the risk of downward pressure on the oil price is likely to be higher.

A further criticism is that the IEA's general equilibrium model takes no account of possible, or even likely, behavioural responses to falling demand on the supply-side. For instance, with a structural reduction in demand, and a clear deadline for full decarbonisation, OPEC members may face growing pressure to break-away from self-imposed quantitative limits. The focus could shift to getting one's own fossil fuels out before others. In other words, in game theory terms, the pay-off from coordinated supply restrictions could fall. If this were to happen, sharper oil price reductions are more likely.

The prices for these scenarios are (all in 2016 prices):

- NPS: \$111 in 2040
- SDS: \$64 in 2040
- B2DS at \$60 in 2060

The price assumptions used in oil and gas companies' 2017 accounts of \$70-\$80/bbl are more conservative than the IEA's NPS from c2030 onwards, but higher than the IEA's prices associated with faster decarbonisation<sup>30</sup>. In short, company price assumptions presume the world fails to limit consumption of fossil fuels in line with the Paris Climate Accord. It is important for shareholders and regulators to be clear about this, and whether this assumption is appropriate.

### Alternative low-price projections linked to the Paris Accord

Another way to think about long-term oil prices is to consider the marginal cost of production at the level of demand consistent with the Paris Accord.

The think-tank Oil Change International uses Rystad Energy data to undertake such an analysis. Figure 5 below shows that a long-term equilibrium price to fulfil the 2°C carbon budget may be as low as c\$35/bbl in 2040 (in 2018 prices)<sup>31</sup>. This is close to the average price for the period evaluated above (1861-2016), and above the pre-OPEC average of c\$25/bbl. In other words, it is not inconceivable<sup>32</sup>.

<sup>27</sup>A detailed recent critique was published by Oil Change International, "Off Track – How the International Energy Agency guides energy decisions towards fossil fuels dependence and climate change", April 2018.

<sup>28</sup>Ibid. See also [http://www.fossiltransition.org/pages/costs\\_and\\_challenges/136.php](http://www.fossiltransition.org/pages/costs_and_challenges/136.php)

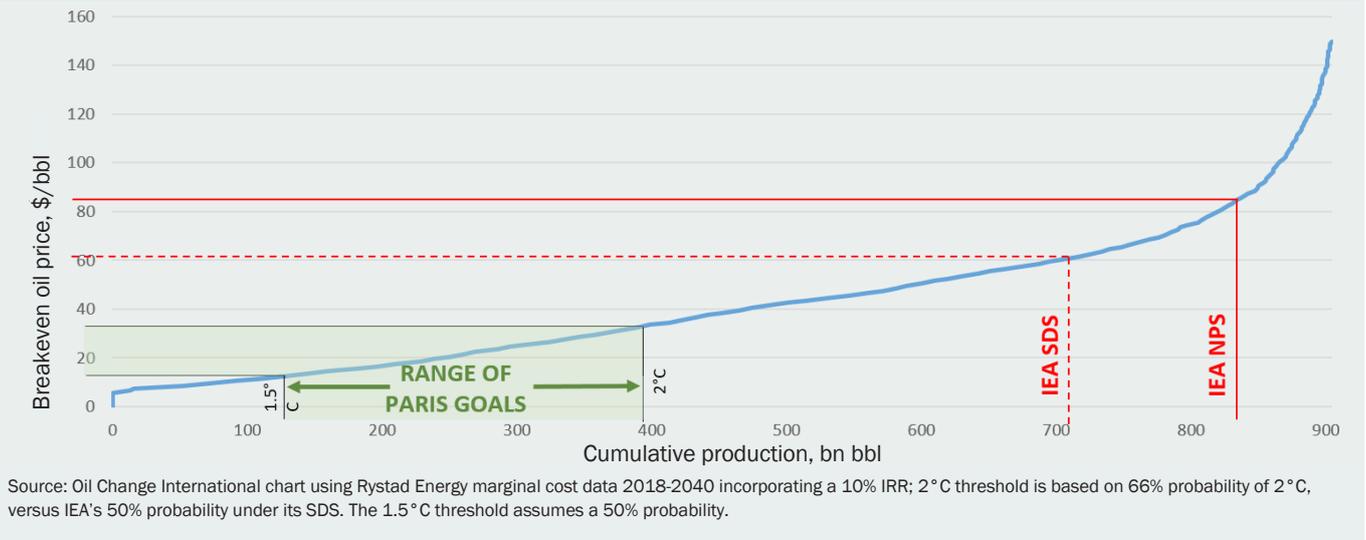
<sup>29</sup>Ibid. See also IEA and IRENA, 2017, "Perspectives for the energy transition: investment needs for a low-carbon energy system".

