



Carbon Transition Initiative – Energy Sector and Carbon Transition Investor Brief

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We are grateful to Reed Blakemore from the Atlantic Council who spoke on this topic at an EMIA webinar on May 19, 2022, and whose thoughts and ideas helped the authors work on this Industry Brief.

The Carbon Transition Initiative aims to study the impact of climate change in emerging markets and identify best practices available to the investment community to help assess and manage climate- and transition-related risks and opportunities. To achieve this objective, the initiative focuses on a series of webinars complemented by investor research briefs on macro issues and sectors that are material to carbon transition.

Executive Summary

Crude oil, coal, and natural gas still account for the majority of global energy supply. Moreover, global GHG emissions from energy have been setting record highs. The current geopolitical turbulence and declining volumes of gas supply from Russia are pushing some consumers to switch to coal, thus exacerbating the situation with CO₂ emissions. Nevertheless, climate transition is inevitable and ongoing, and all businesses will have to come up with mitigation and adaptation plans and targets.

Generally, oil & gas companies can achieve their GHG emissions reduction targets by decarbonizing their high-emissions-intensity assets, decommissioning them, or spinning them off. Asset spin-off is a controversial approach because it often results in emitting assets being passed on to new owners that are less transparent and less accountable to regulators, public capital markets, and other stakeholders.

Many of the largest global oil & gas companies, particularly those based in emerging markets, are majority-owned by the national government and thus, are considered National Oil Companies (NOCs). Given their ownership structure/control, NOCs are aligned with their respective government's energy transition goals and policies. In contrast, the private majors and independent E&P companies have more autonomy in setting GHG emission/net zero goals and long-term investment/business diversification targets. However, publicly-traded energy companies have faced increased pressure from shareholders and other stakeholders to implement ESG programs with a primary focus on the impact of their assets/operations on the environment.



Company GHG emission reduction targets are one of the first and most important things for investors to check and analyze. As of today, there is significant potential for improvement in this area at most oil & gas companies, and investors have their engagement work carved out, especially in emerging markets.

When looking at a company's net zero targets, it is essential to assess the breadth of these targets and check how management plans to achieve them. When looking at a multinational company's targets, it is important to understand what operations/segments they cover. The targets themselves should be on an absolute, not just relative basis. Investors should also ask companies to support net zero targets with concrete steps and timelines. The steps a company plans to take to reduce its carbon emissions should not be focused on spinning off assets and thus transferring their emissions to other owners, especially to private companies. Finally, investors should not forget about the S and the G in ESG during a company's carbon transition.



Introduction

The energy sector has played a key role in global warming, mainly as the supplier of fossil fuels, and it will continue to be an important element of the world's transition to a net-zero future. Yet, the specific place of this element in the grand scheme of things is far from certain as there are multiple scenarios and pathways the transformation of the global energy system may take until 2050 and beyond.

The role of the energy sector in carbon transition is a subject of ongoing debate. While many environmental organizations and investors call for its winddown and divestment from these companies' publicly traded stocks and bonds, others believe in engagement with these businesses to shift their strategies toward more sustainable sources of energy. Regardless of the outcome of this debate, the world's demand for fossil fuels is bound to remain significant for decades.

The inevitable presence and importance of the oil & gas industry in the next several decades brings with itself a number of risks. These include financial risks associated with stranded assets, energy supply instability during the carbon transition, high dependence of some countries on oil & gas revenues, and many other threats. These risks differ in magnitude for assets with various levels of emissions, as well as for private vs. state-owned enterprises. How the industry goes through the transition also depends on each company's strategy.

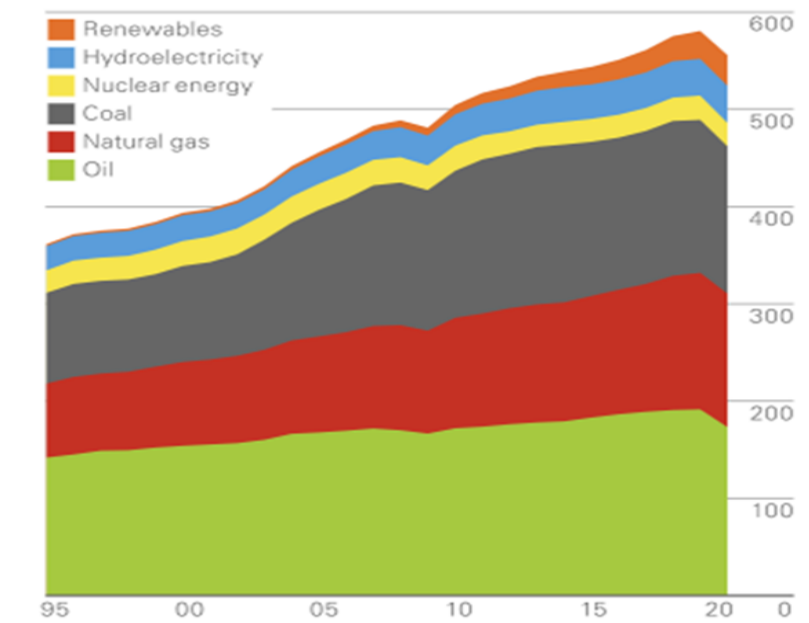
These strategies will define the role of energy companies in the carbon transition. Should the fossil fuel assets be divested and/or decommissioned as soon as possible? Should some or all oil & gas companies remain in operation, and if so, for how long? How should they allocate their investments? What should these companies' net zero targets look like? Is the current state of affairs different in emerging markets (EM) compared to developed markets (DM)? Many of these questions are still being debated. In our research brief we will try to provide information and food for thought for investors to come to some conclusions and to help them engage with the management of oil & gas companies more effectively.



Global Energy Consumption and the Resulting Emissions

Crude oil, coal, and natural gas account for the majority of global energy supply based on market shares of 31.2%, 27.2%, and 24.7%, respectively of total primary energy consumption in 2020. Although demand for clean energy sources has been increasing over recent years [hydroelectricity (6.9% market share), renewables (5.7%), and nuclear (4.3%)], fossil fuels remain the primary energy source worldwide.¹

Fig. 1. Primary energy – world consumption (EJ)



