



Facing the Future:

What National Oil Companies Say About the Energy Transition

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Key messages

- National oil companies (NOCs) should publicly acknowledge the risk of the energy transition, assess this risk, and act by implementing mitigation plans.
- Only 9 out of 21 NOCs analyzed acknowledge the risk of the energy transition, 4 have mentioned the use of transition risk assessments, and 5 have explicitly mentioned strategies to mitigate the risk.
- None of the NOCs have published “just transition plans” detailing how they will help workers and communities.
- NOCs do not plan to decrease investments in risky oil and gas assets. Petrobras (Brazil), Petronas (Malaysia) and Sonangol (Angola) are divesting from less valuable assets, but not necessarily to mitigate transition risk or downsize operations.
- Some NOCs, such as NNPC (Nigeria) and GNPC (Ghana), want to expedite drilling before oil and gas demand falls and acquire assets divested by other companies.
- At least six NOCs intend to increase oil and gas investment to secure energy supplies.
- Most NOCs intend to diversify, especially into gas, oil refineries, petrochemicals and renewable energy. However, it is unclear how much NOCs are spending on diversification or whether these are effective mitigation strategies.
- NOCs can learn from each other. Two NOCs—Ecopetrol (Colombia) and Petrobras—are clear leaders in terms of recognition of energy transition risk. However, NOCs disclosing more transition risk information are not necessarily also those reducing higher-risk investments.

NOCs' readiness to manage energy transition risk (based on public statements)



Risk acknowledgment

- Risk of the global transition
- Risk of the domestic transition

Risk assessment

- Use of risk analysis tools
- Disclosure of methodology used
- Use of price scenarios and disclosure of price assumptions

Risk mitigation

- Mention of strategy to address transition risk
- GHG reduction target
- GHG reduction target by scope
- Scope 3 target
- Just transition plan

Objectives and methodology

National oil companies (NOCs) produce half of the world's oil,¹ yet only recently have climate organizations considered NOCs a worthwhile area for advocacy.

Unfortunately, understanding of NOCs is limited and often based on generalizations.² Although the environmental rationale for NOCs to divest assets linked to fossil fuel extraction is clear, from the economic perspective of NOCs and their governments, complete divestment is not an obvious solution. Divesting allows governments to diversify economies and adapt to climate change, but if oil demand persists, NOCs' investments could earn their countries significant amounts of money.³ The concept of "energy transition risk" reflects this challenge. While this term gained prominence in the financial sector, climate organizations have adopted it to advocate for divestment from fossil fuel assets.

This analysis can help NOCs and governments understand what other NOCs are doing, and gain lessons and ideas that can be implemented in their countries. It can also help climate advocates understand NOCs' attitudes toward energy transition risk, and enable advocates and policymakers to understand how NOCs are managing this risk.

While others have published analyses of specific NOCs, a gap remains in understanding how these companies are planning for the energy transition, comparatively. One exception is the oil and gas benchmark by the World Benchmarking Alliance, but this covers only the largest NOCs.⁴ Our analysis provides a comparative account that reduces generalizations about NOCs and identifies best practices.

It has always been important for NOCs to be transparent, as stewards of billions of dollars of resource wealth that belongs to citizens. The energy transition presents a risk to this wealth, meaning NOCs should be transparent about how they are going to respond.

More organizations, such as the Extractive Industries Transparency Initiative and Publish What You Pay, are now calling for specific disclosures related to energy transition risk, to allow investors and policymakers to assess NOCs' decisions.⁵ We also call on NOCs to show they are responding and protecting public wealth; this study shows which NOCs are answering this call, and which are not.

Key concepts

Energy transition risk and opportunity

Although the energy transition presents significant environmental and economic opportunities on a global and national scale, it also brings with it important challenges, particularly for fossil-fuel companies and producing countries. Different actors, such as financial institutions, investor associations, and insurance companies, have developed terminologies and frameworks to understand and assess these opportunities and risks.

From this perspective, "climate risk" refers to the potential for significant financial losses resulting from changes in technologies, regulations and climate patterns. It encompasses both physical risk, associated with extreme weather events, and transition risk, arising from the shift toward a low-carbon economy.⁶ The notion of climate risk acknowledges that the energy transition and the climate crisis present challenges and opportunities for companies, and that only a multidimensional approach can capture the interplay of factors that can impact investments, including those made by NOCs.

In this analysis, we focus on how NOCs are preparing for the transition rather than the physical risks of climate change. Moreover, we assess how NOCs are preparing for the risks that the energy transition can create for their business, but not on how they and their countries' governments are preparing for the potential implications for national economies.

