

Assessing the Credibility of Climate Transition Plans in the Oil and Gas Sector

Discussion Paper

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Executive summary

The oil and gas sector accounts for around half of the world's energy-related greenhouse gas emissions (International Energy Agency [IEA], 2023a) and, as a result, decarbonisation is critical for meeting climate goals and avoiding the worst impacts of global warming. Under pressure from stakeholders to curtail emissions, many oil and gas companies have set net zero commitments and targets aiming to align their operations with the Paris Agreement.

However, target setting alone is not enough. Companies need to clearly outline how they will deliver on these targets by disclosing transition plans. For financial institutions with their own net zero commitments, it is critical to understand which companies have a credible and sufficiently ambitious transition plan to align financial flows with the Net Zero agenda. In this discussion paper, we detail the crucial elements of transition plan disclosure needed in the oil and gas sector, the tools available for assessment, and the criteria determining a credible climate transition plan.

Net zero targets

The first step to a credible transition plan is a net zero target of sufficient scope and ambition. At a minimum, credible net zero targets should meet the following criteria:

1. Comprehensive across all emissions, particularly scope 3 emissions as they account for 80 to 95% of the industry's emissions (Wood MacKenzie, 2022).
2. Be backed by short-term and medium-term targets to ensure immediate action that limits cumulative emissions en route to Net Zero and responds to calls for rapid decarbonisation.
3. Prioritize absolute targets, or pair intensity targets with absolute reduction targets of oil and gas volumes.
4. Be computed on an equity basis.
5. Cover methane emissions as they account for around 12% of the industry's emissions (IEA, 2022b, 2023a).
6. Exclude offsets or only rely on them to a quantified and very limited extent.

Currently, most corporate targets do not meet these criteria (Net Zero Tracker, 2023). Once targets are set, the level of ambition should be assessed over the short, medium, and long term by comparing emission reductions to net zero pathways. While there are several pathways to reach net zero, credible scenarios should have (1) limited overshoot, (2) limited CCUS and bioenergy, and (3) assume short-term emissions reductions.



For example, the IEA Net Zero scenario is one scenario which largely reflects these criteria despite some limits (IEA, 2022c), and it is widely used in assessment methodologies and the industry.

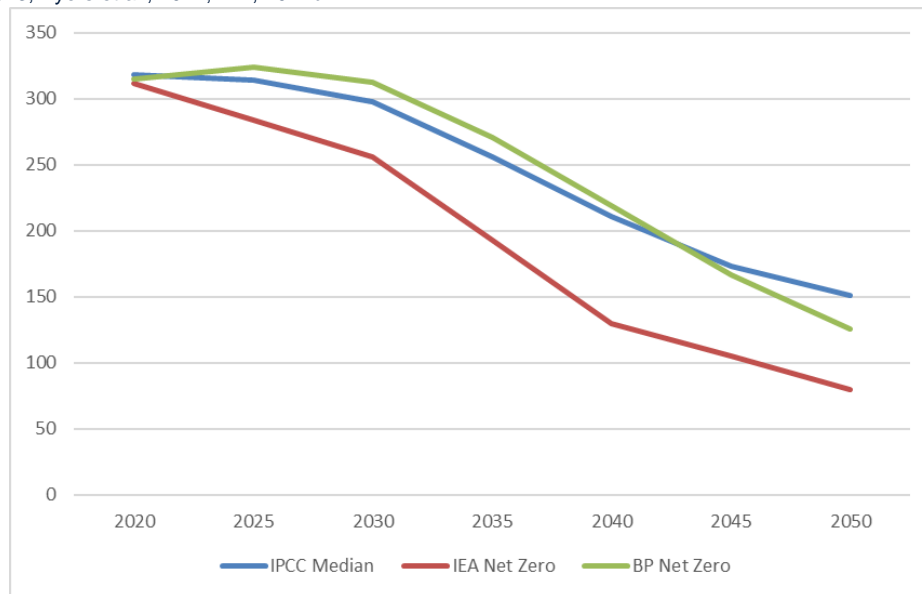
Net zero strategies

To meet these targets, oil and gas companies need to detail their strategy to decarbonise their operations (Scope 1 and 2 emissions) and their Scope 3 emissions from sold products within transition plans. For example, companies can decarbonise their operations by electrifying energy consumption, shifting electricity consumption to renewable sources, implementing energy efficiency measures, reducing methane emissions, and optimizing their portfolio (IEA, 2023b). Most of these solutions can deliver short-term and cost-efficient emissions reductions.

Reducing Scope 3 emissions is the biggest challenge for the oil and gas industry as it requires companies to significantly reduce their oil and gas production, requiring firms to prepare for the decline and exit of their core activities. While the reduction of oil and gas production volumes is the main driver of Scope 3 emissions reduction in net zero pathways (Figure ES 1), it can come with strong challenges to energy systems regarding demand reductions, energy security, and affordability.

Figure ES 1. Evolution of oil and gas volumes in EJ across IPCC C1 scenarios¹, BP Net Zero and IEA Net Zero

Sources: BP, 2023; Byers et al., 2022; IEA, 2022b.



Oil and gas companies can also contribute to the transition of energy systems by becoming low-carbon integrated energy companies. For example, developing renewable power, producing low-carbon fuels, or developing expertise in CCUS. While diversifying into low-carbon industries presents the opportunity for oil and gas companies to evolve in line with the energy transition, doing so does not remove the imperative to reduce oil and gas production over time. However, companies making commitments to reduce their oil and gas volumes remain rare (Carbon Tracker Initiative, 2022c), with shareholders appearing to reward companies rolling back their commitments to reduce production (Bousoo et al., 2023).

¹ IPCC C1 scenarios are scenarios vetted by the IPCC that are aligned with 1.5°C increase in global temperature with limited to no overshoot.

Direct actions: backing net zero strategies with financial planning

While a description of a company's strategy is key for providing content to a net zero target, a transition plan needs to be backed up with direct actions to be credible. Namely, how an oil and gas company allocates its capital expenditures (CAPEX).

Given the need to reduce oil and gas volumes, reducing investment in upstream activities is critical. Across most 1.5°C scenarios with limited overshoot, there is limited to no room for any additional development of new oil and gas fields (International Institute for Sustainable Development, 2022). As a result, for an oil and gas company's direct actions to be credible, there should be a sharp decline in upstream investments, with essentially zero CAPEX for new exploration and new wells, which is far from the trend followed by the industry (Carbon Tracker Initiative, 2022c). Detailed disclosure regarding CAPEX in upstream activities, with a breakdown between exploration, expansion of existing wells, and maintenance of existing assets is key. At present, companies poorly disclose information on upstream capex which may be mitigated using external data to assess the alignment of upstream capital expenditures. For instance, the Carbon Tracker Initiative used data from Rystad Energy to assess companies' upstream expenditures and how these investments lock companies in highly emissive trajectories (Carbon Tracker Initiative, 2022b, 2023).

With regard to low-carbon CAPEX, similar to upstream CAPEX, oil and gas companies should provide a clear breakdown for current and future investment plans. While an oil and gas company may detail expansion into a low-carbon technology as central to their decarbonisation strategy, until investment activity aligns with this, diversification claims cannot be considered credible. For example, in 2019, low-carbon CAPEX accounted for less than 1% of the total oil and gas industry CAPEX (IEA, 2020).

Indirect actions: supporting net zero strategies with climate governance and engagement

Supporting net zero strategies through robust climate governance and engagement with external stakeholders is crucial. The industry and existing transition plan assessment methodologies align on a set of best-practice principles that firms should match.

Good practices in climate governance can support delivering on the company's strategy:

- Robust involvement of the board and C-suite executives in climate governance.

- Strong climate expertise and training across the organisation, especially at the executive level.
- Financial incentives to meet climate goals and absence of incentives to grow fossil fuel activities (Carbon Tracker Initiative, 2022).

Engagement with policymakers, especially given the potential impact of climate regulation on oil and gas companies, can threaten the integrity of oil and gas transition plans if companies are lobbying against climate policies. Therefore, companies should disclose information regarding engagement with climate policies, both directly and indirectly through trade associations. Using external data also allows to verify the credibility of companies' indirect actions, for instance with organisations such as InfluenceMap which try to assess companies' engagement using both corporate disclosure and external data.

Assessment and recommendations to financial institutions

Bottom-up, sector-specific, assessment frameworks from organisations such as Assessing low-Carbon Transition (ACT) initiative or Climate Action 100+ (CA100+) provide tools that address the various components of transition plans in the oil and gas industry (Table ES 1). Given the discrepancy between the strategy and actions needed to reach net zero and the current profile of oil and gas investment activity, financial institutions committed to net zero should use credible transition plans as a condition for the provision of financial services to the oil and gas industry. As highlighted below (Table ES 1), **conditions for credibility should include an aligned net zero target, reduction in oil and gas production volumes and refraining from investment in new exploration and wells.**

Table ES 1. Key elements of a climate transition plan for an oil and gas company

Category	Determinant of credibility	Examples of external assessment	Importance of alignment	Rationale
Net Zero Target	Clear and transparent emissions reduction targets in the short, medium, and long term including scope 3 and methane emissions	SBTi ² , ACT, TPI, CA100+, Moody's, Sustainable Fitch	Essential	Foundation of a company's ambition
High-carbon Strategy and CAPEX	Ambition to reduce oil and gas volume in line with a credible net zero scenario, with consistent current and future CAPEX – meaning minimal new oil and gas development	ACT, TPI, CA100+, Moody's, Sustainable Fitch	Essential	Fossil fuel production is the main driver of Scope 3 emissions
Low-carbon Strategy and CAPEX	Strategy to diversify into low-carbon activities backed by operational targets and financial planning	ACT, TPI, CA100+, Moody's, Sustainable Fitch	Very high	Essential for the commercial feasibility of transition plans and transition of energy systems
Climate Governance	Strong climate governance with a trained board and executives whose incentives support climate goals	ACT, CA100+, Moody's	High	Key enabler of transition strategy implementation
Lobbying Activities	Aligning climate policy engagement with net zero pathways	InfluenceMap, Moody's	High	Failure to comply can negate the company's progress in other areas

² As of now, SBTi does not accept emissions reduction targets from oil and gas companies and the organisation is developing a framework to assess these targets. SBTi published a draft regarding target setting for oil and gas companies and the outcomes from the expert advisory group which reviewed the draft.