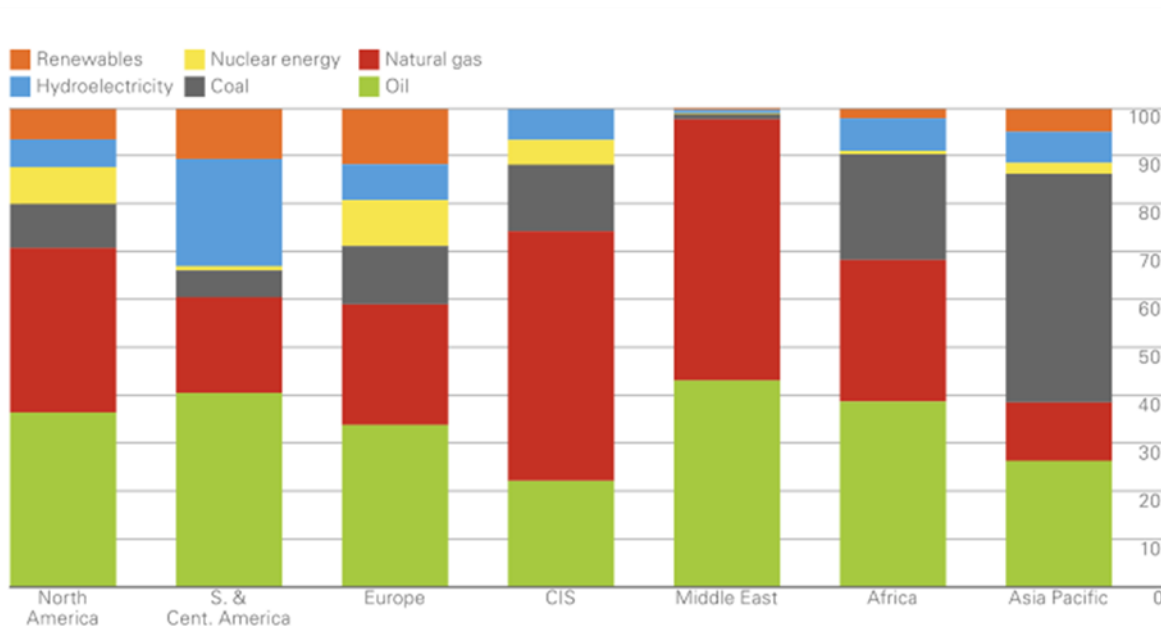
Source: BP Statistical Review of World Energy

The dependence on fossil fuels holds true on a regional basis with some variations in energy mix. As noted in the latest BP Statistical Review of World Energy, oil commands the highest market share in Africa, Europe, and the Americas. Natural gas dominates in the Commonwealth of Independent States (CIS) and the Middle East, and coal is the primary fuel in the Asia Pacific region.

¹ [BP Statistical Review of World Energy](#)



Fig. 2. Regional consumption pattern 2020 (%)



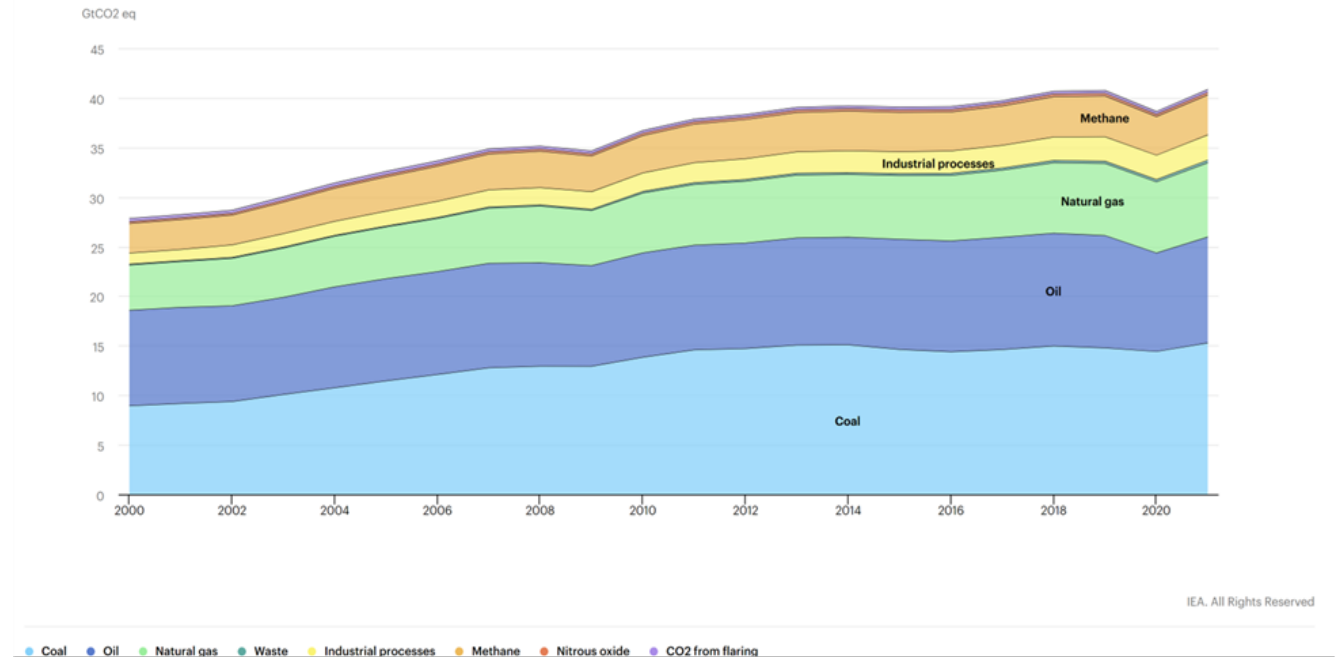
Source: BP Statistical Review of World Energy

Global GHG emissions from energy have been setting record highs. Energy accounts for approximately three-quarters of total greenhouse gas (GHG) emissions globally, according to the International Energy Agency (IEA). The primary drivers of GHG emissions from fuel combustion include population growth, GDP, and energy supply sources. Based on the agency’s analysis, overall global GHG emissions from energy rose to their highest ever level in 2021 to 40.8Gt of CO₂ equivalent (CO_{2eq}), as the world’s economy rebounded from the COVID-19 crisis and usage of coal increased.² The current geopolitical turbulence and declining volumes of gas supply from Russia are pushing some consumers to switch to coal, thus exacerbating the situation with CO₂ emissions.

² [Global Energy Review: CO2 Emissions in 2021 – Analysis – IEA](#)



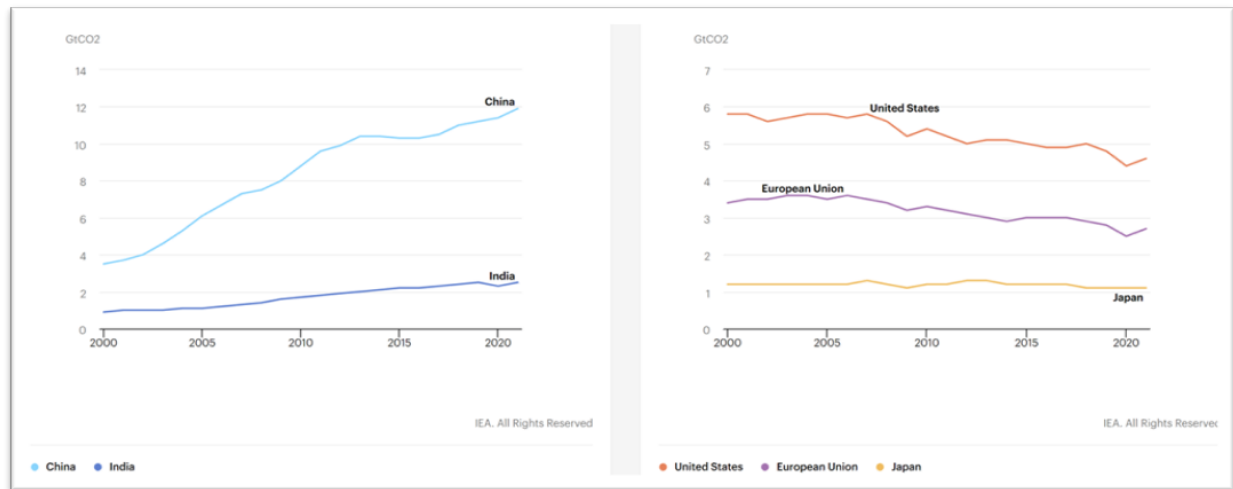
Fig. 3. Energy related greenhouse gas emissions, 2000-2021



Source: [Energy related greenhouse gas emissions, 2000-2021 – Charts – Data & Statistics - IEA](#)

Specifically, the IEA estimates that global energy-related CO₂ (a major component of overall GHG emissions) grew to a record high of 36.3 Gt in 2021. As illustrated from the charts below, the increase in global CO₂ emissions has been largely driven by China, which remains heavily dependent on coal as a fuel source and has experienced outsized economic growth over the past 20 years.

