Carbon Performance of European Integrated Oil and Gas Companies Progress Review

May 2020

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with a foreword from Adam Matthews and Rory Sullivan

Transition Pathway Initiative

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INVESTOR PERSPECTIVE: THE TRANSITION CHALLENGE FOR THE OIL AND GAS SECTOR

Adam Matthews *(Co-Chair, Transition Pathway Initiative and Director of Ethics & Engagement, The Church of England Pensions Board)* and Dr Rory Sullivan (*Chief Technical Advisor, Transition Pathway Initiative and CEO, Chronos Sustainability*)

The European integrated oil and gas sector appears to be changing rapidly. Less than three years ago no company had set targets to reduce the carbon intensity of the energy it supplied. Today all six companies assessed by TPI have set such targets. In addition, five (BP, Eni, Repsol, Shell and Total) have recently updated their long-term climate ambitions. This report presents TPI's provisional assessment of these ambitions, analysing how far these companies have come and how far they need go if they are to meet the goals of 'net zero'.

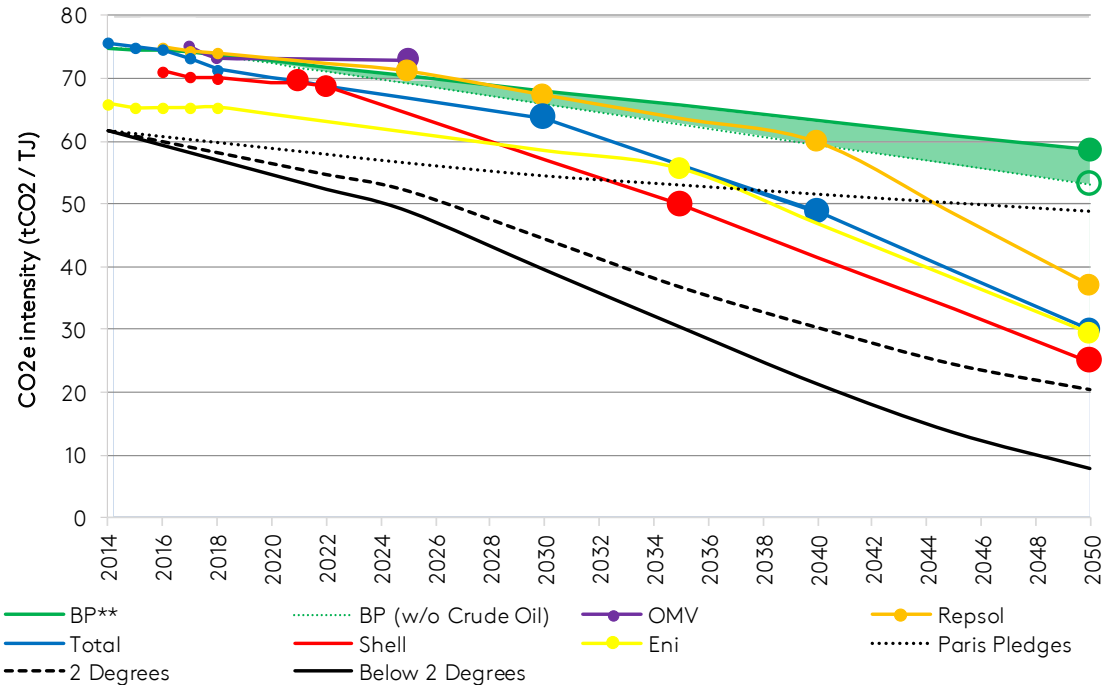
The analysis tells us that:

1. **Ambitions have risen markedly in the last six months.** BP and Eni now include Scope 3 emissions in their ambitions, a big improvement on their previous plans. Companies are increasingly thinking long-term, and setting long-term targets. For example, by extending targets to 2050, Repsol and Total are now aligned with the Paris Pledges scenario, and Shell now plans to cut its emissions intensity by 65% by 2050. OMV plans to announce new targets in 2020.
2. **However, these new targets are not all equal.** Shell's new target currently stands as the most ambitious plan to reduce emissions intensity in the sector and is close to alignment with a 2°C scenario. Eni's commitment to reduce intensity by 55% and absolute emissions by 80% includes disclosure on the expected contribution of offsets and represents a comprehensive strategic response. Current plans from Repsol and BP do not cover all the sales of energy acquired from third parties and consequently are less ambitious.
3. **Companies need to go further.** The claims of 'net zero' or 1.5°C alignment that have been made by these companies are not substantiated by TPI's analysis. Even the most ambitious new goals (Shell and Eni) are not aligned with a 2°C scenario using TPI's intensity metric. Repsol and BP need to extend the boundary covered by their ambitions. OMV needs to set a new, much more ambitious, target. Better disclosure of energy supplied from low-carbon sources will be needed to help investors track progress.
4. **Non-European oil and gas companies are lagging far behind their European peers.** Of the 42 oil and gas companies assessed by TPI in 2019 and headquartered outside Europe, only one (Petrobras) had an emissions target that included Scope 3 emissions, and none were aligned with TPI's Paris Agreement benchmarks.
5. **High Management Quality appears to be a lead indicator.** In previous TPI assessments, European oil and gas companies consistently scored highly on TPI's Management Quality framework, and this is now being reflected in these companies' Carbon Performance. There is a wide gulf in TPI's assessment of the Management Quality of European oil and gas companies compared to their

global peers, although there are signs of improvement among some North American companies.

6. **The ability of the oil and gas sector to transition to net zero by 2050 requires progress in other sectors and action by other players.** The recent announcements from Shell and Total, both of whom set out ambitions to be net zero emissions energy businesses, illustrate this point. Shell is aiming to reduce the carbon footprint of its products by 65%, but to address the remaining 35% it must help its customers decarbonise by working with coalitions of businesses, governments and other parties to identify and enable decarbonisation pathways for each sector. It also plans to pivot over time towards serving the businesses and sectors that, by 2050, are net zero emissions themselves. This introduces a new "sectoral decarbonisation" concept that at present cannot be tracked by TPI, but is one that could theoretically be possible to quantify.

Exhibit ES1. Carbon Performance in European Integrated oil and gas*



* The assessments in this briefing paper are made on a provisional basis. They have been reviewed by the companies, but, to maintain consistency of the data on the TPI website, will not be uploaded until we publish our next oil and gas assessments.
** TPI currently includes volumes from BP's Crude Oil sales business in its assessment, which BP indicates exclusively comprises financial trading. TPI currently aims to exclude financial trading from its assessment, but can only do so where financial disclosure justifies it. The impact of excluding Crude Oil sales from assessed product is shown by the (lower) dotted line. A 2018 base year was used for BP, as not all the 2019 data were available at the time of publication.

And what does this mean for investors? Our view is that investors should welcome the progress made by the European integrated oil and gas sector in the last six months. However, more is needed and investor engagement, through initiatives such as CA100+, will need to evolve to ensure this momentum is sustained. As shown by this TPI paper, a critical mass of European companies have evolved their position and as a result this presents an opportunity for investors to now establish **a net zero standard** for the oil and gas sector. BP, OMV, Repsol, Shell and Total have all indicated they intend to further update investors on their climate ambitions during 2020. We believe companies should be looking to address the following:

1. **Provide standardised and comparable disclosures.** The European oil and gas companies all measure their emissions and set out their targets in slightly different ways, which makes it difficult to directly compare commitments and performance. There is now a need to standardise the overall approach to disclosure to allow investors to assess and compare transition strategies on a consistent basis.
2. **Strengthen their emissions reduction commitments.** For the average European oil and gas company, its emissions intensity would need to be reduced by over 70% between 2018 and 2050 to align with a 2°C climate scenario by 2050. Alignment with a Below 2°C scenario requires a 90% cut in emissions intensity over the same period, while alignment with a 1.5°C scenario requires a 100% reduction in net emissions (a genuine 'net zero' strategy).
3. **Broaden the scope of their commitments.** Emissions ambitions from BP and Repsol only cover 41% and 51% of all their externally sold energy respectively. There is scope for exclusion of financial trading products (where disclosed), but these companies need to broaden their targets to cover more, and ideally all, of the energy they supply externally.
4. **Provide greater clarity on the contribution carbon capture and storage (CCS) and/or offsets make to overall corporate goals.** There remains significant uncertainty as to whether these technologies can scale to meet expected demand. Disclosing the intended contribution of both CCS and offsets will help investors assess the credibility of long-term emissions targets.
5. **Set both intensity *and* absolute targets.** Investors have expressed concern that oil and gas companies can meet intensity commitments without cutting production and reducing absolute emissions. Expressing a long-term emissions target using both intensity and absolute metrics (as Eni has now done) addresses this concern. TPI is currently looking to develop an additional Carbon Performance metric to assess and benchmark absolute commitments.
6. **Provide better disclosure on the contribution low-carbon energy sources will make to overall corporate goals.** Growth in energy supplied by biofuels, hydrogen, wind and solar is likely to be a big component of most oil and gas companies' decarbonisation strategies. Setting out the expected contribution of these sources to the energy mix in the long term and the Fossil Fuel

Equivalent calculation behind these assumptions will help investors assess the credibility of these strategies.