It is difficult to include country risk more explicitly in mitigation plans by NOCs and governments by using current climate risk frameworks, which focus on risks for companies and investors. These risks may not always align with risk for people; future editions of these frameworks should encompass national and people-centered impacts that extend beyond the realm of conventional financial risk assessments.⁷

Global versus domestic energy transition

In this analysis, we differentiate between the risks associated with the global energy transition—the transformation of the world's energy system, particularly in large oil- and gas-consuming markets which set global prices and to which NOCs sell their output—and the domestic energy transition within each country.

This distinction is relevant, as for many countries the global energy transition is by far the most important risk to hydrocarbon revenues. For most export-oriented NOCs, the value of the domestic market is probably not large enough to protect revenues from a fall in global oil and gas demand. In contrast, the global transition is beyond the control of both NOCs and their governments. Therefore, the global transition represents an external risk that NOCs can only mitigate through adaptation, rather than by trying to reduce its likelihood.

There are three main drivers of transition risk for NOCs:

1. decline in oil and gas demand and therefore prices (associated largely with regulatory changes in many countries to reduce emissions)
2. decreased investment by private partners operating joint projects with NOCs
3. decreased access to finance as investors direct capital away from fossil fuel assets

These drivers are related to what the Task Force in Climate-Related Disclosure (TCFD) describes as the four main aspects of transition risk: regulatory, technological, market and reputational risks.⁸



Managing energy transition risk

The central focus of our analysis is how NOCs are managing energy transition risk. We have broken this management process into three steps:



Risk acknowledgment. This refers to NOCs' perception and public recognition of transition risk.⁹ In this analysis, we distinguish between NOCs acknowledging the business risks brought by the global energy transition and the business risks brought by their countries' domestic energy transition.



Risk assessment. This involves the use of scenarios or other tools to evaluate risks, assess their likelihood and estimate their impacts. Assessment should involve both quantitative and qualitative approaches.¹⁰



Risk mitigation. Risk mitigation involves actions to reduce the likelihood of a risk occurring, or to minimize its impact. Given NOCs' limited capacity to influence the pace of the global energy transition, they should focus risk mitigation on minimizing the impacts of these changes by adapting to the new circumstances. Risk mitigation strategies for NOCs might include not only corporate strategies, such as reducing high-cost projects and improving risk monitoring and reporting, but also governmental policies, such as a requirement that NOCs return public capital to the state which may then use it to diversify the economy. In this analysis, we identify whether NOCs have a transition risk mitigation policy or intend to have one. Conversely, we do not assess whether their respective governments have mitigation policies. Do not analyze whether certain mitigation plans are suitable for each NOC, as this would require a more detailed consideration of geological, market, legal, political and other conditions.

Methodology

We examined a sample of 21 NOCs and examined their public statements to analyze whether they acknowledge the risks associated with the global energy transition, how they do so, and whether they have announced risk mitigation and energy transition strategies. Collectively these NOCs produce 16 percent of global oil.

We selected the sample based on various criteria. Initially, we included the five NOCs most relevant to our direct advocacy work (Ecopetrol, ETAP, GNPC, NNPC, and Pemex). For the remaining NOCs, we applied a combination of criteria, including similar size to the NOCs initially targeted, enough representation from various regions, and the availability of information. This meant omitting more than 40 NOCs, including globally important NOCs such as Saudi Aramco.

In addition to this advocacy criterion, we selected NOCs based on their size and the availability of information.

We only studied public documents, and did not conduct interviews with NOC executives. Sources included company annual reports, press releases, websites, government documents and news articles. Relying on public documents is a limitation given the nature of NOCs, few of which are legally required to publish information on their strategies. However, given that NOCs are stewards of large portions of their countries' wealth—both subsoil oil and gas, and the billions of dollars that these companies typically manage—all of which is at risk from a fast energy transition, NOCs' plans regarding the transition should be public and available for scrutiny.