Fig. 4. CO₂ emissions in selected emerging and advanced economies, 2000-2021



Source: [Global Energy Review: CO2 Emissions in 2021 – Analysis - IEA](#)

Oil and Gas – Energy Sector Policies/Regulations in EM

OECD recognizes that for an inclusive energy transition, a well-designed policy framework is required to ensure that national plans and strategies – those that are outlined in the Nationally Determined Contributions (NDCs) – promote full decarbonization and support the scaling of renewable energy, digitalized power grids and electrification of end uses, energy security and access to clean and affordable energy and carbon schemes.

Such policy networks are, inevitably, localized, and in this brief we can only point the reader toward sources of information that can be used for further research. Thus, open-source databases offer insights into policies, regulations, and frameworks introduced or modified by sovereign governments to enable low-carbon energy transition. First, the NDC registry maintained by United Nations Climate Change provides insights into how sovereign governments are thinking about climate change. Second, the International Energy Agency maintains a database that compiles policies, regulations, framework legislations, strategic plans, codes, and standards that cut across various sectors relevant for energy transition. These include: buildings, power generation, electricity and heat generation, transport, industry, and others. Third, investors can leverage the World Bank's RISE 2020 tool, which charts global progress of energy policies. It allows users to compare national policy frameworks for sustainable energy and identify investment opportunities. The Appendix to this paper provides links to the aforementioned sources.



One of the policy challenges governments face is to ensure that energy transition is fair. The S in ESG, or social factor deserves significant attention from both governments and investors for two reasons. First, to ensure that vulnerable communities are included in the conversation and can continue to access new renewable sources of energy in an affordable way. And second, to ensure that oil & gas industry employees are skilled and have access to programs and services that develop their knowledge base and support decarbonization.

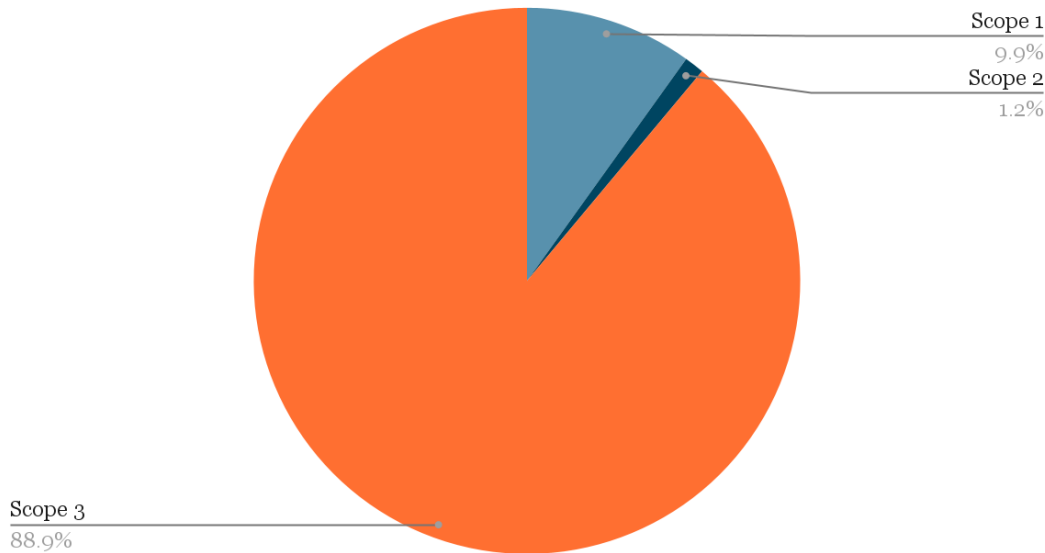
Another challenge is for public budgets to find new sources of revenue that would replace various fossil fuel-based taxes and excises. According to OECD, in most of the Organization of Petroleum Exporting Countries (OPEC) and fossil-resource rich regions, two-thirds of government revenues come from the extraction of oil, natural gas, and coal. Even in the case of oil & gas importers, sales of gasoline and other products to end users typically include hefty taxes. As carbon transition progresses, these sources of public revenues will be drying out and will have to be replaced.

Net Zero Targets

Climate transition is inevitable and ongoing, and all businesses will have to come up with mitigation and adaptation plans and targets. The energy sector's place in this process is particularly important; however, its role is also very complicated. Scope 3 emissions by far exceed Scopes 1 and 2 for these companies, which makes setting and achieving net-zero targets challenging. The fact that humankind will still need oil and gas for the coming decades adds another level of complexity.



Fig. 5. Oil & gas companies' GHG emissions



Source: [CDP Technical Note: Relevance of Scope 3 Categories by Sector](#)

It is no surprise then that the Science Based Targets initiative (SBTi) has recently recalled its guidance for the oil & gas sector. While the SBTi is working out the concept and details of its new approach, no new commitments by fossil fuel extraction and production companies will be validated. In the meantime, a panel of experts is working on this project with the first review and output expected by September 2022.