7. Align short-term targets and executive remuneration with long-term climate commitments. There is a clear relationship between companies with high Management Quality and those now making commitments to significantly reduce their greenhouse gas emissions. Repsol, Shell and Total have set multiple milestones on their emissions intensity path that enable investors to track progress. Recently introduced long-term climate ambitions from BP and Eni should be matched with short-term targets linked to executive renumeration to ensure management actions are aligned to longer-term goals.
8. Establish a sectoral decarbonisation plan. Sectors like aviation and heavy-duty freight transport are particularly challenging to decarbonise, as no clear single path to cut emissions exists currently. Following Shell's example, oil and gas companies should set out how they intend to work with their customers, their supply chains and other stakeholders to decarbonise these sectors. These initiatives will need quantification by tools such as TPI if investors are to understand their contribution to meeting net zero/1.5°C targets. However, just because they cannot be quantified at this point does not mean there isn't merit in this approach. Investor support for and understanding of these efforts will be crucial.
9. Set Scope 3 emissions targets. Of the non-European oil and gas companies assessed by TPI, only Petrobras has set a long-term emissions target that includes Scope 3 emissions.
10. Strengthen their governance and management of climate change. The evidence from TPI's assessment of the oil and gas and other sectors suggests companies usually acknowledge the strategic risk posed by climate change before setting ambitious long-term emissions targets. TPI's analysis of non-European oil and gas companies suggests that most have yet to recognise climate change as a key strategic value driver.

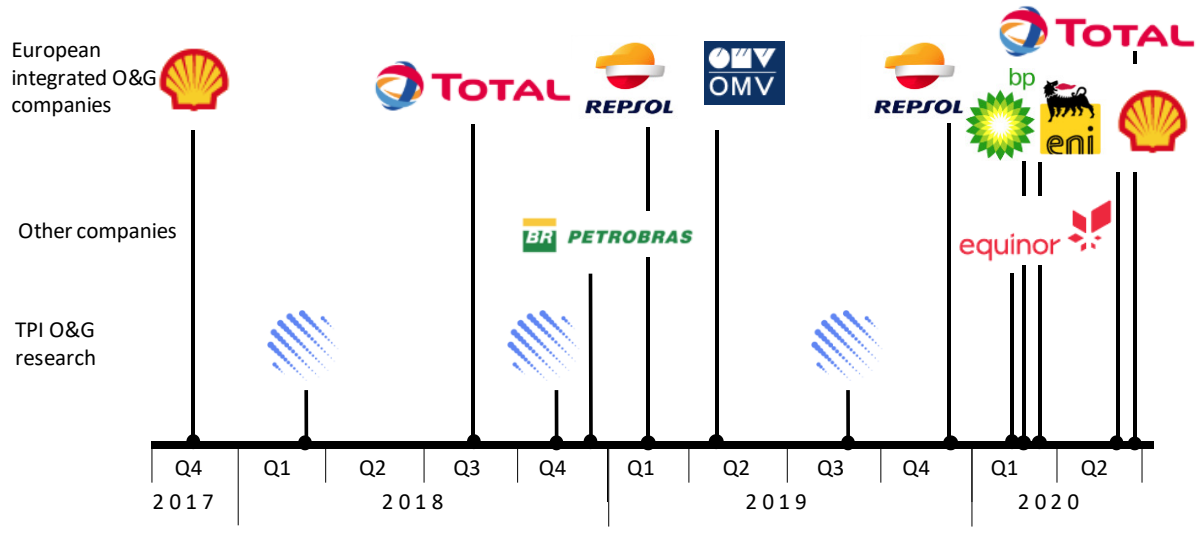
1. THE CARBON PERFORMANCE OF EUROPEAN INTEGRATED OIL AND GAS

This briefing paper provides provisional Carbon Performance assessments for the six European integrated oil and gas companies covered by TPI following the disclosure of new targets by BP, Eni, Repsol, Shell and Total in the last six months. It highlights both the significant progress made by this sub-sector and the wide variation in ambition levels. It also confirms that deeper decarbonisation is needed if the sector is to claim alignment with a 2°C, Below 2°C or even 1.5°C climate scenario. Finally, it also provides an update on some of the initiatives TPI is working on in the oil and gas sector to further improve its Carbon Performance methodology.

1.1. Recent target changes in European integrated oil and gas

Less than three years ago, no oil and gas company anywhere had set formal targets to reduce the carbon intensity of the energy it supplied. In November 2017, Shell announced it intended to cut the emissions intensity of its portfolio in half ("in-line with society") by 2050 (see Exhibit 1). Following that announcement much has changed. A further six European companies covered by TPI (five integrated oil and gas companies plus Equinor) have now set ambitions to reduce Scope 3 ("use of sold product") emissions and Petrobras (Brazil) has also followed suit.

Exhibit 1. Oil and gas companies setting and updating emission targets including Scope 3



TPI published Carbon Performance assessments of the world's 50 largest oil and gas companies by market capitalisation in September 2019[1]. This included six European integrated companies, five of whom have subsequently updated their long-term ambitions to reduce emissions (see Exhibit 2). Repsol, Shell and Total have revised their original ambitions, while BP and Eni both set ambitions including Scope 3 for the first time.

TPI has been asked by its supporters to provide a provisional assessment of these ambitions using its Carbon Performance methodology. Consistent with its methodology, these assessments have been reviewed internally and then sent to the

[1] See https://www.transitionpathwayinitiative.org/tpi/publications/40.pdf?type=Publication

companies for external review. To ensure the consistency of results on the website, these provisional results will not be uploaded to our website[2] until we have had the opportunity to re-assess all companies in the sector.

Exhibit 2. Recent ambition changes in European integrated oil and gas

BP	12-Feb-20	- Net zero across BP's operations on an absolute basis by 2050 or sooner - Net zero on carbon in BP's oil and gas production on an absolute basis by 2050 or sooner - 50% cut in the carbon intensity of products BP sells by 2050 or sooner
Eni	28-Feb-20	- obtain by 2050 an 80% reduction in net scope 1, 2 and 3 emissions […] and a - 55% reduction in emission intensity compared to 2018
OMV	Unchanged*	
Repsol**	02-Dec-19	- Net zero by 2050 - Intermediate ambitions: 10% reduction by 2025, 20% by 2030, 40% by 2040
Shell	17-Apr-20	- 65% cut in Net Carbon Footprint by 2050 or sooner - Net zero in operational emissions for controlled upstream operations by 2050 - Pivot towards serving business and sectors that by 2050 are also net zero
Total	05-May-20	- Net zero for Scope 1 & 2 globally and Scope 1-3 in Europe by 2050 - 15% reduction in intensity by 2030 (unchanged), 35% by 2040 (previously 25-35%) - 60% or more reduction in carbon intensity by 2050

* OMV's Sustainability Report 2019 suggests it will update its long-term emissions targets in the near future: "This year [2020] we will again review our climate protection goals and set even more ambitious targets" (p4). ** Repsol explicitly states that its new ambition refers to reducing the emissions intensity of its own production (51% of its externally sold energy) and excludes third party products. Our previous assessment has been restated to reflect this and in this note we compare Repsol's new ambitions with this restated data.

1.2. Translating published targets into Carbon Performance assessments

A full explanation of TPI's Carbon Performance methodology and its application in the oil and gas sector is set out in our report; *Carbon Performance assessment of oil & gas producers: note on methodology*[3]. Oil and gas emissions intensity is calculated using the metric:

$$\text{Emissions intensity} = \frac{\text{Scope 1 + Scope 2 + Scope 3 (Cat. 11 only) - CCS - Natural sinks } (CO_2e)}{\text{Externally sold energy products (TJ)}}$$

No two oil and gas companies publish emissions, energy or target data using exactly the same boundaries (or scopes). The differences between the disclosures provided by the six companies assessed in this report are detailed in Exhibit 12. Essentially, companies differ how they define their:

- **Emissions boundary.** Several oil and gas companies (e.g. BP, Eni and Shell) report 'lifecycle' intensity metrics that include additional Scope 3 categories (i.e. more than just Category 11, use of sold products, used by TPI). As a consequence, their emissions estimates are higher. Given lifecycle factors are arguably more comprehensive, we assume the targeted reduction is still directly applicable to TPI's metric. Repsol's target is stated using CO_2 rather

[2] Carbon Performance for all oil and gas companies https://www.transitionpathwayinitiative.org/tpi/sectors/oil-gas

[3] See https://www.transitionpathwayinitiative.org/tpi/publications/39.pdf?type=Publication

than CO_2e, which we do not currently adjust for and separate disclosure of Scope 1 and 2 emissions related to petrochemicals production uniquely enables 'non-energy' operational emissions to be removed. Most emissions targets are disclosed on a 'net' basis to reflect the use of 'carbon sinks' (CCS plus offsets), but rarely is the contribution of carbon sinks to either reported emissions or the target given.

- Organisational boundary. TPI is largely agnostic on the consolidation boundary companies use (i.e. equity or operational), but does adjust Eni's and Total's Scope 1 and 2 disclosures to match the equity boundary used to calculate their Scope 3 emissions. Our assessments aim to include all energy products sold externally, including 'third party' products and trading. While we aim to exclude financial trading, we currently only do so where it is justified by disclosure. When targets exclude third party energy products (BP and Repsol), TPI assumes a constant emissions intensity from the last reported year. Therefore excluding products from an emissions target reduces the ability of that target to cut overall intensity.
- The energy boundary. Like TPI, companies typically assume a certain proportion of liquid production is destined for non-energy uses, and reduce their estimates of Scope 3 emissions accordingly. Repsol, however, includes the energy value of petrochemicals in its intensity denominator, lowering its emissions intensity metric. Biofuels, biopower and electricity production are often inconsistently disclosed. Thermal electricity generation typically needs to be 'grossed up' to reflect primary energy input, but we do not do this for renewables. With the exception of Eni, most oil and gas companies appear to increase the energy value supplied by renewables in their intensity calculation using a Fossil Fuel Equivalent adjustment. Eni and Shell calculate their carbon intensity using different energy metrics (final and delivered benchmarks respectively) versus TPI's primary energy approach.