Table 1. NOCs analyzed¹¹

Region	Country	NOC	Production (barrel of oil equivalent/day)	% of global oil production	Type	Publicly listed	Poverty line (% living on less than \$5.50/day)
Asia-Pacific	China	China National Offshore Corporation (CNOOC)	Above 500,000	1.5%	Internationalized operator	Yes	14% (2019)
	China	China National Petroleum Corporation (CNPC)	Above 500,000	0.4%	Internationalized operator	No	14% (2019)
	Indonesia	Pertamina	Above 500,000	0.6%	Large domestic producer	No	53% (2019)
	Malaysia	Petronas	Above 500,000	0.6%	Internationalized operator	Yes	1% (2018)
	Thailand	PTT	100,000-500,000	0.2%	Internationalized operator	No	6% (2018)
Eurasia	Kazakhstan	KazMunayGaz (KMG)	Above 500,000	0.5%	Large domestic producer	No	4% (2018)
Latin America	Colombia	Ecopetrol	Above 500,000	0.6%	Large domestic producer	Yes	29% (2019)
	Venezuela	Petróleos de Venezuela (PDVSA)	Above 500,000	0.8%	Large domestic producer	No	-
	Mexico	Petróleos Mexicanos (Pemex)	Above 500,000	2.0%	Large domestic producer	No	23% (2018)
	Brazil	Petróleo Brasileiro (Petrobras)	Above 500,000	2.1%	Internationalized operator	Yes	20% (2018)
	Argentina	Yacimientos Petrolíferos Fiscales (YPF)	Above 500,000	0.3%	Large domestic producer	Yes	14% (2019)
Middle East and North Africa	United Arab Emirates	Abu Dhabi National Oil Company (ADNOC)	Above 500,000	2.4%	Large domestic producer	No	-
	Tunisia	Entreprise Tunisienne d'Activités Pétrolières (ETAP)	0 - 100,000	0.0%	Small domestic producer	No	16% (2015)
	Libya	Libyan National Oil Corporation (LNOC)	Above 500,000	0.7%	Large domestic producer	No	-
	Qatar	QatarEnergy	Above 500,000	1.3%	Large domestic producer	No	-
	Algeria	Sonatrach	Above 500,000	1.2%	Large domestic producer	No	21% (2011)
Sub-Saharan Africa	Ghana	Ghana National Petroleum Corporation (GNPC)	0 - 100,000	0.0%	Small domestic producer	No	50% (2016)
	Nigeria	Nigerian National Petroleum Corporation (NNPC)	Above 500,000	0.6%	Large domestic producer	No	92% (2018)
	Kenya	National Oil Corporation of Kenya (NOCK)	0	0.0%	Pre-production NOC	No	84% (2015)
	South Africa	PetroSA	0 - 100,000	0.0%	Small domestic producer	No	58% (2014)
	Angola	Sonangol	Above 500,000	0.3%	Large domestic producer	No	89% (2018)



Risk acknowledgement

Only nine of the 21 NOCs publicly acknowledge transition risk: CNOOC, Ecopetrol, Pemex, Petrobras, Pertamina, Petronas, PTT, Sonangol and YPF.

Only five recognize the risk associated with a decline in domestic demand for oil. This includes some Latin American NOCs, but not PDVSA. Sonangol is the only analyzed NOC outside of Latin America that recognizes the risk of the domestic transition.

The most common way in which NOCs acknowledge the risk is by stating an expected decline in demand, and naming specific policies that they anticipate will shrink the global oil market. For example, YPF and Ecopetrol describe global and domestic policies that could threaten their business in upcoming years. CNOOC and PTT mention these types of policies as general drivers of risk.

Ecopetrol's case is particularly insightful. In its 2022 integrated management report, the NOC discloses a detailed analysis of hundreds of risks, including physical and transition risks. The report identifies six transition risks, related to the market, technology, reputation and regulation.¹² Similarly, in its latest TCFD report, PTT presents a detailed analysis of climate-related risks, including transition risk, covering four parts of its business: upstream, downstream, electricity infrastructure and natural gas. The report analyzes each of these in four areas of risk: policy and legal, market, technology and reputation.¹³

Despite seeing the global transition as a risk, the analyzed Asian NOCs—Pertamina, Petronas, PTT and CNOOC—do not publicly acknowledge the domestic energy transition as a risk, perhaps due to the rapid growth in energy demand in their countries.

NNPC and GNPC have not acknowledged the global transition in official publications, but company officials have been quoted in the media. For example, Adokiye Tombomiyeye, an executive director at NNPC, stated that “the energy transition will continue to impact the ability of Nigeria and oil and gas companies to attract capital, as banks and investors prioritize environmental, social and governance factors and are moving away from funding hydrocarbon projects.”¹⁴

In Ghana, the CEO of GNPC has expressed a “fear” of lack of development of some of the NOC oil blocks by private partners intending to divest from the country.¹⁵ In both cases, the NOCs emphasize only two of the three key changes behind transition risk: the retreat of private partners and the decline in investors' interest. They do not address the decline in demand and prices.