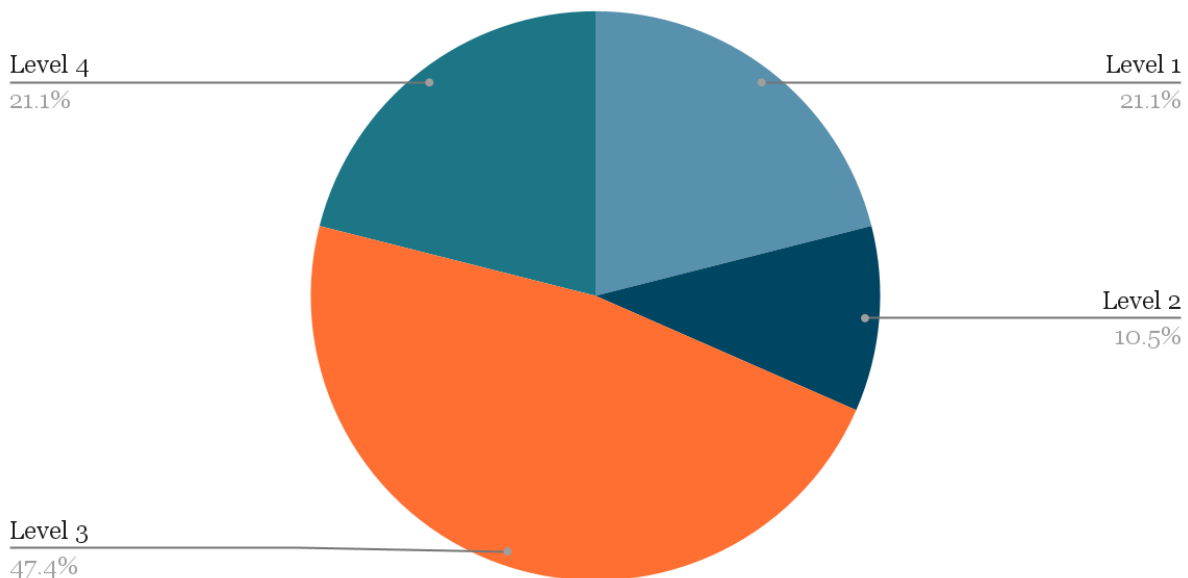
The Transition Pathway Initiative (TPI) works with oil & gas companies to assess their GHG emissions reduction targets to see whether they are in line with national Paris Agreement pledges, 1.5 degrees or below 2.0 degrees scenarios. Scope 1, 2, and 3 emissions intensity per megajoule of energy sold is measured. In addition to carbon performance, TPI assesses the quality of companies' management of GHG emissions and risks and opportunities related to carbon transition. The results of their assessment are available via a free [tool](#) hosted by the London School of Economics, with an [interactive section](#) specifically dedicated to the oil & gas sector.

The following chart, based on the data from this interactive section, shows the distribution of the 19 EM companies currently assessed by TPI by their GHG management quality. Most of the companies belong to Level 3 (Integrating into operational decision making), with 2 Level 2



companies building capacity and 4 companies being at Level 1 (Awareness). Only 4 companies belong to the highest Level 4 (Strategic assessment). For comparison, there are no Level 1 DM companies, many more of which are already at the level of strategic assessment.

Fig. 6. EM Oil & Gas Companies by GHG Management Quality



Source: [Management Quality: Oil & Gas. Transition Pathway Initiative.](#)

As for TPI's assessment of oil & gas companies' GHG emissions reduction targets, very few of the 58 companies have set them in alignment with the Paris Agreement. Narrowing the list down to EM producers, only one, Ecopetrol, has a 2050 target that is in line with Colombia's national pledge. Clearly, there is plenty of work for investors who want to advocate for proper target setting by their investee companies.

Generally, oil & gas companies can achieve their GHG emissions reduction targets by decarbonizing their high-emissions-intensity assets, decommissioning them or spinning them off. According to Atlantic Council's Reed Blakemore, the following decarbonization approaches are available.



1. Efficiency improvements – while maintaining business as usual, new technologies and processes are utilized to reduce emissions.
2. Flaring elimination – venting and flaring of methane are avoided.
3. Renewables – new sources of energy to be used for internal operations.
4. Fuel switch – currently used fossil fuels are substituted by lower or zero-carbon alternatives.
5. Hydrogen – utilization of “green” or “blue” hydrogen.
6. CCUS – Carbon Capture, Utilization or Storage technologies used to cut the ultimate carbon emissions.
7. Carbon offsets – investments in reduction of emissions outside of the production process (the use of offsets in net-zero targeting is criticized by most initiatives such as TPI or SBTi).

Asset spin-off is a controversial approach because it often results in emitting assets being passed on to new owners that are less transparent and less accountable to regulators, public capital markets, and other stakeholders.

Major EM Companies and Their Targets

Emerging markets are key contributors to the global exploration and production of energy. Specifically, half of the world’s 20 largest oil and gas companies are in emerging markets, with Saudi Arabian Oil Company (Saudi Aramco) in first place based on Forbes Global 2000 ranking and market value of \$2,292 billion, which was published as of May 12, 2022.³ Emerging countries with sizable oil & gas companies include Brazil (Petroleo Brasileiro S.A. aka Petrobras), China (PetroChina, China Petroleum & Chemical Corporation, and CNOOC), India (Reliance Industries and Oil & Natural Gas Corporation), Mexico (Pemex), Russia (Gazprom, Lukoil, Rosneft) and Saudi Arabia (Saudi Aramco).

Table 1. Global 2000: The World's Largest Oil & Gas Companies in Emerging Markets 2022

Forbes Global 2000 Ranking	Company	Country	Sales (\$B)	Market Value (\$B)

³ [Global 2000: Big Profits For Big Oil, As Russian Sanctions Combine With Pent-Up Demand](#)



1	3	Saudi Arabian Oil Company (Saudi Aramco)	Saudi Arabia	\$400	\$2,292
2	21	PetroChina	China	\$380	\$142
3	45	China Petroleum & Chemical Corporation	China	\$385	\$80
4	49	Gazprom	Russia	\$117	\$64
5	54	Reliance Industries	India	\$87	\$229
6	65	Petroleo Brasileiro	Brazil	\$84	\$84
7	81	Rosneft	Russia	\$111	\$49
8	134	CNOOC	Hong Kong	\$38	\$63
9	167	Lukoil	Russia	\$125	\$32
10	229	Oil & Natural Gas Corporation	India	\$66	\$29

Source: [Global 2000: Big Profits For Big Oil, As Russian Sanctions Combine With Pent-Up Demand](#)

Interestingly, most of the aforementioned companies are majority-owned by the national government and thus, are considered National Oil Companies (NOCs). Given their ownership structure/control, NOCs are, in general, aligned with their respective government's energy transition goals and policies. In contrast, the private majors and independent E&P companies have more autonomy in setting GHG emission/net zero goals and long-term investment/business diversification targets. However, publicly-traded energy companies have faced increased pressure from shareholders and other stakeholders to implement ESG programs with a primary focus on the impact of their assets/operations on the environment. For example, private equity firm



Kimmeridge Energy published a whitepaper⁴ that outlined ESG-related principles that E&P companies should adhere to:

Governance: Align interests between shareholders, boards, and investors. Tie compensation to absolute performance. Lower cash compensation, limit board terms, and require board compensation in stock to be held until exit.