<sup>30</sup>The NPS's price scenario assumes \$83 in 2025; \$94 in 2030, \$103 in 2035 and finally \$111 by 2040 (in 2016 prices). See WEO 2017, Table 1.4: [http://www.iea.org/media/weowebiste/2017/Chap1\\_WEO2017.pdf](http://www.iea.org/media/weowebiste/2017/Chap1_WEO2017.pdf)

<sup>31</sup>Ibid. A key distinction to the IEA work is their use of a higher two-thirds probability for achieving the 2°C, though they use a 50% probability for the 1.5°C target.

<sup>32</sup>Most companies would add a safety margin of, say 10-15%, to their marginal costs to protect them against the volatility in prices over time. This is not included in the chart. market-clearing price for a two-thirds probability 2C scenario, we consider a daily volume equivalent to four-sevenths of the 450 scenario, similar to the OCI analysis.

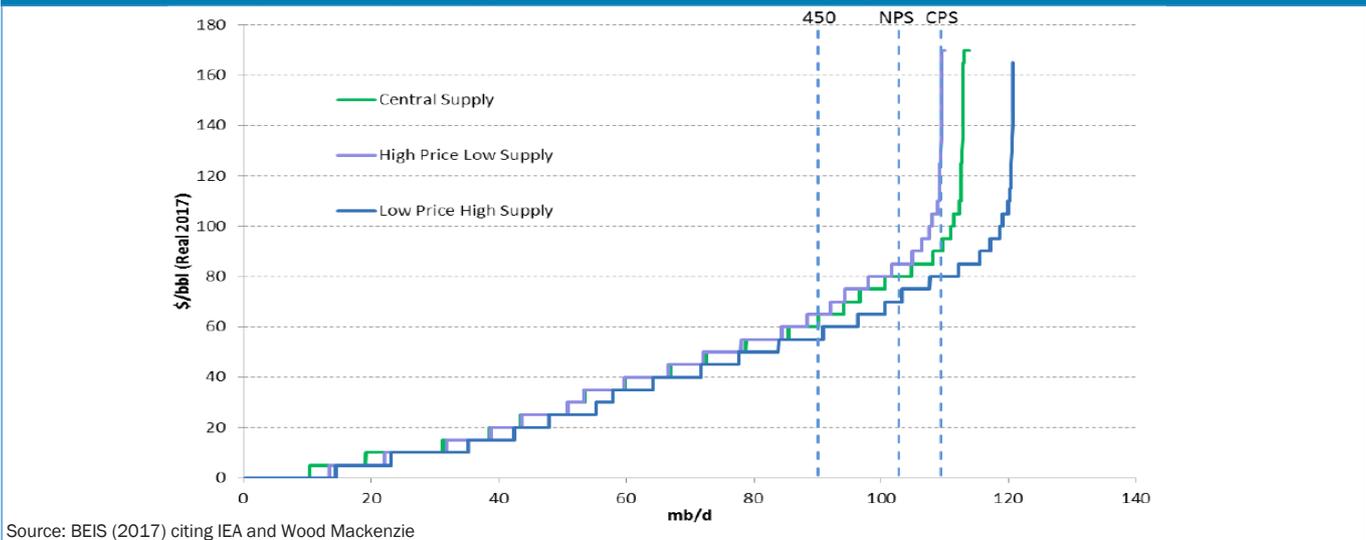
Figure 5: Oil cost curve: cumulative production 2018-40 versus break-even oil price



The UK's Department for Business, Energy & Industrial Strategy (BEIS) also produced oil price scenarios to 2038 in a report published in November 2017<sup>33</sup>. These scenarios use long-run supply curves from Wood Mackenzie in 2016, which present a similar picture to the Rystad marginal cost data above (see figure below). Overlaying the IEA's 450 parts per million scenario (very similar to the SDS used above) onto the marginal cost curve suggests a real long-term equilibrium oil price of \$55/bbl from 2030 (in 2017 prices). Using a demand scenario below the 450 parts per million scenario consistent with a two-thirds probability of achieving 2°C would produce a similar result to the Rystad analysis above of \$20-\$30/bbl<sup>34</sup>.