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1. Introduction

The oil and gas sector accounts for around half of the world's energy-related greenhouse gas (GHG) emissions (IEA, 2023a) and it is therefore under increasing scrutiny from investors, policymakers, and society at large to address the urgent challenge of climate change. As a result, many oil and gas companies have made net zero commitments, aiming to align their operations with global climate goals (Axelsson et al., 2023). Such targets should be underpinned by an overall transition plan which outlines a strategic roadmap towards a low-carbon future while meeting financial goals. However, in a landscape where companies' climate claims may vary in credibility, it is crucial to have effective disclosure and assessment mechanisms to evaluate companies' commitments and ensure transparency, accountability, and comparability. A transition plan allows stakeholders such as financial actors, regulators, and civil society to engage with companies on the credibility of their claims and proposed actions. This assessment is crucial for banks and investors to finance the climate transition and meet their own climate commitments.

Evaluating a transition plan to assess the level of ambition and whether a company will reach its net zero target faces several difficulties, such as identifying the most relevant elements to assess and ways to assess them. The first constraint is the availability of information. The disclosure of fossil fuel companies is limited, as shown by the assessment of different organisations:

- **Net Zero Tracker:** Out of the 104 fossil fuel companies considered, 52 have a target to reach net zero or zero carbon emissions by 2050 which vary in ambition and credibility. Furthermore, 17 of these companies did not disclose a plan to reach this target.
- **CDP:** Out of the 271 fossil fuel companies which responded to CDP's climate change questionnaire in 2022, only one company disclosed all 21 key indicators required for a credible climate transition plan according to CDP.
- **Climate Action 100+:** Out of the 35 companies assessed, no company fully met the CA100+'s disclosure requirements along 9 key categories – the 2 best performers only fully met the requirements of 5 categories.

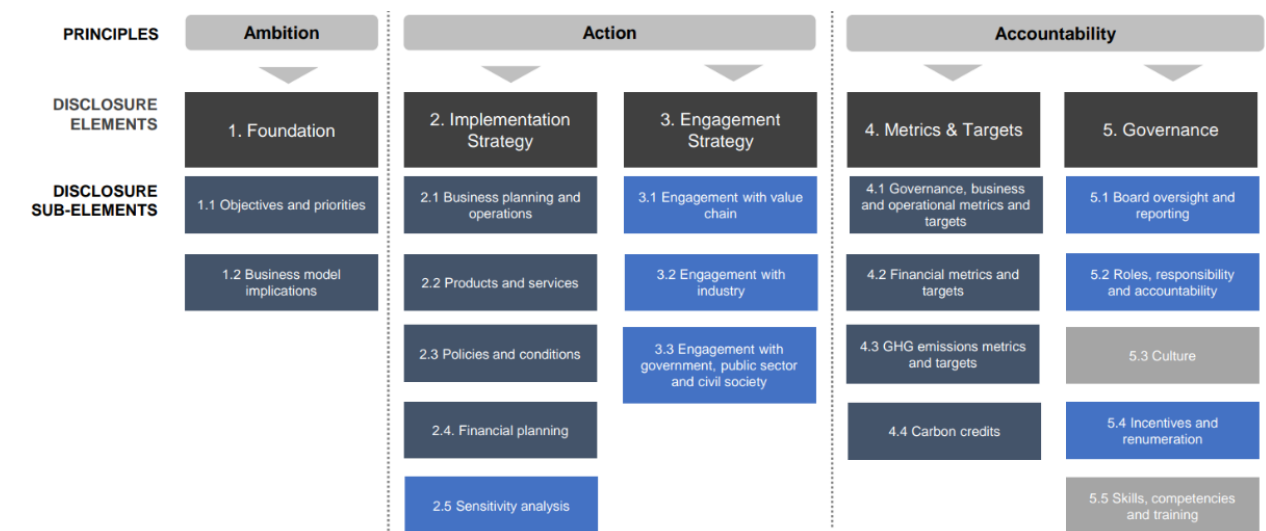
The disclosure quality varies widely depending on the component of a climate transition plan, with more information being available for governance and engagement indicators or emissions reduction targets, while disclosure on financial planning and capital allocation – arguably the most important element of a transition plan – remain very limited.

In this paper, we review how the TPT Framework, CDP’s climate change questionnaire, and CA100+ disclosure and alignment assessment support the disclosure of elements that are relevant to assess the credibility of a transition plan.

This discussion paper reviews the core elements of climate transition plans in the oil and gas industry, the disclosure of these elements, and how assessment methodologies use transition plans to evaluate the ambition and credibility of net zero claims. Within scope are integrated oil and gas players and those focused on upstream activities. The first four sections discuss the main components of a transition plan, setting an ambition through emission reduction targets, adopting a business plan to support this ambition, and implementing this plan through direct actions and indirect actions. We focus on core elements identified from the TPT Disclosure Framework as it appears to be a comprehensive disclosure framework set to have a strong influence (Transition Plan Taskforce, 2022).

Figure 1. Elements of the TPT Disclosure Framework categorized by materiality to oil and gas climate transition plan according to the authors.

Dark blue indicates essential elements, blue indicates important elements and grey indicates supplementary elements.



Source: Authors’ analysis based on discussion workshops and Transition Plan Taskforce, 2022

We review the key elements to disclose according to these dimensions and how to assess whether the disclosed information supports the credibility of the climate transition plan and its ambition.

We then discuss existing assessment frameworks, with a focus on the ACT Initiative, CA100+, Moody's, and Sustainable Fitch's frameworks. A description of these three frameworks is available in the appendices. Finally, we formulate some recommendations for financial institutions and investors on the actions to align financial flows with net zero commitments.

2. Net zero targets

Reducing anthropogenic greenhouse gas emissions is essential to meeting the climate goals enshrined in the Paris Agreement and remaining within a global atmospheric carbon dioxide budget that limits warming to 1.5°C compared to pre-industrial levels. Therefore, emissions reduction targets are the foundation of a company's climate ambition. They are defined along many dimensions which can impact their level of ambition significantly. We introduce these key elements of target setting and the challenges associated and then discusses how these targets can be assessed using emissions pathways.

2.1 Ten dimensions to define a credible emissions reduction target

Seemingly similar emission reduction targets can vary widely in ambition and credibility depending on the targets' specifications. This section highlights best practices that companies should follow regarding target setting and disclosure across different characteristics.

Baseline year. Targets should be defined relative to a baseline of actual historical emissions rather than theoretical future emissions under a business-as-usual (BAU) scenario. A baseline defined by a level of emissions from a past year is more ambitious than one set by a forecasted level of emissions in a BAU scenario that assumes GHG emissions growth and thus a higher baseline. Using projected BAU scenarios to set baselines also relies on assumptions about the future and makes targets more complex.

Scope of targets. Scope 1, 2, and 3 targets should be covered by GHG emission targets. Not including Scope 3 emissions significantly weakens the ambition of emissions reduction targets as Scope 3 emissions from the use of sold products³ account for between 80% and

³ Scope 3 emissions categories: There are many categories of Scope 3 emissions, covering transportation, investments, leased assets, processing of sold products, and use of sold products. For oil and gas certain categories are less material, such as leased office buildings, while others are critical for decarbonisation, such as the use of products sold which corresponds to category 11 in the GHG Protocol. More information on scope 3 emissions categories can be found on the GHG protocol website.

95% of emissions for oil and gas companies (Wood MacKenzie, 2022). Companies may include all three scopes in the same target, but also are known to have separate targets for Scope 1 & 2, and Scope 3. Disaggregation of scopes improves transparency on the company's ambition and allows us to assess whether the company engages in the needed short-term reduction of scope 1 and 2 emissions, as oil and gas operations account for nearly 15% of energy-related GHG emissions (IEA, 2023b). However, evaluation by scope also presents its challenges, as most industry emissions scenarios are not disaggregated. Out of the 52 fossil fuel companies assessed by Net Zero Tracker which plan to reach net zero or zero carbon by 2050, 28 did not include Scope 3 emissions in their target and 11 companies only included them partially. Given the importance of Scope 3 emissions in the industry, targets that do not include Scope 3 emissions cannot be considered credible.

Interim targets and monitoring progress. Short-term targets ensure that management is incentivized to act in the present, in line with calls for deep and rapid decarbonisation. Similarly, medium-term targets are required, given that energy systems need to have made a significant amount of progress towards decarbonisation by 2030/2035 (IEA, 2022b). Therefore, companies should not be looking to take all action to reduce emissions after these dates, for example, by relying on removals to reduce emissions. Finally, long-term emission targets are required to ensure that the long-term trajectory of the business is aligned with climate goals. After committing to achieve a target, a company should monitor and disclose its yearly progress toward that target including both quantitative and qualitative elements of its progress. Reporting also on past emissions and production volumes helps understand the decarbonisation trend followed by the company in the past, and how it aligns with the future decarbonisation trend implied by its targets. This also provides an indication of a company's ability to deliver on its decarbonisation objectives.

Type of target – absolute vs intensity. Absolute and intensity targets both have advantages and disadvantages, yet absolute targets introduce a stronger onus to reduce emissions. Carbon intensity facilitates comparison between companies of different sizes and provides a way to track the rate of relative decarbonisation. For example, if oil and gas companies diversify into low-carbon businesses, such as the development of offshore wind farms, this would decrease overall carbon intensity, holding all other variables constant. However, the challenge with carbon intensity is that it does not necessarily translate into emissions reduction if the company plans to increase its production volumes. For instance, ADNOC plans to reduce its emissions intensity by 25% by 2030⁴ but also plans to significantly increase its production volume from 3 million barrels per day (mbd) to 5 mbd in

⁴ The target only covers operational GHG emissions which in this context is assumed to mean Scope 1 and 2 emissions

2030 (International Finance, 2020), leading to an increase in absolute emissions. An additional challenge with carbon-intensity metrics is that they are sometimes calculated using revenue instead of physical metrics, which can produce additional noise in the evaluation process. For instance, the increase in energy prices in 2022 led to record revenue for the oil and gas industry which – holding everything else constant – artificially improves revenue-based carbon-intensity metrics without being related to emissions reductions (Table 1).

Table 1. Impact of using financial or physical denominators to assess changes in emissions intensities between 2020 and 2022

	Change between 2020 and 2022	
	Calculated financial carbon intensity	Reported physical carbon intensity
Shell	-58%	1%
TotalEnergies	-51%	-4%
BP	-60%	0%

Sources: Calculations of the authors based on companies' reporting (bp, 2023a, 2023b; Shell, 2023; TotalEnergies, 2023). Calculated financial carbon intensity is the ratio between Scope 1, 2 and 3 emissions in tCO₂e per million USD of revenue. Reported physical carbon intensities are the ratio between Scope 1, 2 and 3 emissions in tCO₂e per EJ of energy supplied. However, they are not comparable across companies as calculation methodologies differ. See the appendices for more information.