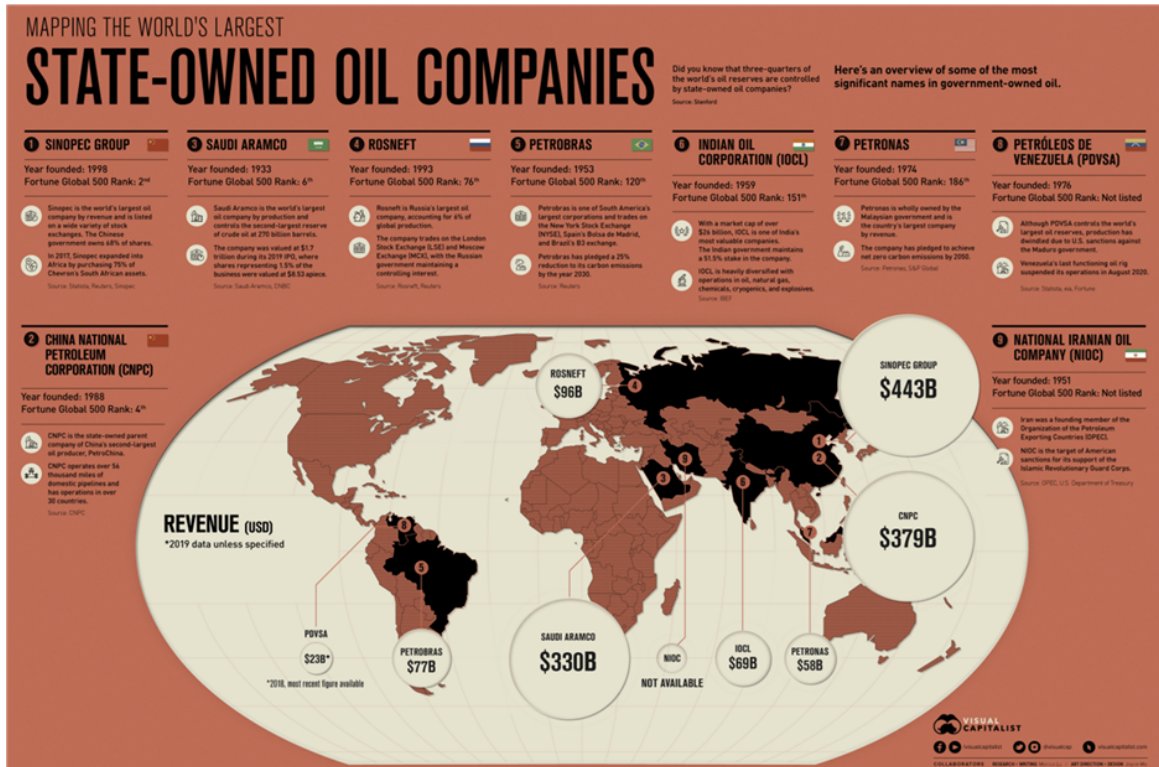
Environmental: Target zero flaring of gas, which is both environmentally irresponsible and uneconomic. Target 100% recycled water for fracking. Plan to achieve net zero emissions.

Social: Position companies for the future energy transition that is upon us. This should include an honest assessment of whether declining the asset base and returning cash is the right strategy. Play a leadership role across jurisdictions. The support and trust of communities impacted by energy development is essential.”

Below we are showing a few representative examples of EM oil & gas companies to illustrate the current state of affairs in these countries and the level of these companies’ policies and carbon transition targets.

Fig. 7. State-owned oil companies

⁴ [Preparing-the-EP-Sector-for-the-Energy-Transition](#)



Source: <https://www.visualcapitalist.com/mapped-the-worlds-largest-state-owned-oil-companies/>

Saudi Arabian Oil Company (Saudi Aramco)

Saudi Aramco is the world's largest oil producer. The company, which is headquartered in Dhahran, Saudi Arabia, is primarily state-owned. Saudi Aramco went public with an IPO in 2019, selling a nominal 1.5% interest to the public.

Given the ownership structure and strong economic ties, Saudi Aramco's sustainability goals and plans are linked to those adopted by the sovereign. In 2016, Saudi Arabia launched its Vision 2030,⁵ which includes among other goals its green initiative targets:

- Achieve 50% renewables in the nation's energy mix by 2030
- Reduce carbon emissions by 4% of global contributions
- Plant 10 billion trees across the Kingdom

⁵ [Vision 2030: A Story of Transformation](#)



- Designate 30% of Saudi Arabia to be protected land
- Reach net zero carbon emissions in the country by 2060
- Invest the first package of \$187 billion to develop a green economy

Saudi Aramco is a part of the Oil and Gas Climate Initiative (OGCI) with members accounting for almost 30% of global operated oil and gas production and investing over \$7 billion each year in low carbon solutions. OGCI’s goals include reducing upstream methane emissions intensity to well below 0.20% by 2025, bringing carbon intensity from upstream operations down to 17.0 kg CO_{2e} per barrel of oil equivalent by 2025 and bringing routine flaring to zero by 2030.⁶

Saudi Aramco is the world’s largest corporate greenhouse gas emitter, according to ClientEarth. It is estimated to be responsible for over 4% of the entire world’s GHG emissions since 1965.⁷

Table 2. World’s Largest Corporate Greenhouse Gas Emitters

Entity	MtCO _{2e}	% of global
1. Saudi Aramco, Saudi Arabia	59,262	4.38%
2. Chevron, USA	43,345	3.20%
3. Gazprom, Russia	43,230	3.19%
4. ExxonMobil, USA	41,904	3.09%
5. National Iranian Oil Co.	35,658	2.63%
6. BP, UK	34,015	2.51%
7. Royal Dutch Shell, The Netherlands	31,948	2.36%
8. Coal India, India	23,124	1.71%
9. Pemex, Mexico	22,645	1.67%
10. Petroleos de Venezuela (PDVSA)	15,745	1.16%
11. PetroChina / China Natl Petroleum	15,632	1.15%
12. Peabody Energy, USA	15,385	1.14%
13. ConocoPhillips, USA	15,229	1.12%
14. Abu Dhabi, United Arab Emirates	13,840	1.01%
15. Kuwait Petroleum Corp., Kuwait	13,479	1.00%
16. Iraq National Oil Co., Iraq	12,596	0.93%
17. Total SA, France	12,352	0.91%
18. Sonatrach, Algeria	12,302	0.91%
19. BHP Billiton, Australia	9,802	0.72%
20. Petrobras, Brazil	8,676	0.64%
Top Twenty	480,168	35.45%
Global	1,354,388	100.00%

Source: <https://climateaccountability.org/pdf/TopTwenty%20Rank%201965-2017.png>

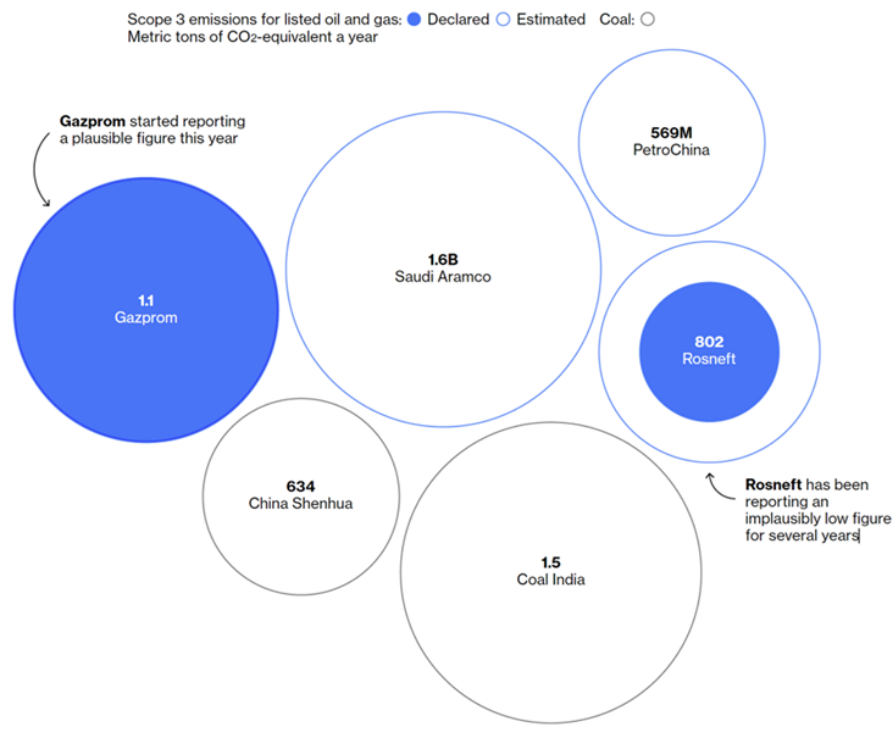
⁶ [OGCI's Strategy](#)