In their words: NOC statements acknowledging energy transition risk



“With the coming into force of the Paris Agreement and the continuing growth of the public’s awareness of climate change problems, the carbon emission policies of different countries have been enacted one after another. China has also put forward the time goal of ‘Carbon peak and Carbon neutrality’. The goal of ‘Carbon peak and Carbon neutrality’ proposed by various countries will greatly accelerate the process of energy transition, posing challenges to the oil and gas industry.”¹⁶



“Transition risks pose an additional challenge for the Company, and its financial valuation, to determine the impact on the business strategy and to establish a resilience plan to be sustainable over time.”

Ecopetrol specifies different types of transition risk, including regulatory, legal, market, reputational and technological, as well as the risk of stranded assets.

In relation to market risk, it states that *“The energy transition is driving the market towards a long-term preference for low-carbon products, which may imply a risk for the Ecopetrol Group of not meeting market demand and not moving rapidly towards the development of these products.”¹⁷*

“Our business depends substantially on international prices for crude oil and refined products. The prices for these products are volatile; a sharp decrease could adversely affect our business prospects and results of operations. (...) Prices of crude oil, natural gas and refined products have traditionally fluctuated as a result of a variety of factors including, among others, competition within the international oil and natural gas industry, [and] long-term changes in the demand for crude oil, natural gas and refined products, notably associated with the transition to a low-carbon economy.”¹⁸

“[T]he impact on income arising from a changing demand for hydrocarbons”, “the impact on costs due to changes in carbon prices” and “the financial repercussions deriving from higher abatement costs due to limitations on the use of compensations.”

Ecopetrol also identifies *“Impact of Climate-related Risks on the Organisation’s Business, Strategy, and Financial Planning.”¹⁹*


In their words: NOC statements acknowledging energy transition risk (continued)


"For oil and gas companies the acceleration of the energy transition away from consumption of fossil fuels tends to diminish the size of the international market for such products. As part of global energy transition efforts promoting sustainable human activity, the financial sector increasingly considers the impact of companies' operations on the environment and has incorporated criteria to measure their culture of sustainability."²⁰

Pemex describes the "[a]cceleration of the energy transition that reduces the size of the market for Pemex crude and products" as one of the risks it faces.²¹



The company's foresees *"the persistence and importance of oil and gas in the global energy matrix, even though their demand and relative share may decrease in an environment of accelerated energy transition. It is our priority to operate at low costs and with superior performance in carbon, safeguarding the competitiveness of our oils in world markets in the context of deceleration and subsequent retraction in demand."*²²



"Along with the energy transition that is continuously sounded globally, Pertamina, which has a core business of fossil-based energy, is projected to lose around 50 percent of its revenue by 2030 if the Company does not immediately respond by developing other sources of revenue besides fossil-based energy, namely new and renewable energy."²³



"We have also witnessed a shift in customers' preferences, namely increasing demand for lower-carbon energy sources. The change in customers' preferences and the emergence of cleaner energy sources have intensified competition within the oil and gas industry, indirectly affecting Petronas' value chain."²⁴



In the 2022 TCFD report, PTT includes "transition risk" as one of the dimensions of analysis, which is described as future changes in oil and gas demand. According to the report, *"PTT has applied physical and transition climate scenario analysis to assess and understand how climate change will affect business operations over time."*²⁵ However, we were unable to find further explicit references to the risk of the energy transition in other PTT publications.



In their words: NOC statements acknowledging energy transition risk (continued)



*"It is expected that the energy transition will bring volatility in the markets, and there is great uncertainty about how the prices of key commodities traded by the Group will evolve in the transition period and in the medium and long term, considering that climate change may affect the supply and demand of energy, both locally and globally, with potential impacts on the recoverability of certain assets recognized in the consolidated balance sheet as of December 31, 2022. Thus, these risks are monitored by the Group and will be appropriately reflected in the financial statements if they occur, in order to minimize potential adverse impacts."*²⁶

*In addition, the pace and extent of the energy transition could pose a risk to the Company if our own transition towards decarbonization does not move in sync with society. If we are slower than society, our reputation may suffer and customers may prefer a different supplier, which would adversely impact demand for our products, including the market value of our unconventional acreage and associated resources we expect to develop in the future. If we move faster than society, we risk investing in technologies, markets or low-carbon products that are unsuccessful because there is limited demand for them. Our failure to time the transition of our production to address climate-change related concerns could have a material adverse effect on our earnings, cash flows and financial condition."*²⁷

In its 2021 Sustainability Report, YPF mentions "transition risk" as part of the action lines in its roadmap for climate change.²⁸



"Climate change challenges, as well as the transition to a lower carbon economy will have an impact on YPF's business and may involve risks related to changes in public policies, laws and regulations, markets, physical impact on properties, operations and technologies... New regulations or requirements could impact YPF's business, whether in a direct way through changes in taxation or other costs to operations, or indirectly, through changes in technology, access to financing or consumer behavior..."