As a result, absolute targets are less susceptible to manipulation. An additional important feature of absolute targets is that it recognises decarbonisation strategies where a company does not transition, but rather winds down operations over time. Such a strategy would not lead to a change in carbon intensity but would see the company decarbonise in absolute terms. As a result, having an absolute emissions reduction target is a key requirement of some assessment frameworks (Carbon Tracker Initiative, 2022a; Sustainable Fitch, 2023). In summary, the best practice is to include an absolute target. However, carbon-intensity targets can also be used, if they are paired with a target to reduce oil and gas production over time.

Inclusion of methane emissions. Companies should disclose methane emissions from flaring, venting and leaks as it accounts for a significant share of the industry's emissions (IEA, 2021a, 2022b). Methane has a high radiative power, and the levers to reduce its emission are quite specific such as reducing flaring or leak detection and repair (LDAR) programs. Therefore, emissions reduction targets should at least cover methane emissions and preferably include a specific short-term methane reduction target.

Accounting methodology. Companies can generally define their organisation’s boundaries following three approaches: equity share, financial control and operational control. In consequence, emissions targets can be expressed differently across these three dimensions. Using operational emissions makes sense as the company has more control over emissions reduction, but a company is also responsible for its emissions computed using equity share. Using the equity share approach minimizes the potential for emissions leakage through joint ventures or minority investments.

A potential solution is for companies to disclose Scope 1, 2, and 3 for both operational and equity emissions. However, regarding target setting, assessment methodologies from SBTi⁵, Carbon Tracker or Moody’s framework base their evaluation on an equity share approach.

Position regarding offsetting. While emission reductions and offsetting correspond to different physical quantities (Dugast, 2020), some companies such as Shell, Chevron, or Saudi Aramco include offsetting in their targets (Chevron, 2023; Saudi Aramco, 2023; Shell, 2023). Reducing GHG emissions is the priority and carbon dioxide removals to offset residual emissions – emissions remaining after all feasible efforts have been made to reduce or mitigate them – can only play a marginal but necessary part in reaching net zero (Fankhauser et al., 2022; IEA, 2022b). If companies use offsets, they should disclose offsets separately from emissions reductions, with quantified metrics showing the extent to which offsetting is expected to contribute to the companies’ climate goals and with qualitative information on the offsets’ type and characteristics (ISO, 2022). Further discussion on offsetting is provided in the next section on companies’ net zero strategies and business plans.

Future developments. Most disclosure frameworks recommend targets that cover companies’ emissions in the most exhaustive way, therefore it is important to include all potential future emissions in companies’ targets, including those of future projects. For example, Petrobras states that its target encompasses both present and future projects, whereas Origin Energy states that “the potential future emissions from any development of new gas fields” are excluded from their short- and medium-term targets. Not accounting for future developments adds significant uncertainty to the company’s future emissions pathway, provides scope for increases in production, and limit comparability between targets.

⁵ As of now, SBTi does not accept emissions reduction targets from oil and gas companies and the organisation is developing a framework to assess these targets. SBTi published a draft regarding target setting for oil and gas companies and the outcomes from the expert advisory group which reviewed the draft.

Coverage and consistency over time. Beyond emissions scope and GHG type, targets should exhaustively cover companies' emissions, i.e. covering all business units and geographies. A lower proportion of covered emissions reduces the credibility of a target, and it can be penalized by assessment methodologies, e.g. in Moody's proposed Framework for Net Zero Assessment (Moody's Investors service, 2022). Besides, companies should discuss transparently how changes in coverage or methodology impact their targets, ideally recalculating past emissions to make sure that data is consistent and comparable over time. If their targets are restated, companies should be transparent about the impact of that change on the target's ambition.

Scope 2 emissions accounting methodology. Companies should state whether they disclose Scope 2 emissions following a market-based approach⁶ – which includes the use of renewable energy certificates (RECs) – or a location-based⁵ approach. While purchasing green energy certificates can support the development of renewable energy, their quality varies significantly across instrument types and certificates do not necessarily yield the promised emission reductions (Bjørn et al., 2022). If companies choose to report market-based emissions, they should provide information on the quality of the RECs they purchase. Since Scope 2 emissions account for a small share of the emissions of the industry, this issue is less material and has less impact on the credibility of an emission reduction target.

Adopting the best practices listed above and disclosing information along the dimensions listed is critical for a credible net zero target, as each can significantly impact the level ambition. Credible targets need to be calculated using a past baseline, include scope 3 and methane emissions, rely on offsets only marginally or not at all, cover all of the company's activities, include future developments, use an equity approach to compute emissions, and use a location-based approach to calculate scope 2 emissions. Finally, emission targets should be expressed on an absolute basis, or as a carbon-intensity target paired with a commitment to reduce oil and gas production.

2.2 Assessing companies' targets

Once a company has disclosed an emissions target, its level of ambition can be assessed. While a target can follow all elements of best practice identified in the previous section, if the

⁶ The location-based approach uses average emissions factors based on the grid's overall electricity generation mix in a specific geographic location while the market-based approach while the market-based method reflects emissions from electricity that companies have purposefully chosen, for instance through renewable energy certificates (RECs). More information on Scope 2 accounting methodologies can be found on the GHG protocol website.

ambition of the target is insufficient compared to a chosen level of decarbonisation (for example, a 1.5°C scenario) then the target, and therefore, the overall transition plan, is not credible. In this section, we detail how the ambition of targets can be assessed and the associated challenges.

Emission pathways and suitable benchmarks

To assess the ambition of an emissions target, alignment is compared with an external benchmark. First, we review the different science-based scenarios used to benchmark companies' emissions pathways and discuss the underlying assumptions determining them. Then, we examine how assessment methodologies use these benchmarks to assess the alignment of emissions reduction targets.

There are many possible pathways to reach net zero and limit global warming to 1.5°C. First, these two goals are not equivalent as reaching net zero does not guarantee limiting global warming to 1.5°C. Indeed, scenarios reaching net zero later and/or through higher cumulative emissions are less likely to be 1.5°C-aligned, holding all other things constant. For instance, BP Net Zero forecasts more than 800 Gt of cumulative CO₂ emissions between 2015 and 2050 while more than three-quarters of Intergovernmental Panel on Climate Change (IPCC) scenarios assume that this will be lower (BP, 2023).

Scenarios are not predictions, with many overly reliant on technologies that are yet to prove commercially viable such as large-scale Carbon Capture and Storage (CCS; IEA, 2022a) or that are limited by available resources such as bioenergy (International Finance, 2020; Searle & Malins, 2015). There is a trade-off between using many scenarios, which allows us to consider all the possible pathways which could lead to net zero even if they include high levels of uncertainty, and narrowing the approach to a few scenarios which are more credible as they rely less on unproven technologies with unknown feedbacks from biosphere sinks (Keller et al., 2018). For financial institutions looking to compare the level of ambition of companies within a sector, using a single set of scenarios, such as the IEA pathways, facilitates direct comparison. For assessment, financial institutions should not cherry-pick scenarios that fit their interests.

The IEA scenarios are widely known and accepted, with many organisations such as ACT or Moody's using them to assess the alignment of corporate emissions, as well as oil and gas companies that use these scenarios to claim alignment of their targets with science-based pathways. In its World Energy Outlook 2022 report, the IEA analysed how its net zero by 2050 scenario compared to the other 16 scenarios identified by the IPCC to achieve net zero emissions from the energy sector in 2050 while limiting global warming to 1.5°C (IEA,

2022c). Among these scenarios, NZE by 2050 relies less on bioenergy, carbon capture, utilisation and storage (CCUS), and energy-related carbon direct removals, while it assumes that a higher share of the energy needs are met by wind, solar and hydrogen. More importantly, it assumes that total final energy consumption is around 340 EJ in 2050, compared to around 460 EJ in the median IPCC scenario, thanks to ambitious policies to improve energy efficiency and reduce energy demand. However, these scenarios are often criticized due to their reliance on carbon capture and storage – the currently planned CCUS capacity for 2030 represents just 20% of the required CCUS in the NZE Scenario (IEA, 2022c). Additional criticisms include their historical underestimation of the falling costs of renewables (Way et al., 2022), and the fact that they only provide a 50% probability of limiting warming to 1.5°C (ShareAction, 2022).

An additional level of granularity within scenarios is regional variation, with certain regions set to decarbonise before others. Within the context of oil and gas, differences in the speed of decarbonisation may see different levels of falls in oil and gas demand by region, and as a result, oil and gas companies could claim to have different regional pathways. However, as oil is a global commodity, and with gas increasingly traded globally with the rise of LNG (Aguilar-Conraria et al., 2022), oil and gas extracted in a particular country is often consumed outside of that country. As a result, Moody's supports the use of regional pathways to allow for a more accurate and fair assessment of companies operating in different regions. However, there are also arguments in favour of using global emissions pathways. Large integrated energy companies such as BP, ExxonMobil, or Chevron operate globally, making it more relevant to assess their performance using global pathways. Furthermore, the use of regional pathways add complexity, as a company's regional breakdown is likely to change year-on-year. This reduces comparability between companies and provides a potential loophole for companies to ramp up production.

Assessment

Once a scenario is selected, it can be used to assess the alignment of a company's target. A credible assessment should rely on a sectoral decarbonisation approach, which accounts for sectoral specificities and calculates a relevant budget for the sector, compared with the absolute reduction approach which sets economy-wide pathways.

Then, either the convergence or the contraction approach can be used⁷. The former recognizes that different companies within a sector may have varying starting points and abilities to decarbonise.

There are different ways to compute alignment with an emission pathway. Moody's uses the different IEA scenarios to compute sectoral emissions pathways and compares the projected emission intensity inferred from the company's target to calculate an implied temperature rise (ITR). The ITR is computed based on the gap between the emission intensity of the company and the one from the closest lower bound benchmark at a given point in time. ACT follows a similar approach, except that it only uses one benchmark for now, the IEA's Sustainable Development Scenario (SDS) scenario, which is associated with a temperature increase of 1.7°C by 2050. SBTi uses a similar, but more complex approach, as it calculates emissions pathways for each oil and gas product and assess the company's performance across all the different products before aggregating the result in one alignment metric. The approach is repeated for methane emissions, where a benchmark is calculated from the IEA's SDS. In addition, ACT and Moody's consider gross GHG emissions and do not account for offsets to compute the alignment of a target (ACT, 2021; Moody's Investors service, 2022). Finally, assessment across different time frames is important as the pace of decarbonisation impacts cumulative emissions. Besides, being on track to meet ambitious short-term targets shows that companies engage in immediate action, reinforcing the credibility of their long-term claims.