⁷ [The Greenwashing Files - Aramco | ClientEarth](#)



ClientEarth noted that Aramco’s oil and gas reserves would last until 2077 at 2020 production rates. The company has no plans to materially change its business strategy/existing asset mix and will keep investing in building crude production capacity. Last year, Saudi Aramco announced its goal to achieve net-zero for Scope 1 and Scope 2 greenhouse gas emissions across its wholly-owned operations by 2050. We note however that this doesn’t apply to Scope 3, which accounts for more than 80% of the company’s total emissions. Bloomberg estimates this figure at 1.6 billion metric tons of CO₂-equivalent a year.

Fig. 8. Scope 3 Emissions of Listed State-Controlled Oil & Gas Companies



Source: [Climate Change: World's Biggest Polluters Are Hiding in Plain Sight](#)

Saudi Aramco's climate plan includes: (1) investing in renewables such as blue hydrogen, (2) creating nature sinks (e.g. a million trees initiative) to absorb CO₂, (3) developing carbon capture, utilization & storage as well as emission-reducing technologies, and (4) collaborating with institutions that are working to reduce the impact of climate change.



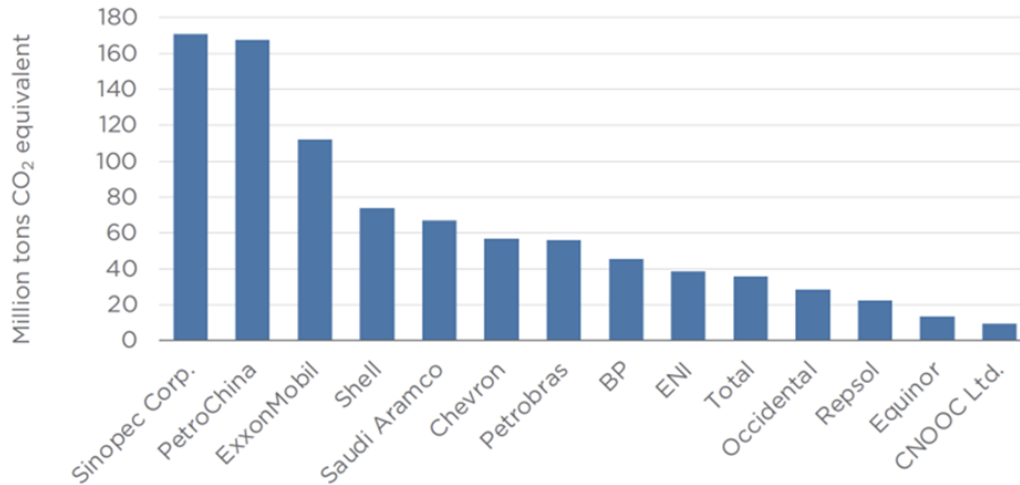
China's Top NOCs

China National Petroleum Corporation (CNPC), China Petroleum & Chemical Corporation (Sinopec), and China National Offshore Oil Corporation (CNOOC) are the largest oil and gas companies in China. In 2020, “CNPC, Sinopec, and CNOOC produced a combined 4.4 million barrels per day in liquids— to about 32 percent of China’s oil demand—and 16.1 billion cubic feet per day of gas,” according to the Center for Strategic and International Studies (CSIS).⁸ China imported approximately 73% of its oil and 43% of its natural gas in 2020.

PetroChina is the publicly-traded arm of CNPC. Sinopec, and CNOOC are majority-owned by the government of China. Given the majority state-owned interests in these companies and their significant contributions to supply China’s energy demand, we expect the NOCs’ long-term strategies to align with China’s energy transition targets. Notably, PetroChina, Sinopec, and CNOOC are some of the largest emitters of greenhouse gasses among publicly traded oil and gas companies in the world.

Fig. 9. Combined Scope 1 and Scope 2 emissions of select oil companies in 2020

⁸ <https://www.csis.org/analysis/chinese-national-oil-companies-face-energy-transition>



Note: The data in this figure is from numbers provided by the companies for their GHG emissions from operated assets except for ExxonMobil, which calculates its GHG emissions on a net equity basis, and PetroChina and CNOOC Ltd., which do not indicate whether their GHG emissions are calculated on an operational control or equity share basis. The Scope 2 numbers for Equinor and Shell used in this figure were calculated by the company using the location-based method. Emissions data for Occidental Petroleum is for 2019.

Source: [Columbia Center on Global Energy Policy](#)

In the fall of 2020, China announced its newly established goal of peak carbon emissions by 2030 and net-zero status by 2060. This compares to CNPC's more aggressive target of 2025 and 2050, respectively. Sinopec and CNOOC expect to reach peak CO₂ emissions both by 2030 and net-zero by 2050 and 2060, respectively. Please refer to the following chart for details.

Table 3. China NOCs Goals



	Emissions (2020)	Net-Zero Commitments	Low-Carbon Investments
PetroChina	<p>Total emissions 167.4 million tons CO₂e</p> <p>Scope 1 128 million tons CO₂e</p> <p>Scope 2 40 million tons CO₂e</p>	<ul style="list-style-type: none"> Peak CO₂ emissions by 2025 and achieve net-zero emissions by 2050 Cut carbon intensity of operations to 20–21 kg CO₂e per barrel of oil equivalent (boe) by 2025, down from 23 kg CO₂e in 2017 Reduce average methane emissions intensity by 50% by 2025 (over 2019 volumes) 	<ul style="list-style-type: none"> Developing CCUS projects in the Xinjiang and Changqing oil fields Planning to build 50 new hydrogen refueling stations per a new hydrogen joint venture agreement
Sinopec	<p>Total emissions 170.9 million tons CO₂e</p> <p>Scope 1 129 million tons CO₂e</p> <p>Scope 2 42 million tons CO₂e</p>	<ul style="list-style-type: none"> Peak CO₂ emissions by 2030 Achieve net-zero emissions by 2050 	<ul style="list-style-type: none"> Built two CCUS projects at the Jiangsu field and developing a new CCUS project at Shandong Annual hydrogen production capacity of 3.5 million tons/year Plans to build 1,000 new hydrogen refueling stations as well as a new green hydrogen project in 2022
CNOOC	<p>Total emissions 9.3 million tons CO₂e</p> <p>Scope 1 9.1 million tons CO₂e</p> <p>Scope 2 0.2 million tons CO₂e</p> <p>Emissions intensity 18.19 kg CO₂ per boe</p>	<ul style="list-style-type: none"> Peak CO₂ emissions by 2030 Achieve net-zero emissions by 2060 Reduce CO₂ emissions by 12.6 million tons by 2023 (a cut of approximately 7.3% from a 2018 baseline) 	<ul style="list-style-type: none"> Holds equity stakes in two offshore wind projects: 47% stake in the Jiangsu project and 80% stake in the Zhongpeng 1 project Exploring the potential for offshore hydrogen projects using electrolysis

Note: PetroChina is the listed subsidiary of its parent company CNPC.
Source: Author's analysis based on company annual reports and media reports.