Risk assessment

NOCs' use of risk assessment tools

Only four NOCs have mentioned the use of transition risk assessments and have made them public. Ecopetrol, Petrobras, Pertamina and PTT are the only NOCs we analyzed that have publicly acknowledged using transition risk assessment tools, although other NOCs may have assessed transition risk privately without publicly mentioning their use.

In our sample, the two Latin American NOCs and PTT are alone in having disclosed assumptions and procedures employed in their risk assessments.


In their words: NOC descriptions of the use of risk assessment tools



*"Since 2018, Ecopetrol has been conducting energy transition scenario analysis as part of its strategic process. This exercise allows us to define actions to manage the opportunities and risks that the transition to a low-carbon economy entails and adapt the business strategy to ensure long-term value creation. The Company considered two (2) scenarios and two (2) sensitivities for its energy transition analysis for both global and local perspectives."*²⁹

"To properly adapt the Ecopetrol Group's business strategy to the transition to a low-carbon economy and ensure long-term value creation, we have been conducting energy transition scenario analyses since 2018.

*These analyses are being updated and refined, reflecting changes that we anticipate for the years to come and that are aligned with the IEA's latest scenarios. We have assumed a peak oil scenario (globally in the late 2020s and in Colombia between the 2030s and 2040s), to reflect ambitious actions and goals in the decarbonization path and to seize the opportunities of the transition. Additionally, in 2022, we evaluated transition risks associated with market risks (crude oil and natural gas demand) and regulatory risks (related to carbon pricing and offsetting) under three IEA World Energy Outlook 2022 scenarios: (i) Net Zero Emissions (NZE), (ii) Announced Pledges Scenario (APS), and (iii) Stated Policies Scenario (STEPS), to analyze the resilience of our long-term strategy."*³⁰ These scenarios are described in more detail in the 2020 TCFD report. However, this description does not include explicit oil price estimations.³¹


In their words: NOC descriptions of the use of risk assessment tools (continued)


“Our projects are evaluated assuming a long-term Brent crude oil price of US\$55 per barrel. To achieve the resilience of our portfolio, all projects must also be profitable in our resilience scenario, which provides an accelerated energy transition with a significant reduction in the price of fossil fuels, assuming a value of crude oil of US\$35 per barrel in the long term. These are stringent assumptions for the price of oil, aligned with the scenarios compatible with the goals of the Paris Agreement.”³²

“Our investment strategy incorporates the assessment of transition risks. The impacts of carbon taxation on the Net Present Value (NPV) are part of the sensitivity analysis of the evaluation process of new investments, requiring that all have a positive NPV in all corporate scenarios. In addition to the deterministic analysis of NPV in the various strategic scenarios and the sensitivity analyses of carbon taxation, stochastic risk analyses are carried out considering other uncertainties that may impact the profitability of investment projects, such as oil prices, gas prices, derivatives prices, exchange rates, investment cost, operating costs, implementation schedule, production curve and demand for products.”³³



According to the company's Sustainability Report 2022, Pertamina conducted an assessment of “risk and opportunities related to climate change” as part of a broader risk management exercise. This included physical climate risk, increasing greenhouse gas (GHG) emissions and the risks of not meeting the company's energy transition strategy, among other factors.³⁴ The observation in Pertamina's 2022 annual report that with the global energy transition the company “is projected to lose around 50% of its revenue by 2030” also suggests the use of these assessments. However, none of these documents provides details on how the Pertamina conducted the assessments and on what assumptions they were based.

In their words: NOC descriptions of the use of risk assessment tools (continued)



PTT has conducted a “transition risk assessment” based on two climate scenarios and different carbon prices and demand projections for oil and gas. These are used to assess four scopes of businesses: upstream exploration and production; downstream oil retail; refining; and petrochemical, infrastructure (power) and natural gas. According to its 2022 TCFD report, “PTT assesses climate change risks using two climate scenarios: PTT’s Clean Scenario supported by IEA stated policies scenarios (STEPS) and Clear Scenario supported by IEA Announced Pledged Scenario (APS).”