2. RESULTS

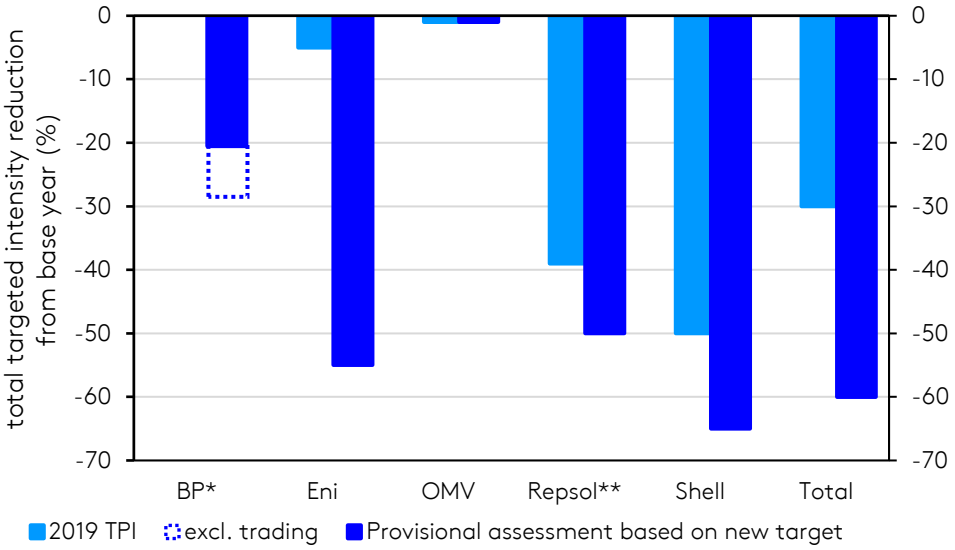
2.1. Demonstrable progress: significant strengthening of ambitions

Acknowledging the issues around boundaries and scope, it is however clear that these new targets represent a major strengthening of European integrated oil and gas companies' strategic responses to climate change. **Companies are adopting a longer-term perspective**: looking at the five companies that have set long-term targets, the average target year is now 2050, up from 2035. BP and Eni have replaced near-term targets (2025 and 2030 respectively) with 2050 targets. Repsol and Total have extended their targets from 2040 to 2050. OMV, the only European integrated company that does not currently have a long-term target, has stated its intention to set one in 2020.

More significantly, target ambition has increased. Previous emissions goals from BP and Eni only covered Scope 1 and 2 emissions. Their new ambitions now include Scope 3 emissions (representing approximately 93% of emissions). While BP's new target covers 41% of its downstream activities assessed by TPI (we include trading), **the inclusion of Scope 3 emissions does represent a substantial strategic shift**. BP has now reorganised the business to address investor concerns about transition risk. Eni's ambition to reduce emissions by 55% is particularly strong, given its carbon intensity is already as low as 65.3 tCO_2/TJ, 10% lower than its peers.

Repsol's net zero target includes Scope 3 emissions, but only covers emissions from sales of its own production (51% of the energy it supplies). For third party products, we assume intensity is unchanged from the last reported value. Hence Repsol's new ambition, whilst still an improvement on its prior commitment, is not as extensive as the headlines might suggest.

Exhibit 3. Overall targeted intensity reductions from base year by company (%)



* BP's ambition to cut the carbon intensity of products it sells by 50% by 2050 covers 41% of the externally sold energy assessed by TPI, excluding its Trading/supply or Crude Oil sales (see pg. 32 of BP's 2018 AR). TPI aims to exclude financial trading from its assessment, but can only do so where financial disclosure justifies the exclusion. Excluding Crude Oil sales from assessed product is shown by the dotted line. A 2018 base year was used, as not all the 2019 data were available at the time of publication. ** Repsol's reduction is shown against a re-stated assessment.

Total's 2050 ambition to reduce emissions by over 60% implies decarbonising at 1.3 tCO_2e/TJ per annum, slightly ahead of the current 1.1 tCO_2e/TJ per annum rate. Shell's new ambition to reduce its carbon intensity by 65% now represents the boldest commitment to decarbonise in the sector.

2.2. Discernible differences: benchmarking the level of ambition

To calculate Carbon Performance for the six companies assessed in this report, we apply these new ambitions to our estimate of historical/current emissions intensity. This enables investors to compare them against both climate benchmarks and each other (Exhibit 4). These provisional assessments do not include estimates of companies' 2019 emissions intensity, as disclosure is not consistently available currently.

Exhibit 4. Carbon Performance in European integrated oil and gas*

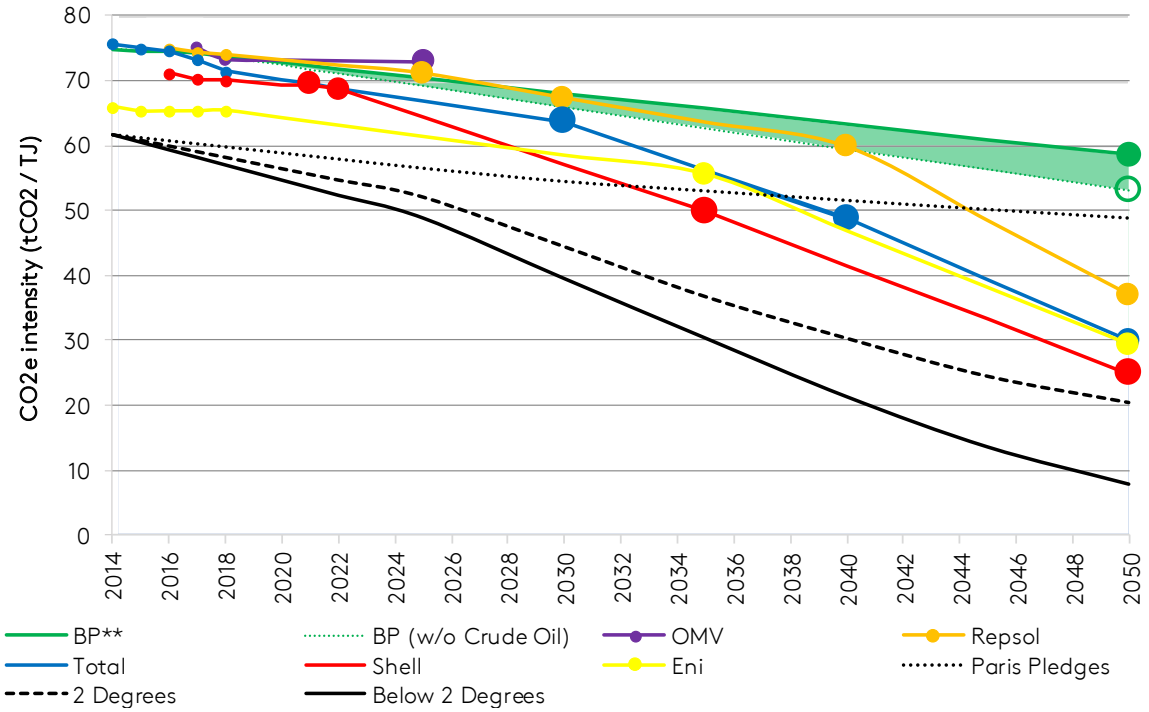


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Exhibit 4 highlights that **European integrated oil and gas companies** with long-term targets **have established broadly similar decarbonisation trajectories** (average reduction = 1.1 tCO_2e/TJ per annum). Eni's and Repsol's multi-stage targets anticipate the pace of decarbonisation accelerating to 2.0 tCO_2e/TJ per annum between 2040 and 2050.

Total is notable. Looked at using an intensity metric it already appears to be decarbonising. Expansion of LNG and gas, disclosure of biofuels, falling operational intensity plus increased electricity sales (assumed to be generated from gas) has

seen its intensity fall from 75.6 tCO_2e/TJ in 2014 to 71.4 tCO_2e/TJ in 2018 (an average reduction of 1.1 tCO_2e/TJ per year). However, this decarbonisation strategy is not yet resulting in falling absolute emissions. We calculate that Total's emissions rose 8% between 2014 and 2018 (from 514 $MtCO_2e$ to 554 $MtCO_2e$), a 2% CAGR.

Eni's high share of gas in its energy mix (57% compared to an average of 30% for its five peers) means that its emissions intensity of 65.3 tCO_2e/TJ is substantially (10%) lower than the peer group average (72.5 tCO_2e/TJ). Its pace of decarbonisation is actually relatively modest up to 2035 (0.6 tCO_2e/TJ per year), but accelerates substantially afterwards (1.7tCO_2e/TJ per year).