Credible targets should have different time horizons and aim to reduce emissions at a pace in line with the net zero emissions pathway chosen. Reporting information on the alignment of the targets with a net zero pathway, with justifications on the choice of scenario and its underlying assumptions, also contributes to reinforcing the credibility of a target. Claiming alignment to a net zero scenario while using a scenario with significant overshoot, high cumulative emissions, and a strong reliance on carbon dioxide removals reduces credibility. If a financial institution has committed to a certain scenario, such as net zero by 2050, a scenario aligned with this target should be used to assess companies. Finally, if a company's net zero target is not sufficiently ambitious, it follows that a company's transition plan is not credible in relation to the net zero pathway chosen.

⁷ Contraction/Convergence approach: The contraction approach sets absolute emissions reduction targets for each company, while the convergence approach sets a common emissions intensity target for all companies within a sector.

3. Business plans to support net zero ambitions

After discussing emissions reduction targets, we consider how the strategy of a company supports delivering on those targets and ensures that the climate transition plan is internally consistent and credible. This section discusses the key strategy and technology pathways that can be part of a net zero-aligned business plan. While being strategy-agnostic, the section highlights the different transition pathways possible for oil and gas companies, and the challenges associated with these. The reporting of a company's decarbonisation strategy needs to give the reader a comprehensive understanding of the company's climate-aligned business plan and cannot be limited to putting forward flagship projects such as the sale of a fossil fuel asset or the development of one renewable energy-related project. The credibility of a company's strategy should be assessed based on a holistic evaluation.

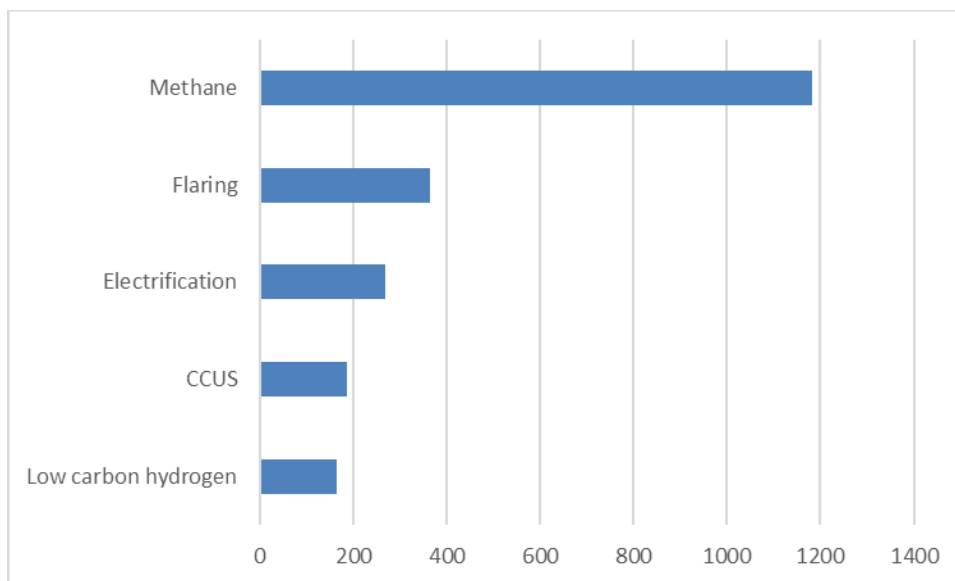
We focus here on three key decarbonisation levers, namely decarbonising oil and gas operations, reducing oil and gas activities, and diversifying into low-carbon activities. We also discuss the role that offsetting should – and should not – have in a credible decarbonisation strategy. Within each of these levers, we provide an outline of the required disclosures from companies and discuss methods for the assessment of business plans' alignment with a net zero target. The Net Zero Standard for Oil and Gas developed by IIGCC recommends that a company identifies the set of actions it intends to take to achieve its GHG reduction targets and quantifies how each action will contribute to the company's emissions reductions per emission scope and over different timeframes. This allows assessing how the company's strategy will contribute to reducing the company's emissions and delivering on its targets.

Decarbonising oil and gas operations and addressing methane emissions

While Scope 1 and 2 emissions account for a small part of emissions from the oil and gas sector, they still amount to 5.1 Gt CO₂e, around 15% of global energy-related GHG emissions (IEA, 2023b). It is relevant to address them as companies have more direct control to achieve significant short-medium-term emission reductions. The main levers to reduce emissions intensity from upstream oil and gas operations are reducing methane emissions, reducing non-emergency flaring, electrifying energy consumption, shifting electricity consumption to renewable sources, and implementing energy efficiency measures to reduce energy consumption (IEA, 2023b, Figure 2). CCUS and shifting from hydrogen to low-carbon hydrogen can also contribute to decarbonising operations, especially refineries (IEA, 2023b, Figure 2). There is also scope for reducing emissions through portfolio management, choosing to prioritize oil and gas resources with the lowest emission intensity (Brandt et al., 2018).

Finally, reduction in oil and gas production could deliver almost as much emissions reduction of Scope 1 and 2 emissions as reducing methane emissions (IEA, 2023b). This last lever would not be captured by emissions intensities, highlighting the importance of accounting for absolute emissions.

Figure 2. Breakdown of emissions reductions in oil and gas operations per decarbonisation levers by 2030 according to the IEA Net Zero by 2050 in Mt CO₂e



Source: IEA, 2023b.

Figure 2 shows that addressing methane emissions is the key issue to address in the short term for oil and gas companies. In 2021, the sector, especially through natural gas activities, was responsible for more than 80 Mt of methane emissions, roughly a quarter of global methane emissions (IEA, 2022b). Companies can reduce methane emissions in a cost-efficient way using existing and new technologies, for instance by engaging in LDAR (Kemp & Ravikumar, 2021).

Companies should disclose to what extent they engage in these actions and provide estimates of emission reductions. Beyond highlighting flagship projects, comprehensive information is necessary with KPIs showing how actions will be implemented across operations. For example, the proportion of energy consumption electrified or the implementation of infrared cameras to identify methane leaks.

Breaking down the contribution of different mitigation initiatives per scope and GHG type is also a desirable supplementary element.

Regarding assessment, the ACT methodology tracks past and future trends in scope 1 and 2 emissions to account for the decarbonisation of operations. **IIGCC offers a more precise assessment, especially regarding methane emissions, and considers whether the company has committed to zero non-emergency flaring by 2030 (in line with World Bank and UN initiative), to minimize routine flaring by 2030, to address leaks, venting and flaring using the best available technology.**

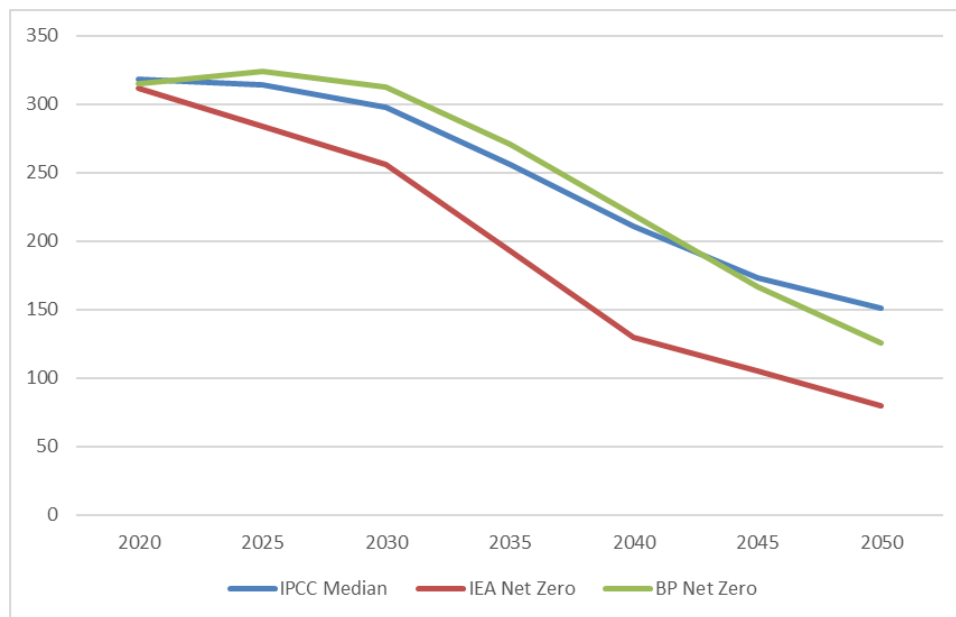
Reducing oil and gas volumes

Oil and gas companies can transition toward net zero through several different pathways but the need to reduce production volumes is a prerequisite to any credible strategy (Figure 3 below). This is particularly challenging as forecasted fossil fuel volumes are not in line with the assumptions made in the IEA NZE by 2050 or other 1.5°C pathways with limited overshoot (Carbon Tracker Initiative, 2022; IEA, 2022c, 2023c). Various challenges might conflict with production reduction imperatives such as ensuring energy security, availability, and affordability (Arndt, 2023; Mohapatra, 2020). Shifting away from fossil fuels towards renewable energy could positively contribute to energy security (Bauen, 2006; Cevik, 2022; van Vliet et al., 2012). However, exogenous factors related to the transition of the energy systems, both from the demand and supply sides, such as public policies to develop low-carbon energy sources, will impact the ability of oil and gas companies to decrease their fossil fuel activities. Furthermore, duties to countries for state-owned companies, or to investors for private firms might constrain ambitions to reduce oil and gas production volumes. However, while concerns such as energy security are legitimate, companies cannot use them to claim alignment with a 1.5°C target while avoiding reductions in fossil fuel production over time.

Reducing oil and gas volumes is the most relevant lever for oil and gas companies to reduce their Scope 3 emissions from the use of sold products, the most important emission category for the industry. CCUS technologies can tackle some of these emissions and play a role in most net zero scenarios (Byers et al., 2022; IEA, 2023b) but their potential remains limited. The readiness of these technologies remains below commercial viability (IEA, 2022a) and existing projects do not deliver on their targets (Browne, 2018; Hauber, 2023) despite high levels of both public and private investments (Browne & Swann, 2017; Harvey & Ambrose, 2023). Finally, while being relevant to credible decarbonisation strategies, CCUS cannot be used to legitimize continued fossil fuel expansion as it threatens the integrity of decarbonisation strategies (Davies, 2023; Harvey, 2023; Mooney & Hodgson, 2023).