However, the report does not mention the price assumption. Some of the results of PTT’s analysis shows that: “Upstream business is expected to encounter the highest risk in transition from mandatory carbon pricing, low-carbon transport, and stranded assets. Oil and gas demand are expected to peak soon and would rather stagnate for gas or start dropping for oil at the global level.”³⁵

NOC references to environmental social and governance (ESG) standards

Twelve of the NOCs we analyzed reference ESG standards as relevant for their business plans. These include not only the NOCs that are publicly listed (Ecopetrol, CNOOC, Petrobras, Petronas, PTT and YPF), but also five non-listed NOCs (ADNOC, KMG, Pemex Pertamina, QatarEnergy, NNPC).

This is noteworthy as NOC analysts often assume that only listed NOCs strive to meet ESG standards, due to pressure from shareholders. In the case of the highly indebted Pemex, ambitions to meet ESG standards may be related to international bondholders’ increasing interest in them.³⁶

Risk mitigation

NOC strategies to mitigate transition risk

Five of the NOCs we analyzed have explicitly mentioned transition risk strategies. Three NOCs in Latin America (Ecopetrol, Petrobras and YPF), one in Asia (PTT) and one in Sub-Saharan Africa (Sonangol) have publicly stated they have strategies related to the energy transition and the need to mitigate associated risks. However, their levels of detail and justification vary, with Petrobras at one extreme presenting an explicit price benchmark for assessing its investments, and Sonangol at the other mentioning the presence of an energy transition plan and diversification efforts to mitigate risk, but no use of tools to reduce high-risk assets.

NNPC has not made any public statement about how it will address the risk of a global decline in oil demand and prices.

However, some of its publications mention an “energy transition plan” focused on “renewables, carbon neutral fuels and gases and energy efficiency.”³⁷ Some NNPC representatives have also communicated via the media that the company wants to reverse the production decline in Nigeria driven by international oil companies (IOCs) leaving the country and the natural depletion of some fields.

YPF and Sonangol mention energy transition strategies, but they do not explicitly state whether they have conducted assessments to identify and evaluate the risks associated with the energy transition. It therefore remains unclear whether they are specifically incorporating transition risk into their strategies, including, for example, future oil price estimations that are in line with plausible energy transition scenarios.³⁸

In their words: NOC descriptions of transition risk plans



“To date, the company has estimated the financial impact and the estimated capital expenditure or costs to implement risk mitigation measures for two prioritised significant physical and transition risks.”³⁹ These transition risks, however, refer to Colombia’s commitments on reducing GHG emissions and the potential impacts these could have on the NOC.

The company’s TCFD report also describes a mitigation plan *“to reduce the exposure levels”* to climate change in general, which includes actions such as *“portfolio updating and strategy, preparation and implementation of portfolio analysis, monitoring of the implementation of projects and initiatives to reduce emissions, implementation of actions to support the fulfilment of the GHG emissions reduction goal, plan to ensure the quality of fuels, structuring and approval of the integrated gas strategy, definition and implementation of the operating model for gas issues, evaluation*

In their words: NOC descriptions of transition risk plans (continued)

of marketer, market monitoring, consolidation and automation of the import price projection model, review of the plastic resin marketing model, and sketch of possible archetypes.”⁴⁰

“While we have begun to implement a mitigation plan in respect of assets with a high risk of becoming stranded, such as prioritizing short cycle projects, starting projects earlier, making current production cleaner and more efficient, and divesting less strategic assets, we can offer no assurance that certain of our assets will not become stranded in the medium to long term.”⁴¹ The company also mentions that *“To manage and mitigate the risks related to the transition to a low-carbon economy and climate change, Ecopetrol, as part of its long-term strategy, “Energy that Transforms”, and in line with its technology, environmental, social, and governance (TESG) agenda, expects to invest approximately 2.3 trillion Colombian pesos in 2023 [USD 560 billion, 1.6 percent of annual revenue⁴⁰] in projects for comprehensive water management, decarbonization, fuel quality, among others. Additionally, we have set a shadow price on carbon at 20 USD/TCO₂ in 2022, 30 USD/TCO₂ from 2025, and 40 USD/TCO₂ from 2030 onwards, which will be used to assess and evaluate current and future projects and investments. (...) Our climate risk strategy is also being aligned with the recommendations of the TCFD and includes the addition of a new climate-related risk to our 2022 enterprise risks, in respect of inadequate management of climate change and water.”⁴³*