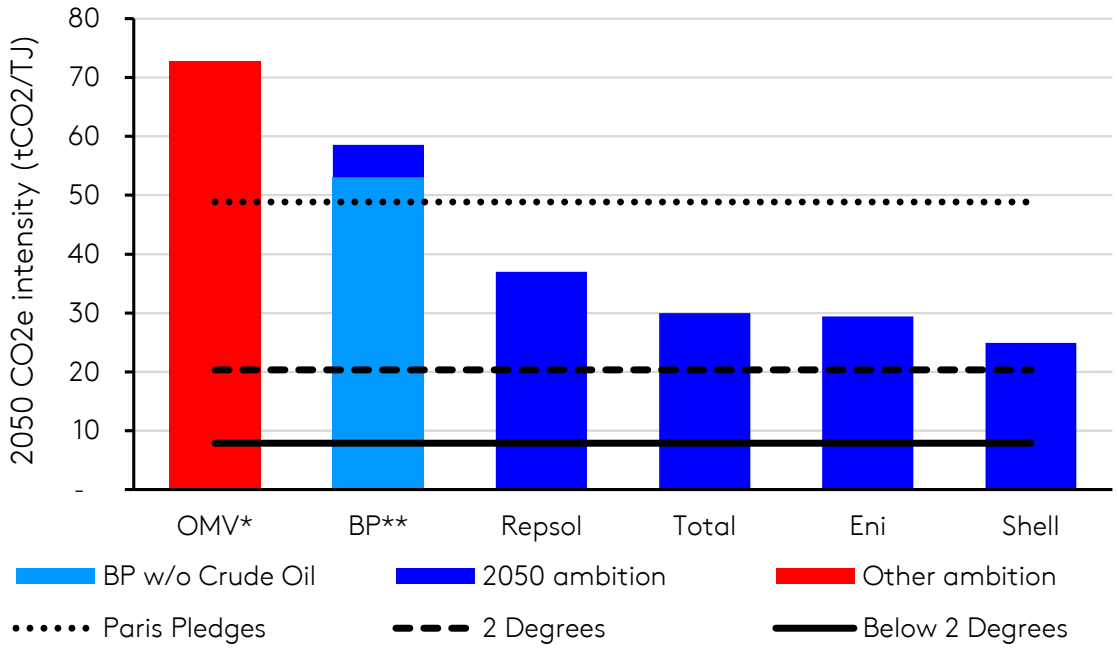
The extent of each company's decarbonisation ambitions can be most clearly seen by comparing their 2050 carbon intensity (Exhibit 5). For OMV, the only company without a 2050 target currently, we assume emissions intensity remains constant from the target year to 2050.

This analysis shows that Shell's new goal to cut its emissions intensity by 65% by 2050 is the most ambitious in the sector. Nevertheless, the implied 2050 intensity of 25 tCO_2e/TJ is still 5 tCO_2e/TJ above our current 2°C benchmark. Shell's claim that this reduction is sufficient to be aligned with a 1.5°C climate scenario is not consistent with our analysis. In general, alignment with 1.5°C scenarios requires a 100% reduction in net emissions by 2050 (i.e. 'net zero'). Its 1.5°C alignment claim could reflect the impact of its additional sectoral decarbonisation initiatives and plans to pivot over time towards serving the businesses and sectors that, by 2050, are net zero emissions themselves. However, these initiatives cannot currently be captured by TPI's Carbon Performance methodology.

Directly comparing Shell's intensity metric and benchmark with those used by TPI is not straightforward. Shell uses a 'delivered' rather than 'primary' energy benchmark that is based on IPCC rather than IEA data. Also, historically its benchmark has not included emissions reductions from CCS and increases the energy value of delivered renewable electrical energy by a factor of 2.1-2.5. We discuss the potential impact of some of these methodological differences in more detail in Section 3.5, but we do not believe they are significant enough to challenge our conclusion on alignment.

Eni's ambition to reduce its emissions intensity by 55% by 2050 lowers its intensity to 29 tCO_2e/TJ. This is 9 tCO_2e/TJ above our 2°C benchmark and, measured exclusively by intensity, is not as ambitious as Shell's goal. However, Eni has also stated that this target implies an 80% fall in absolute emissions, a 378 $MtCO_2e$ cut from a 2018 base year. Eni plans to deliver this 80% reduction by cutting sales of third-party products, as well as lowering intensity. In Section 3.3, we discuss a methodology that would enable investors to directly compare this goal with the reduction in CO_2e emissions implied in the 2°C benchmark over the same period. Eni also breaks out the expected contribution of 'carbon sinks' to these targets (40 $MtCO_2e$ per year).

Exhibit 5. Benchmarking 2050* emissions intensity by company (%)



* For OMV, which currently has a target year of 2025, we assume emissions intensity remains constant from the target year to 2050. ** We estimate BP's ambition translates into an intensity of 58.6 tCO_2e/TJ by 2050. Excluding Crude Oil sales from our assessment would reduce this to 53.0 tCO_2e/TJ

Total's ambition to cut intensity by more than 60% by 2050 reduces its emissions intensity to 30.0 tCO_2e/TJ, 9.7 tCO_2e/TJ above our 2°C benchmark. This ambition reflects the impact of reaching net zero Scope 1 and 2 emissions across its global operations (TPI estimates these emissions were 59 $MtCO_2e$ on an equity basis in 2018). However, like Shell, it is not currently possible to reflect its aim to "achieve net zero across all its production and energy products used by its customers in Europe by 2050" within TPI's intensity calculation. Most of the initiatives needed to deliver on this ambition will take place outside of the company (the boundary assessed by TPI) and regional targets are not accepted by TPI either. Total has not provided additional disclosure at this stage on how it intends to reach its ambition.

Repsol and particularly BP's decarbonisation plans look modest by comparison, as they currently only cover part of their externally sold energy. BP's Aim #3 (plans to cut the carbon intensity of marketing sales[4] by 50% by 2050) excludes both Trading/Supply and Crude Oil sales[5,6]. Together these product categories account for 11 mTJ or 59% of energy assessed by TPI and over 800 $MtCO_2e$ emissions annually.

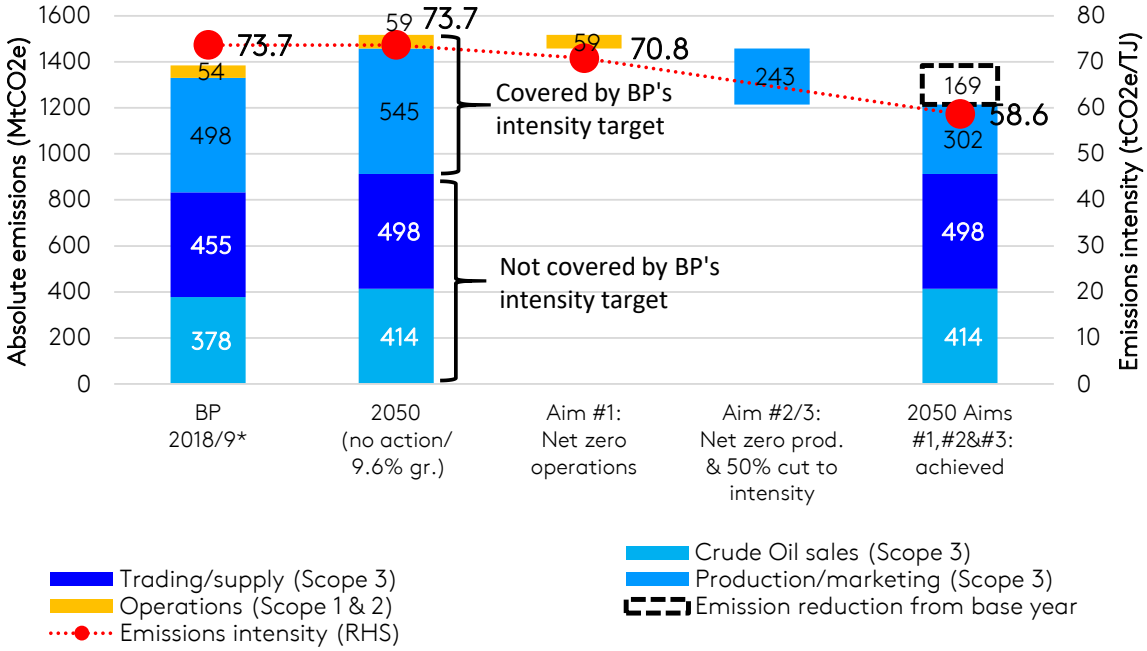
[4] See notes to https://www.bp.com/en/global/corporate/news-and-insights/press-releases/bernard-looney-announces-new-ambition-for-bp.html

[5] See note g, GHG tab https://www.bp.com/en/global/corporate/sustainability/reporting-centre/esg-datasheet.html

[6] BP's targets also exclude its 19.8% stake in Rosneft, which is not factored into TPI's assessment either, but would add over 100 $MtCO_2e$ to its estimate of emissions.

Exhibit 6a highlights how TPI captures BP's emissions targets (Aims #1-3). Aim #3 (cutting the carbon intensity of the products BP sells by 50%) is its most significant commitment. It reflects the impact of Aim #1 and Aim #2 (net zero in operational emissions and production respectively), plus additional actions to decarbonise the energy it sells. However, with Trading/Supply and Crude Oil sales not covered by this commitment, BP's overall emissions intensity only falls 20.5% by 2050 to 58.6 tCO_2e/TJ. Assuming its energy output grows over this period by 9.6%, this implies a relatively modest 169 $MtCO_2e$ reduction in absolute emissions by 2050.