In the end, the market-clearing price will depend on the total level of demand (so how effectively governments reduce fossil fuel consumption; and how quickly technology shifts us away from fossil fuels), as well as whether technological breakthroughs, operational efficiencies and/or OPEC responses shift supply curves. If global efforts to achieve the Paris commitment ratchets up, we will likely see downward pressure on prices. This is something that companies need to build resilience for<sup>35</sup>. In terms of accounting, shareholders deserve greater visibility not just of the assumptions made, but how lower price scenarios would alter reported results.

Figure 6: Long-term (from 2030) oil supply curves and IEA demand projections



<sup>33</sup>BEIS, 2017, "BEIS 2017 Fossil Fuel Price Assumptions", November.

<sup>34</sup>The OCI analysis considers the total cumulative demand compared with supply from 2018-2040, whereas the BEIS analysis looks at demand and supply on a daily flow basis in 2030. So the charts are not measuring precisely the same thing, but both are trying to get to the same end result of a long-term structural market clearing price. To estimate the market-clearing price for a two-thirds probability 2C scenario, we consider a daily volume equivalent to four-sevenths of the 450 scenario, similar to the OCI analysis.<sup>37</sup>FRC, 2014. Guidance on Risk Management, Internal Control and Related Financial and Business Reporting. [Online] Available at: <https://www.frc.org.uk/Our-Work/Publications/Corporate-Governance/Guidance-on-Risk-Management-Internal-Control-and-Related-Financial-and-Business-Reporting>. [Accessed 1 December 2015] p.19.

<sup>35</sup>Of course, if we do not see alignment with Paris, then we would need to factor in how accelerating global warming feeds back into oil demand and supply, something that few projections appear to take account of.

## 4. Company narrative disclosures emphasise decarbonisation as a headwind

The minimal attention given to decarbonisation in the financial statements contrasts with the heavy emphasis placed on the transition away from fossil fuels in companies' narrative disclosures in their Annual Reports.

Every company reviewed in this paper identifies climate change, decarbonisation and/or the energy transition as a threat that they need to attend to. Generally, the Chief Executive and/or Chairman devotes part of his letter to shareholders to this matter, alongside other major strategic considerations. Indeed for several, responding to decarbonisation is the key factor driving their strategy to diversify away from oil towards more gas, and to deploy capital (albeit relatively small sums as a proportion of overall capex budgets) into renewable energy. Statoil's decision to change its name to Equinor in early 2018 reflects its effort to redefine itself as an energy provider, not just an oil company:

*"Our strategy remains firm, and the change is a natural follow up of the strategic development from a focused oil and gas to a broad energy company. The board sees the new name as a continuation of the company's proud history, and a commitment to value creation also in a low carbon future."*

- Jon Erik Reinhardsen, Chair of Board, Equinor (2017 Annual Report and Form 20-F)

In addition, climate-related risks are normally identified

under 'principal risks and uncertainties' in the Management Discussion and Analysis, and alongside carbon taxes, companies explicitly acknowledge how decarbonisation could harm the company's prospects through falling end demand for their products. BP's 2017 Annual Report states, for instance, in its list of Risk Factors:

*"Climate change and the transition to a lower carbon economy - policy, legal, regulatory, technology and market change related to the issue of climate change could increase costs, reduce demand for our products, reduce revenue and limit certain growth opportunities."*

- BP 2017 Annual Report

As part of companies' response to the Task Force for Climate-related Financial Disclosures (TCFD), companies are also now starting to bring together scattered commentary on climate risks to highlight their materiality.

This focus on climate change in company narratives is extremely welcome. The problem comes with the apparent inconsistency between these disclosures that emphasise the importance of decarbonisation to company prospects and strategies, and the silence on this matter in the financial disclosures, as highlighted above. UK company viability statements are also largely silent on climate risks (see box below).

### Box 3: UK viability statements fail to inform investors on climate risks

Since 2014, UK-listed companies are required to provide long-term viability statements in their Annual Reports to shareholders<sup>36</sup>. According to guidance by the Financial Reporting Council, these statements should be aligned with companies' planning and investment horizons and aim to focus directors' minds on longer-term threats to solvency or liquidity. The FRC emphasises the need for the assessments to be undertaken with appropriate prudence<sup>37</sup>.