“Petrobras has a history of managing and quantifying climate-change related risks. Our risk management process is integrated, which allows for the standardization of the analysis and the effective management of all identified risks. The set of climate change and energy transition-related risks was assessed with a very high degree of severity, being monitored by senior management. Regarding the theme, Transition Risks and Physical Risks of Climate Change were identified, and are monitored and reviewed annually: Market Risk, Technological Risk, Regulatory Risk, Legal and Reputational Risk, and Physical Risks, such as water scarcity for onshore assets and meteoceanographic changes for offshore assets.”⁴⁴

“Our priority is to operate at low cost and superior emissions performance, safeguarding our competitiveness in world markets in the context of deceleration and subsequent retraction in demand, low oil prices and carbon prices. Our projects are evaluated assuming a long-term Brent crude oil price of US\$55 per barrel. To achieve the resilience of our portfolio, all projects must also be profitable in our resilience scenario, which provides an accelerated energy transition with a significant reduction in the price of fossil fuels, assuming a value of crude oil of US\$35 per barrel in the long term. These are stringent assumptions for the price of oil, aligned with the scenarios compatible with the goals of the Paris Agreement.”⁴⁵


In their words: NOC descriptions of transition risk plans (continued)


“The climate-related scenario analysis enables the identification of potential risks and opportunities in the business model. PTT incorporates these results as a part of developing the outlook for the energy transition during the environmental scanning process of strategy and business planning. Annual planning involves the executives from the Group level and business groups throughout the Top Executive Thinking Session and the Strategic Thinking Session. The strategy is then presented and approved by the Board. To drive the plan for the decarbonization strategy to meet the goal of the Paris Agreement, PTT will regularly review the impacts based on the changing situations and adjust the plans, as well as the budget planning and performance metrics accordingly.”⁴⁶



“In addition to exploration and production activities, we are making significant progress in the realization of key infrastructure projects, including those related to increasing refining capacity, storage, gas monetization, as well as a strong focus on implementing projects for electricity production through renewable sources, green hydrogen production, among others.

These initiatives are supported by our energy transition strategy, with a total financial effort exceeding that of 2021 by approximately 46 percent.”⁴⁷ This report also states that “Sonangol has adopted diversification of its portfolio as the Energy Transition Strategy, based on investment and increased exploration and production of hydrocarbons to finance this process, with gas serving as a transitional energy source towards renewables.”⁴⁸



“While oil and gas will continue to form the core of our portfolio for the next years, we are committed to strengthening energy efficiency, low-carbon operations and developing more sustainable energy alternatives, in order to ensure a competitive and resilient business model in the energy transition. These lines of actions include the promotion of natural gas production and renewable energy, through YPF EE, as cleaner alternatives to oil, not only for the domestic market, but also for the export market, subject to market conditions. YPF’s energy transition strategy has three main pillars combined with different weighting factors, based on expected timeframes that contribute in a specific and collective way to the transition of YPF to a comprehensive energy company, as well as the energy transition of the country and the region: (i) high-value and low-carbon oil and gas operations, (ii) competitive growth of electric and renewable energies, and (iii) country leader in

In their words: NOC descriptions of transition risk plans (continued)

R&D for new energy solutions and compensation initiatives ... The main initiatives are focused on reducing operational oil and gas emissions while working on and exploring new low-carbon businesses, offset initiatives and operation adaptation programs to future scenarios and potential risks. Since 2019, we have included environmental criteria in the analysis of projects subject to review by the Critical Investments Committee, including carbon emissions. To that end, we determined a price of US\$50 per ton of CO2 equivalent, a shadow price that is updated based on reviews of carbon pricing trends and industry best practices.” (...)“

*Efficiency in costs and processes in all business segments, and particularly in the Vaca Muerta formation, with the aim of ensuring resilience even in low-price scenarios.*⁴⁹

*“The definition of YPF’s strategy is aligned with our goal to be Argentina’s leading integrated energy company, low in costs and low in carbon, with a focus on oil and gas production, the marketing of hydrocarbons and derivative products, and incremental and profitable efforts in the identification and execution of projects which allow us to move forward in energy transitions, such as the case of electric power generation and renewables.”*⁵⁰

NOCs’ just transition plans

We found that none of the 21 NOCs we analyzed have just transition plans for workers and local communities,⁴⁹ similar to WBA’s finding that showed only one NOC out of the 40 surveyed had even a partial just transition plan in place. This is an important gap, as other oil companies, including IOCs Shell, BP and ExxonMobil and the NOC Equinor, are developing just transition plans—although WBA describes Equinor’s plan as vague.⁵²

Only CNOOC, Ecopetrol, Petronas, PTT and KMG have stated plans to train workers in connection with the energy transition.