Exhibit 6a. TPI's assessment of BP's targets (Aims #1-3) and how they could translate into absolute emissions reductions*



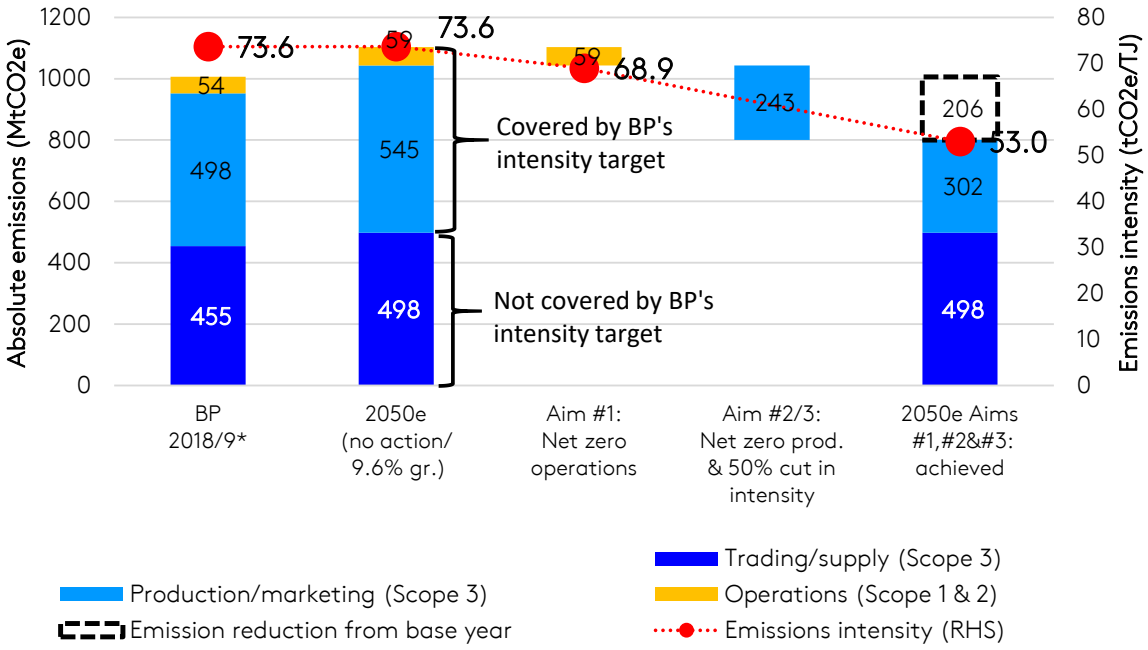
* This analysis assumes a 9.6% growth in both energy and emissions between 2018 and 2050 based on IEA's 2°C scenario.

However, BP indicates that its Crude Oil sales volumes exclusively reflect financial trading. TPI aims to exclude financial trading from its assessments, but can only do so where financial disclosure justifies it. It is currently seeking feedback from the oil and gas industry, mining sector and investors on how trading activities can be captured consistently. If Crude Oil sales are excluded from assessed product, BP's emissions intensity would fall by 28.0% by 2050 to 53.0 tCO_2e/TJ (see Exhibit 6b). The calculated fall in absolute emissions increases under this method to 206 $MtCO_2e$, as it is no longer offset by growth in emissions from Crude Oil sales.

BP has provided little detail so far about how it intends to meet its targets. Achieving net zero in production (Aim #2) covers 357 $MtCO_2e$ annually and represents a substantial commitment. BP expects to use levers including the decarbonisation of gas production and use of natural and geological sinks to achieve it. Aim #3 will include increasing low-carbon energy production. It has said that it intends to provide more detail at its forthcoming Capital Markets day in September 2020.

OMV's current ambitions look relatively weak, as they are not even aligned with TPI's least ambitious Paris Pledges benchmark. However, OMV has stated it intends to announce new commitments in 2020.

Exhibit 6b. TPI's assessment of BP's targets (Aim #1-3) excluding Crude Oil sales and how they could translate into absolute emissions reductions*



* This analysis assumes 9.6% growth in both energy and emissions between 2018 and 2050, based on IEA's 2°C scenario.

2.3. European integrated oil and gas: more progress needed

These results show that European integrated oil and gas companies have significantly increased their ambitions over the last six months. However, it is also clear that further commitments are needed. Even the companies with the most ambitious targets (Eni and Shell) are not aligned with a 2°C climate scenario using TPI's intensity metric. BP and Repsol need to extend the boundary covered by their ambitions. OMV needs to set a new, significantly more ambitious, target.

Equally significantly, TPI believes that companies will need to provide additional disclosure to build confidence in both the credibility of their ambitions and their ability to deliver. Eni's decarbonisation target currently sets the standard in our view. It includes all its energy products, combines both absolute and intensity metrics, and provides guidance on all the main levers it can use to deliver the target. Shell's announcement that it will work with the supply chain in hard-to-decarbonise sectors such as aviation and heavy duty freight transport is also innovative, but further details will be needed to understand how the benefits of this approach can be quantified. We see five main areas of focus:

1. **Greater disclosure on offsets and the role of CCS.** Eni's target also provides guidance on the extent to which it intends to rely on offsets and CCS. We believe that other companies need to provide similar guidance. Our recent

State of Transition report[7] highlighted that greater disclosure on both the contribution and quality of offsets companies intend to use is required. In particular, companies need to provide reassurance that the offsets being purchased are genuinely contributing to reducing emissions and that they have appropriately quantified the expected financial cost. The supply of credible voluntary offsets may need to expand significantly to meet incremental demand from the oil and gas sector. CCS is a technology that is yet to be proven at scale and is therefore inherently riskier than decarbonisation strategies driven by diversification into low-carbon energy supply.

2. Better disclosure of the intended shift to low-carbon energy supply. Some companies (BP, Shell and Total) have set long-term emissions intensity targets without specifying the extent to which they intend to rely on diversifying into low-carbon energy sources (biofuels, biopower, hydrogen, solar and wind) to lower energy intensity. Companies should be allowed flexibility to meet their targets in the most cost-efficient way possible and both BP and Shell have stated they intend to provide more details at forthcoming analyst events. Nevertheless, current disclosure of low-carbon energy sources is generally poor. Inconsistent consolidation boundaries, changes in consolidation method and variation in emissions factors can all impact emissions intensity metrics. Low-carbon energy sources (particularly biofuels) are not consistently disclosed currently. Only after considerable input from Total was TPI able to fully reflect growth in new lower-carbon energy sources. In addition, Shell and other oil and gas companies currently scale up the value of energy delivered as electricity (including renewables) to reflect its increased commercial value. This approach will accentuate the impact of growth in renewables on carbon intensity, but is not used by TPI or Eni (see Section 3.5). Accurately measuring relatively small annual changes in intensity, making comparisons across the sector and tracking progress towards meeting targets requires consistent disclosure.
3. Absolute *and* intensity targets. Historically European oil and gas companies have expressed emissions targets using intensity metrics. Whilst emissions intensity provides a valuable tool to help investors track a 'decarbonisation' strategy, decarbonisation is not the only strategy available to oil and gas companies (see Section 3.3) and therefore additional metrics are needed. There is a concern that oil and gas companies intend to meet decarbonisation goals by growing low-carbon sources, without cutting oil and gas production. TPI's experience of tracking Total, which is successfully reducing intensity in line with its long-term trajectory whilst growing absolute emissions, highlights this risk. Eni's ambition to reduce absolute emissions by 80% (ahead of the 55% fall in intensity) addresses this concern. TPI believes other oil and gas companies will need to follow suit. TPI will be looking to develop an absolute emissions methodology in the next few months and will set out more formal proposals in due course.

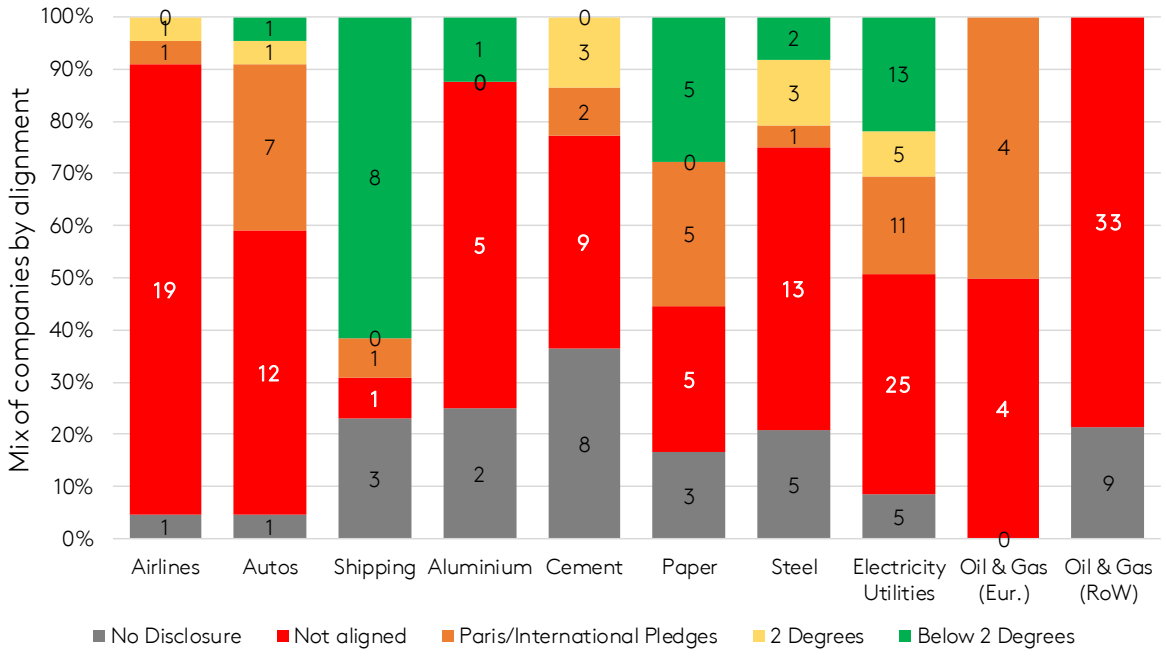
[7] See https://www.transitionpathwayinitiative.org/tpi/publications/50.pdf?type=Publication