As noted by The Center on Global Energy Policy at Columbia University SIPA, the NOCs' energy transition strategies primarily entail:⁹

- (1) Diversify into renewable energy. This includes offshore wind by CNOOC and hydrogen projects by Sinopec.
- (2) Shift focus from the development/production of oil and coal to natural gas, which should generate less GHG emissions.
- (3) Improve energy efficiency and reduce air pollution
- (4) Invest in new technologies such as carbon capture, utilization and storage.

Oil and Natural Gas Corporation (ONGC – India)

The Indian-state owned ONGC is the largest upstream company in the country, accounting for approximately 70% of India's domestic production. ONGC produced 19.45 million tonnes of crude oil in the fiscal FY22, which was 13.82% lower than the target and 3.62% less than the output in

⁹ https://www.energypolicy.columbia.edu/sites/default/files/file-uploads/ChinaNOCs_CGEP_Report_092221-2.pdf



the previous fiscal year primarily due to aging fields.¹⁰ Notably, India is heavily dependent on imports to meet its energy demand (over 80% of crude) including supplies from Russia since the invasion of Ukraine (top 2 provider in May 2022), according to BBC News.¹¹

Indian Prime Minister Modi announced a 2070 net zero target at the World Leaders Summit at COP26 in Glasgow. He also highlighted four other goals: “First – India will reach its non-fossil energy capacity of 500 GW by 2030. Second – India will meet 50% of its energy requirements from renewable energy by 2030. Third – India will reduce the total projected carbon emissions by one billion tonnes from now onwards till 2030. Fourth – By 2030, India will reduce the carbon intensity of its economy by 45%.”

Aligned with achieving India’s emission targets, ONGC has set a target of producing a minimum of 5 – 10 GW of renewable power (mainly from offshore wind projects) by 2040. ONGC has also announced a long-term \$1 billion research and development (R&D) venture fund for clean energy, artificial intelligence or reservoir/field services technology.¹² However, its focus will remain on the core exploration and production (E&P) business. ONGC plans to raise its oil and gas exploration and production (E&P) acreage by nearly fourfold by 2025 (i.e., current 127,000km to 500,000km² by 2025).¹³

Petroleo Brasileiro (Petrobras – Brazil)

In April 2021, President Bolsonaro announced Brazil’s aim to achieve net zero by 2050 (vs. 2060 previously). Last fall, Brazil increased its commitment against greenhouse gas emissions, aiming for a 50% decrease (vs. 43% previously) by 2030 as compared to 2005 levels. However, “the new 50% target, using the updated baseline, would leave Brazil’s emissions reductions at the same level adopted by former President Dilma Rousseff with the 43% goal and the prior baseline,” according to the Climate Observatory, a network of environmental nonprofit groups. The network also published a study concluding Brazil’s emissions increased 9.5% in 2020, in large part due to Amazon deforestation.¹⁴ Approximately 53% of Brazil’s energy was sourced from fossil fuels in

¹⁰ <https://www.livemint.com/industry/energy/india-ends-fy22-with-2-6-drop-in-oil-production-11650461221743.html>

¹¹ [BBC News](#)

¹² [State Owned Enterprises and the Energy Transition - Funcas](#)

¹³ [India's ONGC targets to boost exploration acreage | Argus Media](#)

¹⁴ [Brazil steps up climate emissions goal; critics unimpressed | AP News](#)



2020 (including about 35% from crude oil). Notably, hydropower is also a large contributor to the energy mix accounting for about 29%.¹⁵

Petroleo Brasileiro (Petrobras) is one of the largest producers of oil & gas in the world. The company is primarily engaged in exploration and production, refining, energy generation, and trading. Petrobras' controlling block (comprising the Federal Government, BNDES, and BNDESPar stakes) holds 36.7% of its total shares and 50.5% of its voting shares.

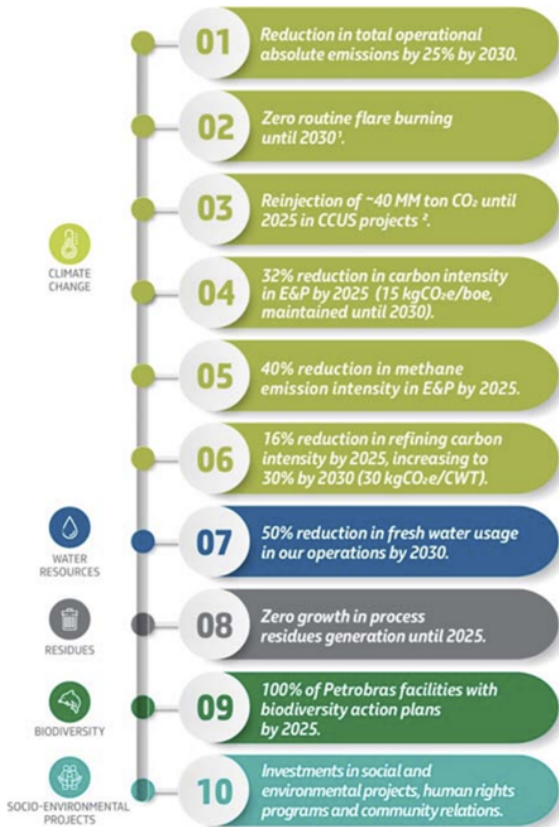
Petrobras' 2021-2025 Strategic Plan presents two top metrics related to sustainability: GHG Intensity (Intensity of Greenhouse Gases Effect emissions) and Spilled Volume (spilled volume of oil and oil products). The company's target for GHG Intensity is 17 kgCO_{2e}/boe for E&P and 40 kgCO_{2e}/CWT for refining, and its goal for spilled volume: 120 m³ alert limit.

Fig. 10. Petrobras ESG Commitments

¹⁵ [Brazil: Energy Country Profile - Our World in Data](#)



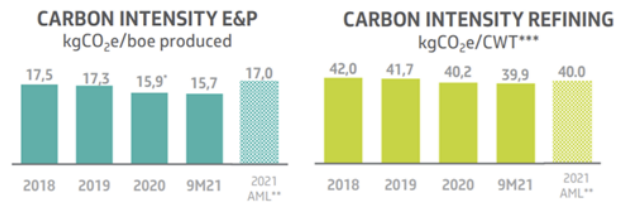
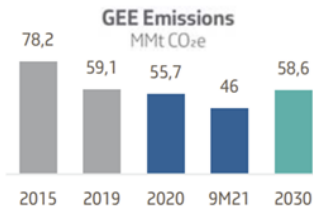
FOCUS ON ESG
OUR 10 SUSTAINABILITY COMMITMENTS



Carbon commitments related to 2015 base. Other commitments based on 2018.