Based on our review of UK-listed oil and gas majors, only Royal Dutch Shell explicitly mentions climate-related risks in this statement. No company provides any detail on the sensitivity analysis they have done to reassure themselves that the business is resilient to the decarbonisation headwinds. Moreover, companies tend to use a 3 to 4 year time horizon in their viability statements, although their investment planning horizons can span decades<sup>38</sup>. This appears to run contrary to FRC guidance.

<sup>36</sup>A "viability statement" has been introduced in The UK Corporate Governance Code (Paragraph C.2.2) from 1 October 2014. For quoted companies with a premium listing, Rule 9.8.6 of the Listing Rules requires a statement in the annual report indicating how the company applies the main principles of The UK Corporate Governance Code.

<sup>37</sup>FRC, 2014. Guidance on Risk Management, Internal Control and Related Financial and Business Reporting. [Online] Available at: <https://www.frc.org.uk/Our-Work/Publications/Corporate-Governance/Guidance-on-Risk-Management,-Internal-Control-and.pdf> [Accessed 1 December 2015] p.19.

<sup>38</sup>Sarasin & Partners and Client Earth coordinated an investor letter to the FRC in January 2016 outlining our concerns that fossil fuel company viability statements are failing to take account of climate risks. This letter can be found on Sarasin & Partner's website: <https://www.sarasinandpartners.com/charities/about-us/responsible-stewardship/policy-outreach>.

## 5. Conclusion: Companies and auditors need to ensure that accounts are transparent and reliable in the face of global decarbonisation

Shareholders deserve greater visibility about how decarbonisation could impact the capital strength and performance of their companies. They also need reassurance that company balance sheets are prudent and not overstating their position.

This paper draws attention to often under-scrutinised, yet critical, long-term commodity price assumptions that currently underpin oil and gas companies' reported capital and performance. We find that these price assumptions are frequently higher than what the same companies use in the strategy and/or capex decisions; and are also higher than external benchmarks, especially those projections that take account of decarbonisation as agreed under the Paris Climate Accord. These discrepancies require greater attention.

Questions need to be asked of boards – particularly Audit Committee directors – and auditors as to whether these price assumptions are sufficiently prudent. Why are companies using more conservative numbers to build their strategies than their accounts? In addition, shareholders should seek reassurance that the long-term price assumptions take account of structural changes underway in the demand side of the fossil fuel market driven by both Paris-linked regulation and technological change.

In none of the European companies' annual reports that we looked at did the Audit Committee or the auditor mention decarbonisation as something they considered. This was true even where the company highlighted climate change and decarbonisation as a key risk facing the business in the narrative section of the annual report.

This apparent blind spot for decarbonisation in accounting has important ramifications for companies' preparedness and thus resilience to declining oil and gas demand over the longer term. Accounting numbers do not only inform management and shareholder views of capital strength, but they also guide decisions around where capital should be deployed. If these companies are over-optimistic about long-term oil and gas prices, they may deploy too much capex towards fossil fuel activities. This could undermine dividend flows and result in capital destruction.

Overstatement will also hamper efforts to shift capital away from fossil fuels; and delays in ensuring more accurate numbers could raise the risk of disruption when the eventual adjustment comes. Aside from

shareholders, regulators concerned with ensuring capital market stability and efficiency have an interest in addressing any hidden risks.

Indeed, this was the central concern of the Task Force on Climate-related Financial Disclosures (TCFD) set up by the Financial Stability Board in 2016 to look into the potentially harmful macro-economic impacts of climate risks and to come up with recommended disclosures by companies to enable investors and others to better understand and take account of these risks (see Box 4).

While the final report did not delve into the links between financial statements and climate risks, they identify this as an area for further work, specifically pointing to asset impairments and contingencies as pathways through which impacts could be felt. This report demonstrates the importance of such accounting pathways.

### Box 4: TCFD and accounting for climate risks

Set up at the request of Mark Carney, Chair of the Financial Stability Board and Governor of the Bank of England, the TCFD produced a number of recommendations in 2017 for companies to provide better and comparable disclosures of material climate risks that affect their businesses.