4. **Alignment of short-term targets and remuneration with long-term ambitions.** Repsol, Shell and Total have multiple milestones that enable investors to track progress. Recently introduced long-term climate ambitions (e.g. BP, Eni) should be matched with short-term targets linked to executive remuneration to ensure management actions are aligned with longer-term goals and investors can track progress.
5. **Supply chain approach.** Sectors such as aviation and heavy-duty freight transport are particularly challenging to decarbonise, as no clear single path to reduce emissions currently exists. Following the example of Shell and others, oil and gas companies should set out how they intend to work with supply chains to decarbonise these sectors. TPI is looking to develop a methodology that would enable these initiatives to be captured in future Carbon Performance assessments.

2.4. Oil and gas outside Europe: no alignment with climate targets

The response of the sector outside Europe to the risks posed by the shift to a low-carbon economy appears much more muted. As Exhibit 7 highlights, of the 42 oil and gas companies assessed by TPI in 2019 that are headquartered outside Europe, only one (Petrobras) has set an emissions target that includes Scope 3 use of sold products emissions and not a single one is aligned with the Paris Pledges benchmark, let alone 2°C or below. If oil and gas outside Europe were a standalone sector, this level of alignment (0%) would represent the lowest of any assessed by TPI.

Exhibit 7. Carbon performance alignment by sector*



* Eight European oil and gas companies are assessed by TPI on Carbon Performance. This chart includes the provisional updates for six integrated players. Carbon Performance for Equinor (E&P) and Neste (midstream) have not been updated. Figures refer to the number of companies in each category

It has been suggested that the limited response of the oil and gas sector outside Europe reflects the particular transition risks faced by E&P (exploration and production) companies. While this may be a factor, it is not supported by the data. Of the 42 oil and gas companies outside Europe assessed by TPI, only 15 are pure E&P companies. Prior to its Anadarko acquisition, the collapse in the oil price, and management changes, Occidental (a US E&P company) had indicated its intention to tackle Scope 3 emissions based on carbon capture and sequestration[9]. In February 2020, Equinor, Europe's largest E&P company, announced a target to reduce its emissions intensity, including Scope 3 emissions, by 50%[10].

TPI's experience with European oil and gas and with other sectors suggests that our Management Quality indicator, which measures the level of strategic engagement

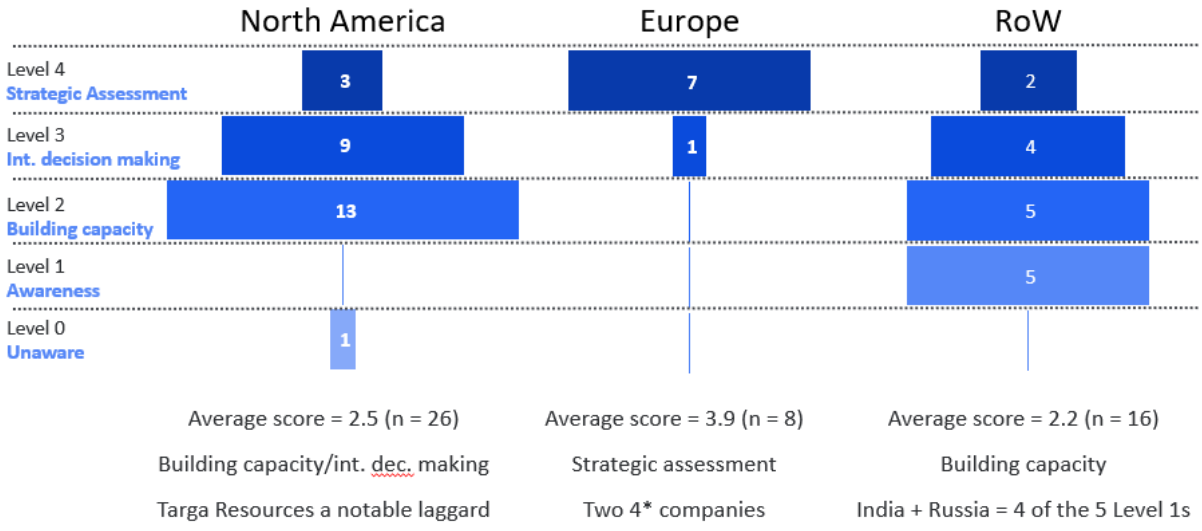
[9] See p.13, https://www.oxy.com/SocialResponsibility/overview/SiteAssets/Pages/Social-Responsibility-at-Oxy/Assets/Occidental-Climate-Report-2019.pdf

[10] See p.11, Equinor's Climate Roadmap: https://www.equinor.com/en/how-and-why/climate.html

with climate issues, can be a lead indicator of Carbon Performance. As Exhibit 8 highlights, the average TPI Management Quality score for companies headquartered outside Europe is 2.4 (2.5 in North America and 2.2 in RoW), substantially lower than for those based in Europe (3.9).

While the overall picture is concerning, it is also relevant to note that five companies outside Europe (ConocoPhillips, Occidental and Suncor from North America plus JXTG and Woodside) have now achieved Management Quality Level 4. This means they can demonstrate a strategic response to the transition risks posed by climate change. The three North American firms all moved up at least a level in the last assessment (Occidental moved up two)[11].

Exhibit 8. Management Quality for the 50 largest oil and gas companies by region



[11] This assessment (not updated for this report) is now nearly a year old. The 2020 assessment is due to be published later this year.

3. METHODOLOGY UPDATE

3.1. About the Transition Pathway Initiative

The Transition Pathway Initiative (TPI) is a global initiative led by asset owners and supported by asset managers. Established in January 2017, TPI investors now collectively represent nearly US$19 trillion of Assets Under Management and Advice.[12]

On an annual basis, TPI assesses companies progress on the transition to a low-carbon economy in terms of their:

- *Management Quality* – all companies are assessed on the quality of their governance/management of greenhouse gas emissions and of risks and opportunities related to the low-carbon transition.
- *Carbon Performance* – in selected sectors, TPI quantitatively benchmarks companies' carbon emissions against the international targets made as part of the 2015 UN Paris Agreement.

TPI publishes the results of its analysis through an open access online tool hosted by the Grantham Research Institute on Climate Change and the Environment at the London School of Economics (LSE): http://www.transitionpathwayinitiative.org.

Investors are encouraged to use the data, indicators and online tool to inform their investment research, decision making, engagement with companies, proxy voting and dialogue with fund managers and policy makers, bearing in mind the Disclaimer that can be found on page 2. Further details of how investors can use TPI assessments can be found on our website at https://www.transitionpathwayinitiative.org/tpi/investors.

3.2. TPI's emissions intensity metric starts with absolute emissions

TPI's Carbon Performance methodology employs the Sectoral Decarbonization Approach (SDA), created by CDP, WWF and WRI[13] and published in a peer-reviewed academic journal in 2015[14]. The SDA translates the absolute emissions budgets implied by international climate targets (e.g. those of the 2015 UN Paris Climate Agreement) into sector-specific emissions intensity benchmarks.

Using an intensity metric makes assessing company progress towards meeting long-term decarbonisation targets easier. Fluctuations in absolute emissions, such as those precipitated by the current Covid-19 crisis, often primarily reflect changes in output such as economic growth or energy production. Intensity enables firms of different sizes and growth trajectories to be compared fairly and the underlying pace of decarbonisation to be tracked.

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[12] As of February 2020.

[13] The Sectoral Decarbonization approach (SDA) was created by CDP, WWF and WRI in 2015 (https://sciencebasedtargets.org/wp-content/uploads/2015/05/Sectoral-Decarbonization-Approach-Report.pdf).