As a result, credible climate transition plans need to discuss how the company engages in oil and gas volume reductions.

Figure 3. Evolution of oil and gas volumes in EJ across IPCC C1 scenarios, BP Net Zero and IEA Net Zero



Sources: BP, 2023; Byers et al., 2022; IEA, 2022b.

While there is a consensus on the need to reduce oil and gas production, the uncertainty lies in how companies will anticipate it, and who will get to keep producing. Disclosure should include production forecasts and key elements which determine future production such as plans regarding exploration or increasing the life or capacity of existing wells. Therefore, IIGCC’s net zero standard for oil and gas companies includes questions on production forecasts over different timelines, including “Has the company recognized the need to decrease production?”, and six questions assessing how production forecasts align with the IEA NZE by 2050 scenario. Even without considering the size of the decline, companies committing to reduce oil and gas production are rare (Carbon Tracker Initiative, 2022c).

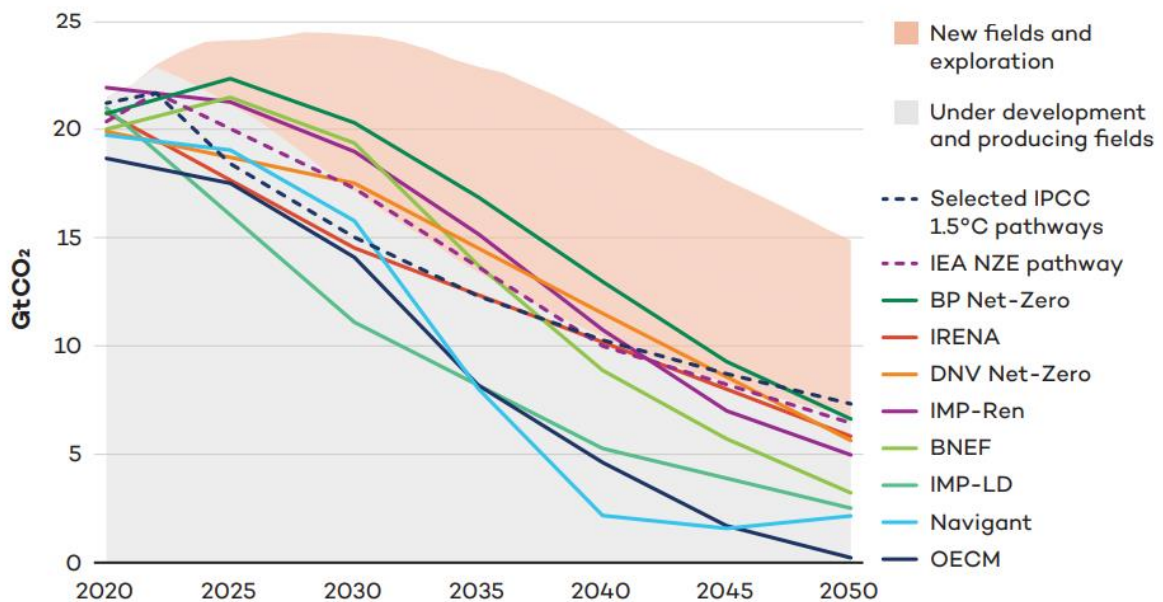
Determining which actors should engage in bigger efforts to reduce their production and assessing the validity of these efforts is a complex matter. As oil and gas are somewhat global commodities, the discussion relies less on consumption and regional emission pathways, unlike many other industries, and more on the cost and emissions efficiency of production. Projects with higher costs are more likely to destroy value at higher carbon prices.

As a result, countries belonging to OPEC will be less impacted by the need to reduce production and are likely to account for an increasing share of the world's oil and gas production according to the IEA Net Zero and BP Net Zero scenarios. **Therefore, companies should disclose information regarding their production costs and their oil and gas price assumptions along with production forecasts, to determine whether the projects they are considering are likely to become stranded assets⁸ on a net zero pathway. IIGCC's framework also investigates this issue with questions on breakeven costs, the assumptions underlying them, and their alignment with a net zero scenario.**

Several methods can be used to assess the alignment of the future oil and gas production of a company with a net zero scenario. One is to compare the pace of production declines with the ones computed in the IEA Net Zero by 2050 scenario or other credible net zero scenarios. One key advantage of the IEA Net Zero scenario is that it offers different paces of production reduction depending on geography, allowing for a more accurate assessment. Another method, used by ACT, is to assess the carbon lock-in of a company through its currently producing and under development oil and gas upstream assets. While this forecasted overshoot could still be mitigated through the early closure of assets, it is an important red flag for the credibility of a net zero claim. Overall, investments in exploration and the development of new fossil fuel resources are unlikely to be aligned with a net zero pathway, as existing production assets have enough fossil fuels to breach the carbon budget for staying within a 1.5°C warming compared to pre-industrial levels (figure 4, International Institute for Sustainable Development, 2022).

⁸ "stranded assets are assets that have suffered from unanticipated or premature write-downs, devaluations, or conversion to liabilities" (Caldecott et al., 2013)

Figure 4. Global oil and gas production, based on other selected 1.5°C pathways. Extracted from the IISD report Navigating Energy Transitions (IISD, 2022)



Sources: BNEF (2021); BP (2022); Byers et al., (2022); DNV (2021) ; IRENA (2022); Navigant (2018); Rystad Energy (2022b); Teske et al., (2022).

Beyond information on production forecasts, it is relevant to have information on how a company plans to deal with its fossil fuel assets. For instance, through anticipated closure, sale, or repurposing. Selling assets can provide necessary resources to shift toward new activities such as renewable energy, as observed in the transformation of Dong Energy into Ørsted – a company specializing in offshore wind – or through the sale of Lundin Energy’s exploration and production activities to Aker BP which led to the birth of Orrön Energy in 2022. However, selling assets only leads to “paper decarbonisation” as it does not lead to direct emissions reduction and simply displaces the problem to another owner, which might face smaller scrutiny and environmental regulation (The Glasgow Financial Alliance for Net Zero, 2021; Transition Plan Taskforce, 2022). Some best practices can be implemented by oil and gas companies and financial actors regarding M&A activities, such as adding enforceable clauses or covenants in a sales contract to transfer emissions targets (Ceres & Environmental Defense Fund, 2023). Repurposing assets is especially relevant for midstream and downstream assets, and for refineries which could be used to produce non-energy products from fossil fuels without combustion.

Shifting toward new activities

While companies could choose to simply wind down their operations, most companies will likely try to offset the decline of their oil and gas activities by diversifying toward new revenue streams. Given their expertise, some strategies are more relevant, and we can see that oil and gas companies tend to diversify toward a common set of activities: carbon capture and storage, low-carbon hydrogen, and renewable energy – especially biogas and offshore wind (IEA, 2021b). The oil and gas industry is leading the development of CCUS as the industry is involved in 90% of the CO₂ capture and storage in operation, and its expertise in developing CO₂ transport and storage infrastructure is essential (IEA, 2023b). Renewable energy is becoming increasingly cost-efficient and offers profitable diversification options to oil and gas companies, making it one possible strategy to persist in a transitioning energy landscape (Fattouh et al., 2019). Some petrochemical activities, even if they are still dependent on the oil and gas value chain, can also be relevant due to their utilization of fossil fuels for non-combustion purposes such as lubricants or asphalts. Up to now, companies have diversified to hedge their transition risks but without engaging in actual decarbonisation which requires strong reductions in oil and gas activities (Green et al., 2022).

To allow for a comprehensive assessment of the credibility of its strategy, a company should be precise about what it considers to be green activities and disclose the related current and future operational and financial information. Green taxonomies are a useful tool to agree upon common definitions of green activities. To be credible, the company's strategy regarding new activities should demonstrate they can replace fossil fuel activities and revenues over time. While the current share of "green" activities in total revenue, and the growth rate of these activities is the most important information to assess and disclose, companies tend to prefer to disclose absolute operational targets regarding the development of these activities rather than relative targets. For example, Chevron aims to produce 100 mbd of renewable fuels and 40,000 mmbtu/d of renewable natural gas by 2030.

While absolute operational targets are relevant to assess the credibility of a climate transition plan, they do not provide information on how development is intended to replace fossil fuel revenues. If possible, companies should also disclose how revenues from low-carbon activities are expected to replace fossil fuel revenues over time. While financial information such as profitability and expected growth is currently difficult to obtain, it should become more easily available as low-carbon activities grow and end up being disclosed as a separate business segment in financial statements.

If green activities are too marginal to be disclosed in a separate business segment, it hinders the credibility of their ability to replace the company's fossil fuel revenue.

Offsetting remaining emissions

We discuss here the key principles regarding offsetting residual emissions, the different types of offsets implemented by companies, and their relevance compared to net zero benchmarks.

Offsets cannot be considered a solution to reduce a company's emissions and therefore should not be used to achieve emissions reduction targets (Dugast, 2020; ISO, 2022). In the Voluntary Carbon Markets Integrity Initiative Claims Code of practices, the first prerequisite of any valid offsetting strategy is to set ambitious science-based emissions reduction targets and achieve them without relying on carbon credits. Offsets should only be used when there are no alternatives available, i.e. to counterbalance residual emissions⁹ remaining after all reductions possible have been achieved, and therefore should play a very limited role in reducing an oil and gas company's own emissions (ISO, 2022).

Defining and allocating residual emissions, i.e. emissions which require offsets and are eligible for it, is challenging. How residual emissions are spread across countries and sectors is complex as they are not clearly defined conceptually nor quantitatively even at the country level. An analysis of projections of residual emissions in governments' long-term strategies submitted to the UNFCCC shows that most strategies were imprecise about which sectors residual emissions would originate from, and few offered specific projections of how residual emissions could be balanced by carbon removal (Buck et al., 2023). Furthermore, the level of residual emissions in 2050 according to these targets is around 18% of current emissions, which is much higher than the negative emissions assumed in the IEA Net Zero scenario or the median IPCC C1 scenario (Byers et al., 2022; IEA, 2022c). Allocating residual emissions between countries, sectors, and even companies requires further research to allow for a better assessment of how climate transition plans account for them.