The goal is to ensure the market has the information it needs to allocate capital efficiently, taking account of the physical risks from climate change as well as the impacts of decarbonisation as we transition to a low carbon world. Accurate information underpins market stability; surprises cause market volatility.

The report provides a high level and voluntary disclosure framework, touching on governance, strategy, risk management, metrics and targets related to climate risks. While the report encourages Audit Committees to consider the information, and directors to comply with local laws and rules, they do not go into detail on accounting. They do, however, identify it as an area for further work.

Specifically, the TCFD final report states:

*“careful consideration should be given to the linkage between scenario analyses performed to assess the resilience of an organization’s strategy to climate-related risks and opportunities (as suggested in the Task Force’s recommendations) and assumptions underlying cash flow analyses used to assess asset (e.g., goodwill, intangibles, and fixed assets) impairments.”*

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## 6. Recommended next steps

It is in everyone's interests that key accounting assumptions are made clear to enable the proper interpretation of company accounts. It is also vital that any overstatement in oil and gas companies' reported accounts is addressed sooner rather than later. We would recommend the following next steps by investors, either individually or collectively.

### Investor dialogue with Audit Committees

Investors should initiate dialogues with Audit Committee directors to seek:

- Disclosure of commodity price assumptions where this is not yet disclosed, e.g. Exxon Mobil, Chevron and Anadarko.
  - A justification for long-term commodity prices used in reported accounts.
  - Consistency between accounting assumptions and the commodity prices being used in company strategies or capex plans, and an explanation for how directors have become comfortable that the assumptions are prudent.
  - Whether and how the price assumptions take account of commitments made by governments in the Paris Climate Accord.
  - Sensitivity analyses showing how a lower price trajectory associated with accelerated decarbonisation might impact net assets, profits and dividend paying capacity.
  - In the UK, an explanation for how decarbonisation is considered in the long-term viability analysis, and the results of this analysis.
- How they have become comfortable that the price assumptions are prudent and ensure the accounts present a true and fair view; or are not misrepresenting the underlying economic position of the entity.
  - Where the price assumptions used in financial statements are not consistent with prices used in the company's strategy, how they explain the divergence<sup>39</sup>.
  - How they incorporate decarbonisation into their testing of companies' long-term oil and gas price assumptions.
  - Steps taken to take account of downside price risks in reviewing dividend proposals.
  - For UK companies, evidence that they ensured that decarbonisation was taken into account in the determination of long-term viability. If not, why not.

### Investor dialogue with auditors

Investors should reach out to the large audit firms, KPMG, PWC, Deloitte and EY to clarify:

### Voting decisions

The conversations that investors have with directors and auditors on this issue should inform voting decisions on the reappointment of Audit Committee directors; the auditor; and (in some jurisdictions) the report and accounts<sup>40</sup>. Investors should determine their voting rules on this matter before the next annual general meeting season kicks off in earnest in April 2019, and ideally communicate this to companies ahead of time.

### Outreach to regulators and standard setters

Investors should reach out to accounting and audit regulator(s) in the jurisdiction where the company is listed to call for clearer guidance for directors and auditors on the disclosure of commodity price assumptions, and how companies have taken account of global climate targets in their financial statements where this is material. This guidance should be framed

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<sup>39</sup>In the UK, the auditor is required to establish consistency between the management's narrative section, and their accounts. They must state whether the report and accounts meet the "fair, balanced and understandable" test.

<sup>40</sup>Please see IIGCC discussion paper Landell-Mills, N. "Voting for better climate risk reporting: the role of auditors and audit committees", April 2018.

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in terms of ensuring directors and auditors meet their statutory reporting duties.

It would also be worth investors reaching out to the main accounting standard setters – the International Accounting Standards Board (IASB) and the US Financial Accounting Standards Board (FASB), in particular – to see whether and how they could play a supportive role. Likewise, the IEA should be encouraged to continue to provide externally-verified reference benchmark for long-term oil and gas prices that take account of the Paris commitments, such as its B2DS, updating these at regular intervals.

With any structural change, expectations take time to adjust. Decarbonisation demands a fundamental re-wiring of the global economic system. While oil and gas company narrative disclosures to shareholders appear to recognise this fact, their numbers do not. This puts shareholders and creditors at risk. It also works against efforts to combat climate change. We believe the proposed actions in this paper will catalyse a faster and smoother adjustment, which is – at the end of the day – in all of our interests.

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