¹In accordance to the zero routine flaring initiative of the World Bank
²CCUS: Carbon Capture, Utilization and Storage

MONITORING OUR SUSTAINABILITY COMMITMENTS



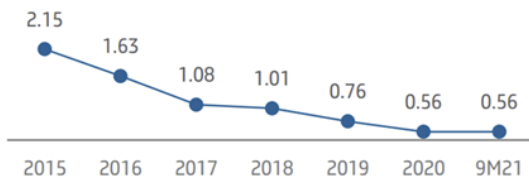
¹Value revised after certification by a third party concluded in July/21, from 15.8 KgCO₂e/boe to 15.9 KgCO₂e/boe

** AML = Acceptable Maximum Limit

***A refinery's CWT (Complexity Weighted Tonnes) considers the CO₂ emission potential, equivalent to distillation, for each process unit

MONITORING OF SAFETY METRICS
TRI - TOTAL RECORDABLE INJURIES PER MILLION MAN-HOURS

In 2020, we obtained a TRI of 0.56, a level significantly below our peer group benchmark.



Ambition of zero fatality

Source: [Petrobras October 2021 Factsheet](#)

Recommendations for Investors

We cannot stop using fossil fuels right away, no matter how much we may want to. The oil & gas industry will remain an important supplier of energy for decades to come. This inevitability assigns particular importance to the industry's transition pathway and GHG emission reduction strategies. As a result, company targets are one of the first and most important things for investors to check and analyze. As of today, there is significant potential for improvement in this area at



most oil & gas companies, and investors have their engagement work carved out, especially in Emerging Markets.

When looking at a company's net zero targets, it is essential to **assess the breadth of these targets** and check how management plans to achieve them. The vast majority of currently announced net zero targets include Scope 1 and 2 emissions. Scope 3 is the most challenging segment of GHG emissions, and for this industry it is the largest. Yet, how to tackle them is still a big question. It will be interesting to see what sector guidance SBTi will issue later this year. Their deliberations notwithstanding, Scope 3 emissions will need to be reduced, and this is a topic worth raising with companies' management teams during investor engagement.

When looking at a multinational company's targets, it is important to **understand what operations/segments they cover**. There are examples of companies that report their emissions and set emission reduction targets selectively. The best practice, on the contrary, is to cover global production on a full equity share basis. The coverage should include downstream business, too, including processing of third-party crude.

The targets themselves should be on an **absolute, not just relative basis**. Setting a goal of reducing emissions per unit of revenue and then increasing sales is unlikely to lead to net zero. Emission reduction targets for carbon intensity are not in line with the Paris Agreement and best practices.

As for the plan, investors should ask companies to **support net zero targets with concrete steps and timelines**. These timelines should include interim targets that are in line with the Paris Agreement's targets. We recommend the following resource that contains some examples of best practices in target setting: [Absolute Impact: Why Oil and Gas Companies Need Credible Plans to Meet Climate Targets - Carbon Tracker Initiative](#).

The steps a company plans to take to reduce its carbon emissions **should not be focused on spinning off assets** and thus transferring their emissions to other owners, especially to private companies. The latter are likely to be less transparent and less subject to pressure from regulators and other stakeholders. Most importantly, this does not lead to GHG emissions reduction globally, thus it does not help to slow down global warming. This problem can be mitigated by the seller adding specific climate-related requirements and targets to the sales agreement. Ideally, of course, instead of selling such assets, companies should wind them down in a transparent and responsible manner. Please refer to the following resource for more analysis of the impact of transferred emissions with a few case studies: [Transferred Emissions: How Risks in Oil and Gas M&A Could Hamper the Energy Transition](#).



Finally, investors should not forget about **the S and the G** in ESG during a company's carbon transition. Gender and racial equality, health and safety, human rights, respect of community consent, active policies against corruption and modern slavery, and many other social and governance factors should not be pushed to the backstage while discussing GHG emissions and other environmental considerations.

Conclusion

The importance of the energy sector for investors remains vital. These companies are going to continue to supply fuel for decades, and they can play an important role in the carbon transition. Some of them will transform themselves, others may have to wind down and close eventually. During this process, oil & gas companies will face physical and transition risks, for which investors will need to be prepared. They can either divest or engage with management teams to support them in setting GHG emission reduction targets. Investors can and should make sure that these targets are properly set, monitored, and achieved. We hope that this brief will provide them with some background information and practical recommendations.

Should you have any questions or comments, please do not hesitate to get in touch with Pavel Laberko, Director, Extractive Industries Program, EMIA, at plaberko@eminvestorsalliance.org.



Appendix of Initiatives, Frameworks, and Standards

Transition Pathway Initiative

The TPI is an asset-owner led initiative that assesses companies' preparedness for the transition to a low-carbon future. This assessment shows whether businesses' GHG emissions reduction targets are in line with the pathways set by the Paris Agreement. The TPI also evaluates the quality of their climate risk management strategies and policies. The website offers free access to the results of assessment of companies from energy and other sectors.

Carbon Tracker

Carbon Tracker is an independent financial think tank that carries out in-depth analysis on the impact of the energy transition on capital markets and the potential investment in high-cost, carbon-intensive fossil fuels. On its website, Carbon Tracker regularly publishes comprehensive research reports on various topics related to carbon, fossil fuels and the energy sector.

International Energy Agency

The IEA was created in 1974 in response to the oil embargo by major producers, and it now has 31 member countries and 10 association countries. The organization produces timely and in-depth research and data covering various aspects of energy transition, corresponding policies, and industry developments and trends.

Climatescope

Climatescope is a public resource intended to help developers and investors screen opportunities, policy-makers understand policy frameworks around the globe, and researchers access timely, but difficult to collect, data. The complete Climatescope survey includes data sets for all 107 emerging markets.

Nationally Determined Contributions

The United Nations Climate Change maintains a registry of Nationally Determined Contributions (NDCs) set by member states, in line with Article 4, paragraph 12 of the Paris Agreement.



[International Energy Agency Policy Database](#)

The IEA's Policies and Measures Database provides access to information on past, existing or planned government policies and measures to reduce greenhouse gas emissions, improve energy efficiency and support the development and deployment of renewables and other clean energy technologies.

[RISE 2020](#)

RISE is a tool for policymakers to compare national policy frameworks for sustainable energy and identify opportunities to attract investment. RISE assesses countries' policy support for each of the three pillars of sustainable energy – access to electricity, access to clean cooking (for 55 access-deficit countries), energy efficiency, and renewable energy. With over 30 indicators covering 138 countries and representing over 98 percent of the world population, RISE provides a reference point to help policymakers benchmark their sector policy and regulatory framework against those of regional and global peers, and a powerful tool to help develop policies and regulations that advance sustainable energy goals



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