While scenarios account for residual emissions within the oil and gas value chain, residual emissions mostly relate to the end use of fossil fuels in industry and transport, and not to upstream operations (IEA, 2023b). Therefore, offsets can only play a marginal role in companies' transition plans to address their scope 1 and 2 emissions, if any.

⁹ Residual emissions: GHG emissions that are emitted after all technically and commercially feasible options have been implemented to reduce emissions. The concept is better defined at the planetary scale as global emissions that cannot be abated and need to be balanced by carbon sinks and direct carbon removals to achieve net zero.

However, offsets are still considered a key lever to decarbonise scope 1 and 2 emissions by several oil and gas companies, such as Chevron (Chevron, 2023). Regarding some scope 3 emissions, offsets can be part of a relevant strategy, as long as they meet strict quality standards, consist of removals rather than emissions reduction, are additional, permanent¹⁰, and with a low risk of reversal (Axelsson et al., 2020; Fankhauser et al., 2022). Current practices are not aligned with these principles with various investigations and studies casting doubts on the credibility of offsets (Anderson, 2012; Bumpus, 2011; Greenfield, 2023; Pan et al., 2022). Besides, only 3% of the credit market was pure removals projects (Carbon Direct, 2022).

As a result, assessment methodologies often do not account for offsetting (ACT, Moody's Net Zero Framework) and focus on gross emissions. In Sustainable Fitch's assessment, companies receive a malus if offsets account for more than 5% of their achieved emissions reductions (Sustainable Fitch, 2023). SBTi adopts a more nuanced position and deems that direct CO₂ removals from the atmosphere that occur within energy sector activities may be accounted for, for instance through biorefineries (SBTi, 2022). Indirect removals such as afforestation or reforestation shall not be accounted for. However, nature-based offsets are part of many actors' strategies such as Repsol, PTT, or China National Petroleum Company (CNPC, 2022.; PTT, 2023; REPSOL Group, 2023.). Overall, offsetting is often used to avoid engaging with more meaningful decarbonisation through a change in business strategy (Trencher et al., 2023). **Since offsetting remains part of companies' strategies and emissions reduction targets, disclosure frameworks include guidelines on how to report on offsets. If companies decide to use offsets, they should report offsets separately from GHG emissions, clearly explain the role of carbon offsets and carbon removal solutions in their climate transition plan and give information on their type and quality. Transition plans which rely on offsets are not credible.**

4. Implementing a climate transition plan in operations and investments

Aligning financial planning and investment frameworks with a company's net zero strategy is key for assessing the credibility of a transition plan. Continued high levels of CAPEX for new oil and gas development or low levels of CAPEX allocated to low-carbon activities will call the credibility of a transition plan into question.

¹⁰ This adheres to the like-for-like principle that geologically sourced emissions (fossil fuels) are equally compensated for by geological storage.

This section outlines the most important information to disclose regarding direct actions companies need to implement to deliver on their business plan detailed in section 3, with a focus on investment activity. Then, it provides guidelines on how to assess whether these operational and financial metrics are aligned with a net zero strategy.

Capital expenditures in upstream oil and gas assets

Regarding upstream activities, the IEA states that a net zero by 2050 scenario requires a sharp decline in oil and gas investment, especially regarding new wells, and that declining oil and gas demand can be met without approving new long lead time upstream conventional oil and gas projects, which have a high risk of carbon lock-in (IEA, 2022c). In the IEA’s net zero scenario, there is virtually no room for investment in new oil wells (Table 2) and investment in upstream natural gas should be limited to existing fields and to decrease the emission intensity of current production.

Table 2. Average annual upstream oil investment in the IEA Net Zero by 2050 scenarios in billion USD

	2021	2022–2030	2031–2050
New wells	94	18	0
Existing wells	142	243	120
Tight oil	70	42	5
Total	306	303	125

Source: IEA, 2022c.

Therefore, detailed disclosure regarding current and forecasted investments is required so that investors can assess how financial planning supports the internal credibility of a company’s net zero strategy. Current and planned capital expenditures need to be broken down into upstream activities by exploration and development for new wells, expansion of existing wells, and maintenance of existing assets. For instance, IIGCC’s net zero standard considers these expenditures over the next three years to assess the relevancy of a company’s disclosure. However, detailed information on upstream CAPEX is rarely available, and this seems to be the element of transition plans where the current availability of disclosure is furthest from what is required (CDP, 2023a).

For instance, TotalEnergies does not disclose information regarding its capital expenditures in upstream activities (TotalEnergies, 2023). On the contrary, PEMEX provides a detailed breakdown of capital expenditures per segment in its Form 20-F, including a specific amount for exploration and production (PEMEX, 2023). These capital expenditures in exploration and production are further detailed between investments in existing and new wells. The company discloses its exploration and production budget for the next year, including a breakdown between investment in existing projects, new wells, exploration, and drilling as well as an asset-level breakdown. Overall, PEMEX's capital expenditures in upstream activities increased by 20% in 2022, the reporting year, and are set to increase by 48% in 2023 compared with 2022. This trend does not align with the need to reduce oil and gas production volumes.

Given the lack of information regarding upstream capex, other indicators can be used as a proxy to verify that the company is addressing the decline in fossil fuel volumes such as the commitment to stop approving new upstream projects, a plan to peak production in the next ten years, a plan to have upstream capex peak and decline to zero within the next five years, or targeted declines in absolute emissions that are faster than targeted emissions intensity declines in the short term, all of which hints that the company will decline its fossil fuel production (Moody's Investors service, 2022). Assumptions about future oil prices and information regarding pre-final investment decision breakeven cost of all upstream projects can also be used to assess the future trend of a company's production volumes (IIGCC, 2023).

Given that oil and gas companies continue to invest in upstream projects, using external data to assess the alignment of upstream capital expenditures solves part of the lack of disclosure regarding these projects. For example, the Carbon Tracker Initiative uses data from Rystad Energy to link the asset-level supply of oil and gas to demand pathways under different carbon-constrained scenarios from the IEA. This shows that investments in new oil and gas assets remain high with 62% of investments in 2021/Q1 2022 inconsistent with a well below 2° pathway, showing misalignment between direct actions and net zero claims (Carbon Tracker Initiative, 2022b). ACT and CA100+ both use this methodology to assess the alignment of corporate investment activity.

Aligning upstream capital expenditures with a net zero scenario is fundamental to ensure the internal consistency of a transition plan aiming for net zero. Investment in low-carbon activities cannot be a substitute to balance upstream misalignment, as the latter leads to more emissions while the former does not translate into emissions removals.

However, investing in low-carbon activities, especially in low-carbon energy, can provide a commercial opportunity to exit fossil fuel activities and contribute to the transition of energy systems. In this regard, Moody's proposed Framework for Net Zero Assessment states that a reduction in fossil fuel volumes is only credible from an operational and financial perspective if the company plans to diversify into new low-carbon activities (Moody's Investors service, 2022).

Capital expenditures in low-carbon activities

By diversifying into low-carbon and mitigation activities, oil and gas companies can contribute to the build-out of low-carbon technologies required in net zero pathways¹¹. To date, oil and gas companies have invested mainly in solar, wind, CCUS and biofuels (IEA, 2020). However, these investments account for less than 1% of their capital expenditures, showing that the industry has resisted diversifying out of fossil fuel activities (IEA, 2020). **Companies need to provide detailed metrics and targets regarding investment in low-carbon technologies that back up their proposed business plan.**

Therefore, companies need to disclose how financial planning supports their business strategy. Crucial indicators include current and planned capital expenditures in low-carbon and mitigation activities, as well as operational targets such as targeted installed generation capacity of renewable energy. Disclosure should cover both current investments and future periods of up to at least 3 to 5 years to enable assessment of a company's future direction (ACT, 2021; IIGCC, 2023). Companies should not be penalized for failing to report on these indicators if the activity is not part of their transition plan. However, if diversification into low-carbon activities is a key part of a company's transition plan, failing to support this with operational and financial planning shows a lack of credibility.

Financial planning should not just include the quantum of capital expenditures in low-carbon activities, but also how the company intends to fund these investments.

Fundamentally, funding can come from three sources: operational cash flows, the balance sheet, and capital markets. If the company relies on operational cash flows (OCF), this should be justified with scenario analysis, assumptions of future oil and gas prices and breakeven costs that demonstrate whether OCF will be sufficient to fund planned capital expenditures. Relatedly, if the company intends to use its balance sheet, such as cash and

¹¹ While scenarios provide information on what is needed at the aggregate level to reach net zero, such as increased renewable electricity generation or carbon capture and storage, each individual company does not have to engage in all low-carbon business activities. In other words, companies can follow different strategies to decarbonise.

cash equivalents or disposal proceeds from divestments, it should make the extent of its reliance on this strategy clear to investors and assess liquidity issues associated with the timing and location of divestments (i.e. stranded asset risk). Capital markets may be accessed for debt financing, however companies need to balance this against multiple considerations. This includes, but is not limited to, whether the company has the balance sheet and cash flows to service additional financial obligations, and how a different capital structure may affect the company's credit worthiness, particularly as it pivots into new ventures with different risk-return profiles compared to conventional business segments.

To assess the level of current or planned investments, ACT computes the share of investment in low-carbon and mitigation technologies over total capital expenditures and verifies if it is higher or lower than 49%, equivalent to the proportion of investment allocated to low-carbon energy in the IEA Net Zero scenario. The assessment is conducted for the current year of reporting and in five years, with a penalty if the data is available at a shorter time frame or not available at all. The challenge with using a uniform benchmark for assessing the level of low-carbon investment is that it does not account for variations in the business strategy of companies, with some potentially choosing to wind down operations rather than investment in low carbon. However, the advantage of a straightforward uniform benchmark is that it facilitates comparisons between companies over time. R&D can be included in these measures of investment or assessed separately.

5. Engaging with stakeholders

This section outlines the importance of engaging with four main stakeholders for oil and gas companies: corporate employees, policymakers, the supply chain, and clients. It discusses engagement best practices both in terms of disclosure and action items and how they can be assessed.

Climate governance

Effective climate governance increases the likelihood of meeting net zero targets by ensuring oversight and management of climate-related issues and accountability for climate-related performance. Disclosure and assessment of governance processes are more qualitative in nature. In the oil and gas industry, disclosure frameworks and assessment methodologies focus on the following core elements. Board oversight and reporting; roles, responsibility and accountability; culture; incentives and remuneration; skills, competencies, and training (CDP, 2023b; Transition Plan Taskforce, 2022).