[14] https://www.nature.com/articles/nclimate2770

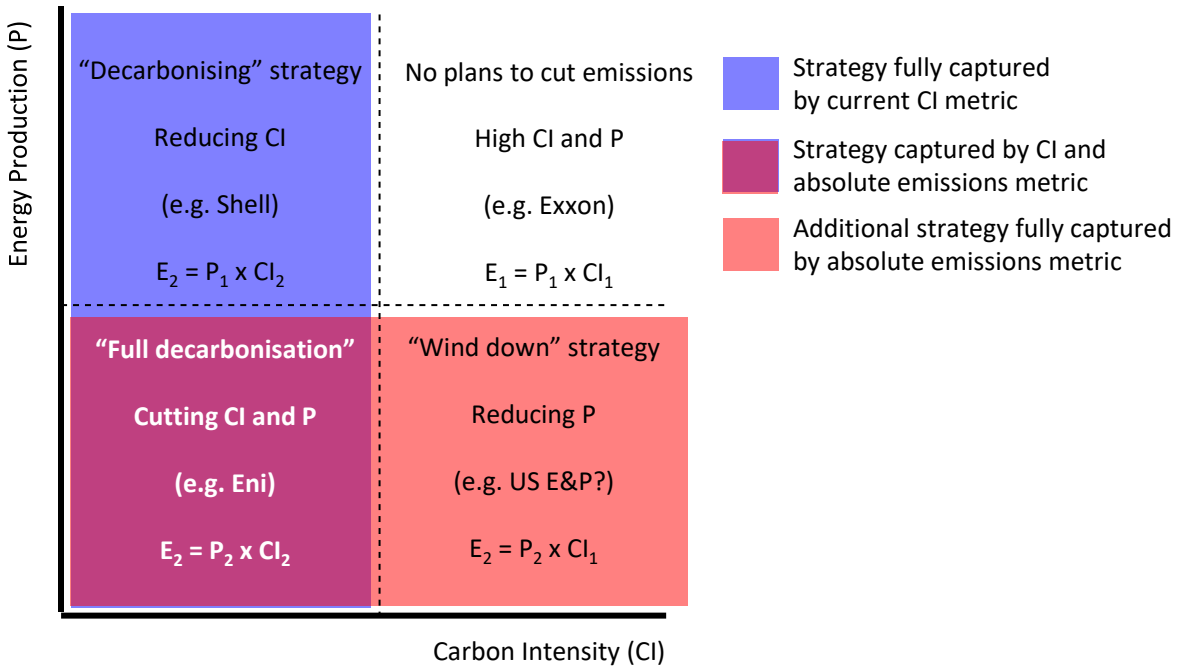
3.3. Developing an absolute emissions metric

Whilst carbon intensity is a valid way to track a 'decarbonisation' strategy, this is not the only path oil and gas companies can take to cut emissions. For some companies, stopping capital investment, 'winding down' production and returning cash to shareholders may be a more suitable response. The effectiveness of this approach in reducing emissions cannot be tracked using carbon intensity, and TPI has previously highlighted the need for an additional metric to assess this strategic response.

Recent developments in the sector highlight the need for an additional absolute emissions metric. The extent of Eni's ambition to reduce absolute emissions by 80% is not fully captured using an intensity metric in isolation (Eni aims to reduce its carbon intensity by the lower figure of 55%). The experience of tracking Total, which is reducing intensity in line with its long-term trajectory while still growing emissions, also highlights the need for a complementary approach.

Exhibit 9 shows how an absolute emissions metric (E) could sit alongside carbon intensity to assess different emissions reduction strategies. Simply assessing the absolute change in emissions (i.e. $E_1 - E_2$) is of limited value for evaluating the effectiveness of a company's strategy, as the number is largely determined by (or a proxy for) company size. The percentage change in absolute emissions (i.e. $E_2/E_1 - 1$) provides a more rounded picture of performance and is therefore likely to be more useful when assessing corporate strategies focused on reducing absolute emissions. TPI will be looking to develop this methodology in the next few months and will set out more formal proposals in due course.

Exhibit 9. Metrics to assess strategies to reduce emissions (E) in the oil and gas sector



3.4. Planned future development of the oil and gas benchmark

TPI continues to evolve and refine its Carbon Performance methodology across multiple sectors. Aside from an absolute emissions methodology, other areas of focus include understanding how sectoral decarbonisation paths can be incorporated, whether trading activities should be included in company assessments, and developing a robust methodology that enables offsets to be included consistently.

In oil and gas, TPI is also looking closely at the calculation of the benchmarks. The current benchmarks are based on the primary energy demand forecasts of the IEA and the methodology is described in Section 3.1 of our report; *Carbon Performance assessment of oil & gas producers: note on methodology*[15]. It takes the IEA's estimates of primary energy and associated CO_2 emissions under three different scenarios (Paris Pledges, 2°C and Below 2°C), adjusts for process emissions from industry and adds estimates of methane emissions. TPI expects to update these benchmarks when the IEA publishes revised scenarios later this year. The IEA scenarios were originally selected, because the IEA has established expertise in modelling the cost of achieving international emissions targets. It also provides unprecedented access to the modelling inputs and outputs in a form suitable for applying the Sectoral Decarbonisation Approach.

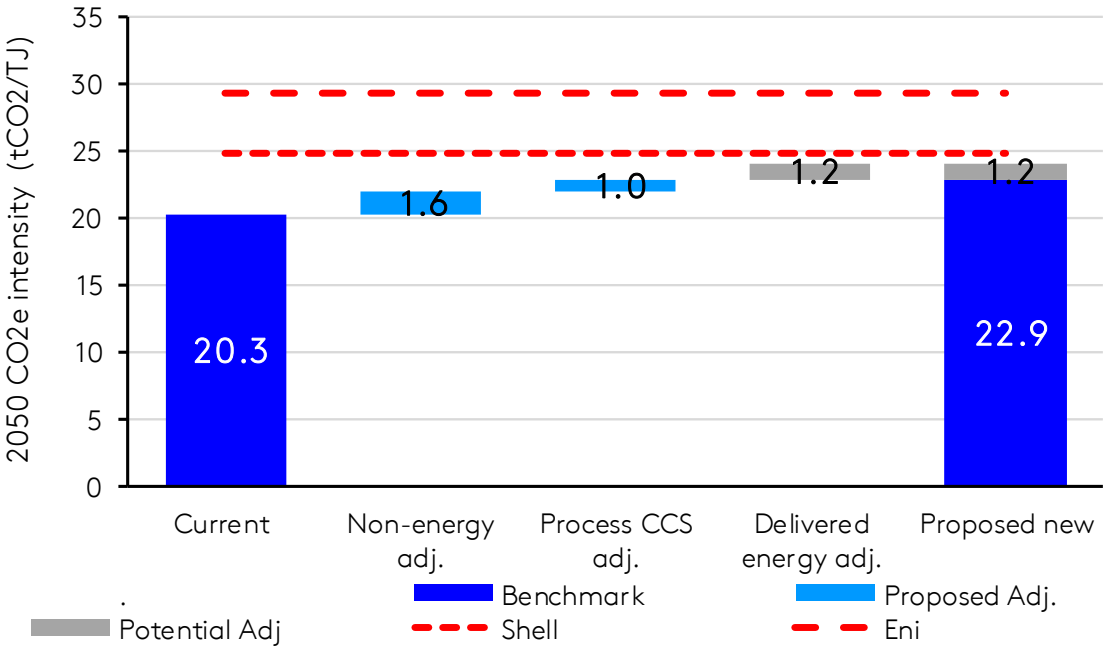
TPI is also evaluating three further adjustments:

- **Removing non-energy from the denominator.** Discussions with the IEA highlight that its ETP scenarios contain the primary energy values of products that are ultimately destined for non-energy uses (i.e. plastics). To make them consistent with company assessments, where we currently strip out Scope 1 & 2 emissions from petrochemicals (where disclosed) and remove 10% of liquid energy output (and associated Scope 3 emissions), we are looking to make an adjustment that would raise the benchmark by **1.6 tCO_2e/TJ in 2050**. Our revised approach here may also lead us to change the adjustment we apply to company assessments, but we are not able to specify the amount currently.
- **Excluding process emissions from captured emissions.** The IEA's forecast use of CCS reduces TPI's 2°C benchmark by 8.6 tCO_2e/TJ in 2050. However, further research has highlighted that the IEA estimate of CCS contains captured process emissions. TPI aims to remove all process emissions from the energy benchmark, so we will look to exclude this. This would raise our 2°C benchmark by **1.0 tCO_2e/TJ.**
- **Shifting to a 'delivered' rather than primary energy benchmark.** It is possible to benchmark energy at different parts of the supply chain and using a 'delivered' energy metric, which reflects conversion losses to fuels, may be more appropriate for integrated oil and gas companies. However, the primary energy output from E&P companies may need to be reduced to reflect these downstream losses, resulting in a modest increase in intensity for these companies.

[15] See https://www.transitionpathwayinitiative.org/tpi/publications/39.pdf?type=Publication

These adjustments are shown in Exhibit 10. In summary, TPI is currently looking at making two adjustments to its oil and gas benchmark for non-energy and captured process emissions respectively that would raise the 2°C benchmark in 2050 by up to 2.6 tCO_2e/MJ (the impact would be slightly greater on Below 2°C and less on Paris Pledges). The merits of a third adjustment (shifting to a delivered energy benchmark) are less clear cut, but if implemented would take the total adjustment to 3.8 tCO_2e/MJ in 2050. None of these adjustments would impact the alignment of any company in this report.