While existing frameworks often capture best practices regarding governance, they fail to capture bad governance practices such as the presence of financial incentives for increasing oil and gas production, with most of the largest listed oil and gas companies directly or indirectly pushing for oil and gas growth through executive incentives (Carbon Tracker Initiative, 2022).

With a focus on C-suite executives and the board, a credible climate transition plan should disclose how employees are trained on climate-related issues, how they engage with the company’s strategy, and crucially, how they are incentivized to deliver on it, with reference to specific KPIs used, both for high- and low-carbon activities. Assessment methodologies should ensure the presence of these policies.

While it is hard to quantify how each of these elements (or their absence) affects the likelihood of reaching net zero, they add credibility to a transition plan. Disclosure of these elements tends to be more easily available than other quantitative operational or financial indicators, such as capital expenditures, as they cover less sensitive information and are opportunities to communicate good practices. For example, across the 4,100 organisations who reported to have developed a 1.5°C-aligned climate transition plan through CDP’s climate change questionnaire in 2022, more than 50% of the disclosing organisations met the disclosure criteria for the governance element (CDP, 2023a), making governance the most popular disclosure category that respondents meet.

Engagement with policymakers

Policymakers play a critical role in the energy transition, from introducing carbon pricing mechanisms to industrial policies that directly incentivise decarbonisation. Therefore, the lobbying activities of oil and gas companies towards climate policies can undermine or support their stated climate targets.

Regulators can directly mandate companies to reduce their greenhouse gas emissions, as we can observe with more stringent regulations on methane emissions in the United States (McCormick, 2022, 2023). In 2021, a Dutch court ruled that Shell must reduce its GHG emissions by 45% by 2030 from 2019, including its scope 3 emissions. Regulators can also grant or deny permits for further development of fossil fuel assets. Companies can be impacted by the regulations both from the country where they operate (e.g., EPA’s regulation regarding methane emissions) or from the country where they have their headquarters (e.g., the Milieudefensie v Royal Dutch Shell Ruling).

Given the importance of policy to the oil and gas industry, it is unsurprising that companies lobby to defend their fossil fuel interests.

Indeed, there is evidence that oil and gas companies have lobbied against carbon pricing policies that penalize carbon-intensive industries that consume fossil fuels or against measures such as bans on the sales of internal combustion engines vehicle which are likely to impact demand for fossil fuel products (InfluenceMap, 2022). However, there is little transparency regarding these activities. When information is disclosed, it is generally through non-binding and unambitious statements such as acknowledging the need for the energy sector to transition or supporting the goals of the Paris Agreements. Active engagement with climate policy is hard to monitor as companies rarely advertise lobbying against climate change policies, especially given that these lobbying activities can occur through third-party entities such as industry associations. According to InfluenceMap, four of the ten most negative and influential companies with regard to climate policy lobbying are from the oil and gas industry: Chevron, ExxonMobil, ConocoPhillips, and Gazprom (InfluenceMap, 2022). Lobbying against climate policies indicates that companies are not serious about climate action, raising questions about the credibility of their own climate commitments.

Within the context of transition plans, companies should disclose and be assessed on their position regarding key climate policies (such as carbon pricing), on their governance regarding lobbying activities, and their membership in industry associations and their respective positions. For example, Section 3.3 from the TPT Disclosure Framework or Section C12.3 in CDP's climate change questionnaire provides specific guidelines to report on these issues. The Global Standard on Responsible Climate Lobbying ('the Global Standard'), was launched in 2022 by a group of investors including AP7, BNP Paribas Asset Management and the Church of England Pensions Board. **It sets out 14 indicators to clarify exactly what investors expect from companies regarding disclosure, governance and oversight processes to ensure company alignment between climate policy engagement and the 1.5°C goal of the Paris Agreement. While this standard outlines the disclosure expected from companies, engagement with climate policy is hard to assess given the lack of information and constant evolution of lobbying activities.** InfluenceMap specializes in the assessment of these activities, using the Global Standard on Responsible Climate Lobbying.

Engagement with the supply chain

Engaging with the supply chain is a relevant decarbonisation lever and therefore it is part of most disclosure frameworks. However, this practice may be less material for the oil and gas industry, especially for upstream actors as they are further from end consumers, meaning

that action is desirable but not a key determinant of the credibility of a net zero claim. As a result, assessment methodologies usually account less for these criteria, with ACT weighting both engagements with suppliers and engagement with clients at 0% for upstream actors. Similarly, IIGCC Net Zero Standard does not address the issue.

6. Climate transition plan scoring

So far, this paper has discussed separately the key elements that determine the credibility of a transition plan. Next, we discuss the overall assessment of transition plans. We focus on the frameworks developed by ACT, CA100+, Moody's, and Sustainable Fitch discussing their relative strengths and weaknesses. A description of each assessment framework is available in the appendices.

Feasibility of assessment. Conducting a detailed transition plan assessment can be time-consuming and complex. For example, ACT's methodology involves 31 mainly quantitative indicators providing a comprehensive and detailed assessment, but is nevertheless complex. In contrast, a traffic light system comprising of yes/no questions makes the assessment slightly easier but can result in a less precise and granular assessment, and limits comparisons between companies due to a lack of quantitative indicators. Considering fewer criteria can make an assessment more straightforward. For instance Sustainable Fitch's framework focuses on emissions reductions targets, past emissions reductions, and financial actions (Sustainable Fitch, 2023), yet such an approach risks missing out on other important elements of a transition plan such as governance or policy engagement. Therefore, there is a trade-off between the precision of the assessment and its feasibility, with each methodology potentially more suitable depending on the end use of the assessment. For instance, ACT might be more relevant for a company to assess its transition plan or for a financial institution to conduct a deep dive on a specific company for engagement purposes, while the CA100+ could be useful to investors who want to screen companies based on specific criteria. An alternative would be to focus on information-rich quantitative metrics but to limit these in number to those that are most important, such as those identified in this discussion paper.

Practicability and transparency of overall scoring. There are different types of scoring. ACT, Moody's and Sustainable Fitch offer one consolidated metric which describes the credibility of a transition plan and the likelihood of a company meeting its climate ambition. Having one standardized granular indicator is useful as it allows one to compare and rank companies within a sector. However, even if the most important elements have high weights, a weighted indicator can mask serious issues.

For example, if curbing fossil fuel expansion accounts for 15% of an overall score, an oil and gas company could appear to have a credible transition plan overall if it performs well in other areas. In contrast, CA100+ does not provide an aggregate score for measuring the strength of an overall transition plan. Each indicator can result in either a “Yes” (usually showing alignment), a “No”, or a “Partial”. An alternative scoring approach would complement the overall score with a list of safeguards, an approach adopted by Sustainable Fitch’s transition assessment methodology for the oil and gas sector (Sustainable Fitch, 2023). Safeguards could be elements such as having an aligned net zero target, or sharp reductions in new upstream development.

7. Conclusion and recommendations for financial institutions

This discussion paper outlines the key determinants of a climate transition plan needed to infer the credibility of a net zero target. It discusses the information that should be disclosed by companies, how to assess the reported information, and how it impacts the credibility of a company’s transition plan. In this section, we summarize the key determinants of the credibility of a net zero claim and discuss how financial institutions can make use of them to align financial flows with their own net zero commitments.

Main determinants of the credibility of a transition plan

Assessing to what extent a company’s net zero claim is credible requires assessment across the elements listed in Table 3.

Table 3. Key elements of a climate transition plan for an oil and gas company

Category	Determinant of credibility	Examples of external assessment	Importance	Rationale
Net Zero Target	Clear and transparent emissions reduction target in the short, medium, and long term including scope 3 and methane emissions	SBTi ¹² , ACT, TPI, CA100+, Moody's, Sustainable Fitch	Essential	Foundation of a company's ambition
High-carbon Strategy and CAPEX	Ambition to reduce oil and gas volume in line with a credible net zero scenario, with consistent current and future CAPEX – meaning minimal new oil and gas development	ACT, TPI, CA100+, Moody's, Sustainable Fitch	Essential	Fossil fuel production is the main driver of Scope 3 emissions
Low-carbon Strategy and CAPEX	Strategy to diversify into low-carbon activities backed by credible operational targets and financial planning	ACT, TPI, CA100+, Moody's, Sustainable Fitch	Very High	Essential for the commercial feasibility of transition plans and transition of energy systems
Climate Governance	Strong climate governance with a trained board and executives whose incentives support climate goals	ACT, CA100+, Moody's	High	Key enabler of transition strategy implementation
Lobbying Activities	Aligning climate policy engagement with net zero pathways	InfluenceMap, Moody's	High	Failure to comply can negate the company's progress in other areas

Recommendations to financial institutions

¹² As of now, SBTi does not accept emissions reduction targets from oil and gas companies and the organisation is developing a framework to assess these targets. SBTi published a draft regarding target setting for oil and gas companies and the outcomes from the expert advisory group which reviewed the draft.

Coalitions of financial actors, such as the Glasgow Financial Alliance for Net Zero, are aiming to redirect financial flows to support the net zero transition. Indeed, financial institutions possess considerable leverage to incentivize and guide companies towards sustainable practices (Caldecott et al., 2022). By evaluating whether companies have a credible transition plan, financial institutions can ensure that their financing of oil and gas companies is in line with their own net zero commitments. However, financial institutions have come under increasing pressure from NGOs and climate activists regarding their continued financing of oil and gas companies, with little regard for whether companies financed are aligned with climate goals (Carbon Tracker Initiative, 2023).

To align financial flows to the oil and gas sector with net zero pathways, financial actors can condition the provision of financial services on several criteria. First, halt the direct financing of fossil fuel projects through project finance, which has been implemented by several banks and financial institutions (Fossil Banks, 2023; Reclaim Finance, 2023a; ShareAction, 2022). This is in line with 1.5°C scenarios, which show that minimal to no additional oil and gas development is needed to meet demand (IEA, 2021b, 2022b; International Institute for Sustainable Development, 2022). Second, halt corporate financing, for example, through debt or primary markets, for companies engaged in significant fossil fuel expansion. This could allow for marginal and justified exceptions as discussed in section 4. Finally, a third step is to condition financial services on companies having a credible transition plan. For instance, banks such as La Banque Postale or asset owners such as Ircantec condition financial services to the end of new oil and gas upstream and midstream projects by the end of 2023 (Reclaim Finance, 2023b). Ratings of companies' climate transition plans are used by Natixis to ponder Risk-Weighted Assets (RWA) and influence internal credit decisions. Natixis uses the ratings to monitor and reflect its own transition (KPMG, 2022).

The current reality for banks with significant exposures to oil and gas is that the majority of clients will not meet the criteria for a credible transition plan. Reducing exposure to these clients in the short term will mean revenue forgone, both from direct lending and investment banking activities. However, if banks continue to service these clients, they cannot claim that this activity is aligned with 1.5°C climate scenarios. For active asset managers, only oil and gas firms with credible transition plans should be financed through primary markets, with regard to both debt and equity. While passive investors claim that financing for all fossil fuel companies is unavoidable, due to inclusion in indices tracked, they can be selective in who they finance in primary markets, with stratified sampling providing scope to reduce carbon exposure.

For existing shareholders that are not providing capital to companies through primary markets, stewardship on the issues highlighted in Table 3 may be a relevant approach as shareholders are in a position to hold boards of directors to account for the credibility of transition plans. This includes using voting rights to elect board members with relevant experience, and crucially, filing and voting for shareholder resolutions that require companies to deliver a credible transition plan. For example, by setting net zero targets, or disclosing how their investment plans are, or are not, aligned with net zero targets. Even if resolutions do not pass, they can send a powerful message to companies and raise awareness of an issue with the media and general public. For resolutions to pass, collaborative engagement platforms such as CA100+ have a role to play. Indeed, studies have found that successful engagements on climate change issues are more likely when investors collaborate (Dimson et al., 2015; Barko et al., 2021).

However, stewardship with oil and gas companies has seen mixed results to date. In 2021, the hedge fund *Engine No. 1*, in collaboration with larger investors, successfully won a proxy battle with Exxon Mobil wherein it managed to install three climate-oriented directors on the company's board. However, in recent years Exxon has shown little sign of changing its investment activity, with only 5–7% of capital expenditures going to “low-carbon solution businesses” between 2022 and 2027 (ExxonMobil, 2022).¹³ Furthermore, after putting its climate transition plan to a shareholder vote in 2022 (with support at 89%), BP unilaterally reversed its climate ambitions with lower emission reductions targets for 2025 and 2030 in February 2023, citing energy security concerns in response to the Russo-Ukraine War (bp, 2023c). This shows the limits of shareholder power and underlines the need for continuous stewardship from financial actors to hold firms accountable on transition plans.

Decarbonising the oil and gas industry is an immense task critical to the energy transition, with success also dependent on factors outside of the direct control of the oil and gas industry and its financiers. However, having made net zero commitments, oil and gas companies should be held to account on whether their plans for delivery are credible. In this regard, financial institutions with net zero targets should ensure that the companies they finance move in lockstep.

¹³ For comparison, European O&G companies such as BP and TotalEnergies plan to allocate at least a third of capital expenditures to low-carbon profit centres over the same period (bp, 2023; TotalEnergies, 2023).



A failure to disclose and implement credible transition plans on behalf of companies and a failure to ensure they are a prerequisite for investment from financial institutions raises the risk of greenwashing and risks undermining confidence in net zero claims.

All actors should work towards a planned and immediate transition away from oil and gas to reduce the risk of a disorderly transition that would have severe impacts extending well beyond the oil and gas sector alone.

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9. Appendices

Presentation of ACT, Moody's, Sustainable Fitch and CA100+

ACT. A joint voluntary initiative of the UNFCCC secretariat Global Climate Agenda launched in 2015 by ADEME and CDP that provides sectoral methodology to assess whether companies' transition plans are credible to put them on a well below 2°C compatible pathway. It evaluates a transition plan across nine dimensions: targets, material investments, intangible investments, product performance, management, supplier engagement, client engagement, policy engagement, business model; with each dimension being the result of an assessment across sub-indicators. The end use outcome is one score which is the weighted averages of the company's performance across all sub-indicators.

Moody's. A credit rating agency developing a framework for net zero assessments. It is made up of two main components: an ambition score, which corresponds to section 2 in this paper, and an implementation score, which corresponds to sections 3 to 6 of this paper. The company receives a final rating as an integer ranging from 1 to 5 which is a combination of the ambition score – how ambitious the company is about reducing its GHG emissions – and the implementation score – how likely the company is to deliver on that ambition. The rating is sector-neutral, with some adjustments to account for scope 3 emissions for relevant sectors such as oil and gas.

Sustainable Fitch. The ESG branch of the credit rating agency Fitch that published in June 2023 a framework to assess transition plans of oil and gas companies. It focuses on three pillars: emissions ambition (equivalent to emissions reduction targets) which account for 30% of the final score; emissions reduction (equivalent to achieved emissions reductions) which accounts for 40%; and financial actions which account for 30%. The score is adjusted following different criteria and safeguards and the final output is a colour-coded spectrum (ranging from Black to Brown, Light Brown, Olive, Light Green and Green).

Climate Action 100+. A coalition of investor networks, including IIGCC which publishes a net zero company benchmark assessing several aspects of a company's transition plan. CA100+ conducts four assessments on disclosure, capital allocation alignment, climate policy engagement alignment, and climate accounting and audit hybrid. The first assessment follows a structure similar to the one developed in this paper, emissions reduction targets are covered through four sections, and the company's strategy, capital allocation, corporate governance, and climate policy engagement each have their own sections. In addition, this framework considers Just Transition, explain, TCFD disclosure, and historical emissions



reductions. This disclosure assessment is conducted by the TPI Centre and FTSE Russell. The capital allocation alignment, presented in section 4 of this paper, is assessed by the Carbon Tracker Initiative and the Climate Policy Engagement alignment, discussed in section 5 of this paper, is assessed by InfluenceMap. Finally, the climate accounting and audit hybrid assessment evaluates how climate risks are included in financial statements and it is conducted by the Carbon Tracker Initiative (CTI), the Climate Accounting and Audit Project (CAAP). For all these methodologies, each sub-indicator can result in either a “Yes” (usually showing alignment), a “No”, or a “Partial”. Similarly, each overarching indicator results in a “Yes”, “No” or “Partial” based on the answers obtained for the sub-indicator. The company does not deliver an aggregate score measuring the overall transition plan nor an aggregate score for each of the four assessments.

CA100+’s capital alignment assessment conducted by Carbon Tracker

The assessment is conducted across four indicators. The first one considers the actions of a company during the last fiscal year and analyses whether the company has sanctioned any new oil and gas projects inconsistent with B2DS. Out of the 31 companies analysed, 11 companies complied with the criterion. The second indicator considers the share of the company’s potential CAPEX for the period 2021–2030 in unsanctioned upstream oil and gas projects that are inconsistent with B2DS, the same indicator as the one used in the ACT methodology. Out of the 31 companies assessed, only 2 had no misaligned unsanctioned CAPEX, while 25 had more than 25% of their unsanctioned CAPEX inconsistent with a B2DS scenario. The third indicator analyses the company’s oil and gas prices outlook as companies forecasting high future commodity prices are more likely to proceed with projects at risk of becoming stranded assets. Out of the 31 assessed companies, only 5 met Carbon Tracker’s criteria for alignment while 14 companies did not disclose information regarding their assumption on commodity price. Finally, the last indicator considers how the decline in a company’s oil and gas production threatens its cash flow generation. Assuming a company follows the IEA’s Net Zero guidelines regarding investment in production, which according to Carbon Tracker implies no new upstream projects after 2021, the pace of the natural decline of the company’s production can be a threat to the commercial feasibility of the transition plan if other activities do not replace earnings from upstream activities. This did not represent a significant challenge for only 1 of the 31 companies assessed.

CA100+’s climate policy engagement assessment conducted by InfluenceMap

In November 2022, InfluenceMap released an assessment of 40 oil and gas companies on the CA100+ focus list and only 3 companies – BP, Shell, and Marathon, have a clear commitment to align their direct and indirect climate policy engagement with the 1.5°C goal of the Paris Agreement, and to implement governance measures to meet this expectation. Nearly half of the companies did not meet any of the disclosure criteria. Nearly 90% of CA100+ oil and gas companies are also a member of at least one industry association with climate policy engagement misaligned with the Paris Agreement. Finally, 19 out of 40 oil and gas companies in the CA100+ focus list have published a review of their climate policy engagement, but all overall performance remains poor, with companies headquartered in North America performing particularly poorly across the criteria tested.

Data used in this paper

Data used to compute Table 1

	Revenue in USDm			Reported Scope 1 & 2 emissions (mt of CO2e)			Reported Scope 3 emissions (mt of CO2e)		
	2022	2021	2020	2022	2021	2020	2022	2021	2020
Shell	386,201	272,657	183,195	58	68	71	1174	1299	1305
TotalEnergies	280,999	205,863	140,685	40	37	41	389	400	400
BP	248,891	164,195	109,078	31.9	35.6	45.5	306.7	303.6	327.6

	Calculated financial carbon intensity				Reported physical carbon intensity			
	2022	2021	2020	Change 2022/2020	2022	2021	2020	Change 2022/2020
Shell	3,190	5,014	7,511	-58%	76	77	75	1%
TotalEnergies	1,527	2,123	3,135	-51%	64	65	67	-4%
BP	1,360	2,066	3,420	-60%	77	78	77	0%

Sources: calculations of the authors based on companies' reporting (bp, 2023a, 2023b; Shell, 2023; TotalEnergies, 2023). Calculated financial carbon intensity is the ratio between Scope 1, 2 & 3 emissions in tCO₂e per million USD of revenue. Reported physical carbon intensities are the ratio between Scope 1, 2 and 3 emissions in tCO₂e per EJ of energy supplied. However, they are not comparable across companies as calculation methodologies differ. See the appendices for more information.

Data used to compute ES Figure 1 and figure 3

Evolution of oil and gas volumes across scenarios in EJ							
Scenarios	2020	2025	2030	2035	2040	2045	2050
IPCC Median	318	314	298	256	211	173	151
IEA Net Zero	312		256		130		80
BP Net Zero	315	324	313	271	219	167	126

Evolution of oil supply volumes across scenarios in EJ							
Scenarios	2020	2025	2030	2035	2040	2045	2050
IPCC Median	188	186	177	162	129	100	75
IEA Net Zero	172		143		76		40
BP Net Zero	177	184	166	134	95	62	39

Evolution of natural gas supply volumes across scenarios in EJ							
Scenarios	2020	2025	2030	2035	2040	2045	2050
Median	131	128	120	94	82	74	76
IEA Net Zero	140		113		54		40
BP Net Zero	138	140	147	137	124	105	87