Exhibit 10. Estimated potential impact of changes to the current oil and gas 2°C benchmark in 2050



3.5. Reconciling TPI's benchmark with alternative approaches

Section 3.4 highlighted some of the issues TPI is looking to address as it seeks to refine its oil and gas benchmark. Some oil and gas companies set targets and climate benchmarks using their own interpretation of emissions scenarios, leading to different conclusions about alignment. For example, Shell states that the extension of its decarbonisation target to 65% brings it "in step with society's aim to limit the average temperature rise to 1.5°C"[16]. TPI's provisional assessment here does not support this conclusion. In general, 1.5°C scenarios require a 100% reduction in net emissions by 2050 (i.e. 'net zero'), therefore it would only be possible for Shell to claim alignment by factoring in its sectoral decarbonisation initiatives. However, TPI has yet to work through the details of Shell's analysis. TPI does recognise that

[16] See slide 12 https://www.shell.com/investors/news-and-media-releases/investor-presentations/2020-investor-presentations/responsible-investment-annual-briefing-april-16-2020/_jcr_content/par/pageheader_copy_copy.stream/1587027568331/59b9154c9d920e11586dea171ad939a0aed36cd3/ri-day-slides.pdf

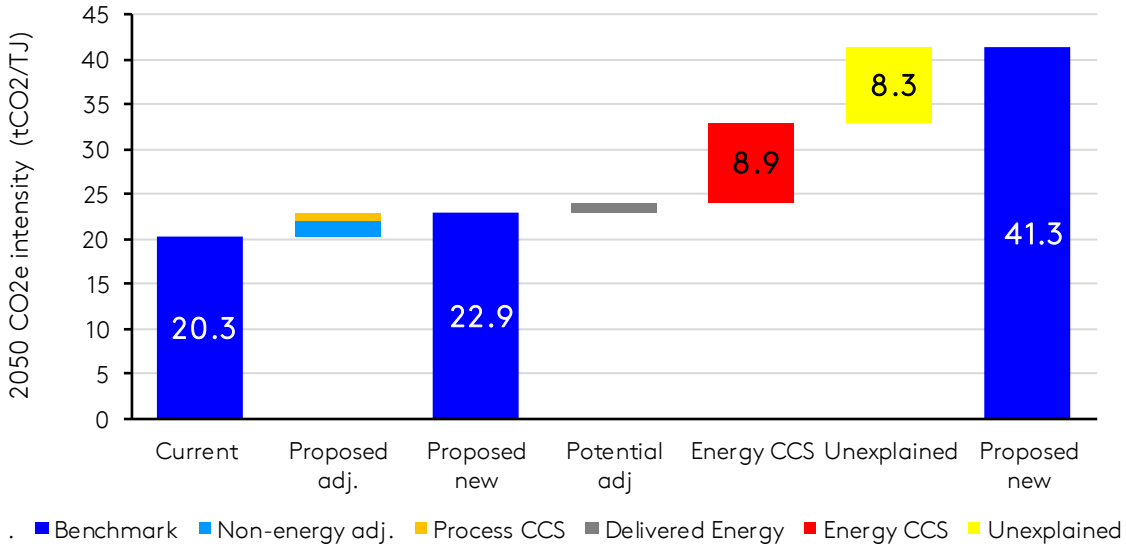
there can be sufficient scope, either due to using different data or applying a different methodology, to legitimately arrive at different conclusions.

TPI's attempt to reconcile the c. 21 tCO_2e/TJ difference between Shell's previous "Energy System Footprint" benchmark and TPI's current 2°C benchmark in 2050 revealed three main differences:

1. **Proposed adjustments for non-energy and process emissions.** Shell's benchmark includes adjustments for both non-energy emissions and CCS on process emissions. These adjustments account for 2.6 tCO_2e/TJ and (as explained in Section 3.4) TPI plans to adjust its benchmark to include them.
2. **Delivered, rather than primary, energy denominator.** Shell's benchmark uses a delivered rather than primary energy benchmark. TPI estimates this would increase the emissions intensity of its benchmark by 1.2 tCO_2e/TJ. However, further work is needed to assess the impact a delivered energy metric would have on company assessments. At this stage, we do not plan to change the energy denominator we use.
3. **Exclusion of energy CCS emissions.** The biggest component of the difference (8.9 tCO_2e/TJ) reflects Shell's exclusion of CCS from its benchmark. Shell believes it is not responsible for capturing emissions that are not directly released by the company and therefore its decarbonisation strategy should not be judged against a benchmark that includes CCS. However, oil and gas companies (including Shell) already use CCS to reduce their emissions footprint today and are likely do so to a much greater degree in the future. We understand that Shell's new 1.5°C benchmark now includes some CCS and we continue to believe it is appropriate that TPI's benchmarks reflect it.

Exhibit 11 shows that if all these adjustments were applied simultaneously to a delivered energy denominator, the difference between the two benchmarks would shrink from 21.0 tCO_2e/TJ to 8.3 tCO_2e/TJ.

Exhibit 11. Estimated potential impact of changes to the current oil and gas 2°C benchmark in 2050



Finally, Shell and other oil and gas companies scale up the value of energy delivered in the form of electricity to reflect its increased commercial value. While this 'fossil fuel equivalent' approach is an effective way of accounting for conversion losses in thermal power stations, Shell (and other oil and gas companies) also apply this adjustment to electricity delivered by renewable sources. A full description of Shell's approach here is given in its report *Net Carbon Footprint Model: A methodology*[17]. The adjustment factor varies by company and over time, but typically ranges from 2.1-2.7. This approach to renewables is not used by Eni or TPI in either its assessments or benchmarks.

Adopting a fossil fuel equivalent approach to counting the energy supplied by renewables will accelerate the reduction in reported carbon intensity as the share of renewables in the energy mix rises. Without knowing the expected share of renewables by 2050, it is difficult to quantify the impact on company targets at this point. However, TPI believes that the lack of a consistent approach could materially impact comparisons between company ambitions. Applying a 2.3 factor to TPI's 2°C benchmark reduces carbon intensity by 4.6 tCO_2e/TJ in 2050. TPI does not intend to adopt this approach, but if it did it would be harder for companies to claim alignment.

[17] See p48 of https://www.shell.com/energy-and-innovation/the-energy-future/what-is-shells-net-carbon-footprint-ambition/faq/_jcr_content/par/textimage_1422873874_1315597295.stream/1582292335743/24581f6a28d55839ebfab818b9f0375d046d25d9/the-net-carbon-footprint-model-methodology.pdf

4. APPENDIX: REVIEW OF EUROPEAN INTEGRATED OIL AND GAS DISCLOSURE

Exhibit 12. Variation in the emissions, organisational and energy boundaries set by oil and gas companies

Company	Emissions Boundary	Organisational boundary	Energy Boundary
BP	"Lifecycle GHG emissions" metric include Scope 1, 2 and 3 (Category 11 only). Scope 1 & 2 include estimates for third party products which TPI does not include. Metric could also include GHG sinks, removals or reductions in the future	Equity share based on "marketing sales". Company states this excludes Trading/supply sales and Crude oil (3.2m bpd and 2.6m bpd respectively in 2018) and also excludes 19.8% stake in Rosneft	Specifically excludes petrochemicals and lubricants. TPI assumes standard 10% of liquid energy products go into non-energy products. Biofuel, biopower and wind power energy is included where disclosure allows
Eni	Net carbon intensity. GHG metric includes Scope 1, 2 and 3 emissions (all categories). Includes "carbon sinks": forest conservation and CO_2 capture and storage.	Equity based target. Scope 1 and 2 emissions disclosure currently adjusted to equity basis by TPI. Includes third party product sales	Energy products sold (petrochemicals and lubricants are excluded). TPI assumes standard 10% of liquid energy products go into non-energy products. Energy from electricity (grossed up) and biofuels are added
OMV	CO2e intensity targets for Scope 1 and Scope 3. The base year value for Scope 1 emissions from routine flaring and venting is not disclosed so the target is not used by TPI. Scope 3 was achieved in 2018 and so is assumed to be flat.	OMV's operations (upstream, refineries and power). Equity/operational boundary unclear	Not clearly specified. TPI assumes standard 10% of liquid energy products go into non-energy products. Energy from electricity (grossed up) and natural gas sales are included
Repsol	Climate Intensity Indicator (CII). CO_2 only. Scope 1, 2 and 3 (Category 11 only). Discloses Scope 1 & 2 for chemical operations which is in the target but TPI removes. Repsol assumes that Scope 3 for chemicals is zero.	Excludes third party (purchased) products which accounted for 1.3mTJ in 2016 (49% of assessed energy in the base year). TPI assumes third party products (mostly crude which Repsol processes) has a constant intensity	Includes chemicals in the emissions denominator but no associated Scope 3 emissions. TPI removes asphalt, lubricants and naphtha (15%) from liquid products and assumes growth rates of energy and non-energy is the same
Shell	NCF (Net Carbon Footprint) metric includes Scope 1, 2 and 3 (all categories). Includes scope 1 & 2 in estimates for third party products which TPI does not include	Equity footprint. Includes third party products and some (undisclosed) trading	Excludes petrochemicals and lubricants (including associated Scope 1 & 2 emissions). TPI assumes standard 10% of liquid energy products go into non-energy products.
Total	Product lifecycle metric includes scope 1, 2 and 3 measured in CO_2e. Metric includes negative emissions stored using CCUS and offsets	Scope 3 emissions calculated by the TPI on an equity basis. Scope 1 & 2 emissions on an operational basis are adjusted to an equity basis.	Non-energy products (asphalt and bitumen, lubricants, plastics, etc.) are not included. TPI assumes standard 10% of liquids go into non-energy products. Energy from electricity (grossed up) and natural gas sales are included