For example, Ecopetrol states that more than 2,000 staff (out of a total of 18,900) have been trained in “energy transition” topics such as decarbonization, energy efficiency, the circular economy and renewable energies.⁵³

YPF’s “Sustainability Report 2021” shows that through its YPF Foundation, the company has offered technical/professional training on energy transition-related issues in “priority” local communities.⁵⁴

NOC plans that affect their transition risk exposure

While only five NOCs have referenced strategies explicitly related to energy transition, NOCs' business plans will affect their exposure to energy transition risk. We have organized these plans into six groups. The NOC statements suggest that none are considering a shift away from oil and gas. Conversely, 18 NOCs intend to intensify oil and gas exploration and production. (See Table 2.)

Upstream oil and gas sector

Rather than pivoting away from oil to gas, most NOCs intend to increase gas investment in addition to oil investment. Nineteen of the analyzed NOCs emphasize gas investments, but we could not find evidence suggesting they plan to replace oil with gas investments. Rather, gas would be in addition to oil investments.⁵⁵ LNOC is the only NOC that has publicized its intentions to develop gas reserves, but has not published an explicit plan to increase oil exploration and production. In an official statement in 2023, LNOC announced a new partnership with Italy's Eni to develop two blocks with estimated natural gas reserves of 6 trillion cubic feet—the first agreement of its kind in Libya for at least 25 years.⁵⁶ Due to the opacity of their plans and their complex financial situations it is unclear whether LNOC, PDVSA and NOCK have plans to intensify upstream investments.

The energy transition as a risk for energy supply is a common concern, used by some NOCs to justify further upstream oil and gas investments. For example, reacting to IOCs' announced divestment from Nigeria, the CEO of NNPC said that Nigeria's increasing population and need to lift citizens from poverty "will no doubt continue to push our nation's energy demand faster than what renewable energy technologies are likely to offer in the near future...

We are therefore leveraging the provisions of the Petroleum Industry Act to attract more investment in the Nigerian petroleum sector, to continue to guarantee access to energy while aligning with global energy transition."⁵⁷

Similarly, the CEO of GNPC expressed the need to develop local technical capacities to promote the growth of the petroleum sector, ensuring domestic supply when IOCs leave: "With a growing population, rapid urbanization and increasing incomes, it is anticipated that the pace of domestic energy supply (which dominantly would be fossil fuels in our lifetime) will struggle to keep up with demand if the right local-content policies are not put in place."⁵⁸

ADNOC goes further, justifying continued investment to ensure global energy security. ADNOC managing director Sultan Al Jaber argued that "divesting from the energy sources that drive the global economy will lead to a systemic supply crunch that erodes economic growth. Put simply, we cannot and we must not unplug the current energy system, before we have built the new one."⁵⁹ During the announcement in 2022 of a plan to expand extraction capacity, he justified this approach as a way of addressing the following problem: "The world needs maximum energy, minimum emissions and it needs all the energy solutions if we are to ensure global energy security."⁶⁰

Many of the analyzed NOCs aim to augment oil refining. Sixteen NOCs have announced plans to invest in refineries, justifying this strategy by the need to enhance energy security. This approach holds particular significance in countries with large domestic demand for fuels, such as Algeria, Angola, Indonesia, Mexico and Nigeria, which increasingly depend on importing refined fuels despite their own large-scale extraction of unrefined oil.

Fourteen of the analyzed NOCs plan to expand petrochemical production. In particular, ADNOC, Sonatrach and KMG emphasize petrochemicals, based on a rationale of diversifying their portfolios and contribute to their countries' economic development. KMG aims to invest in petrochemicals, hoping that the sector will be a driver of global oil demand.⁶¹

Seven of the analyzed NOCs intend to buy assets divested by other companies. Important examples in the upstream sector include QatarEnergy's plan to acquire a 17 percent stake in two of Shell's Red Sea blocks, NNPC's plan to acquire ExxonMobil assets, Petronas' acquisition of Shell's Masela block and GNPC's acquisition of Occidental Petroleum's interests in the Jubilee and TEN fields.⁶² In the downstream sector, Sonatrach's acquisition of Exxon refineries and fuel terminals in Italy⁶³ and Pemex's acquisition of Shell's Deer Park refinery in Texas. In addition to these plans emphasized in official publications, Table 6 shows other acquisitions NOCs have recently made.



Table 2. NOCs' stated business strategies, by element

NOC	Upstream intensification				Downstream development				Divestment of high-risk assets	Decarbonization		Clean energies	Unrelated diversification
	Gas	E&P	Buying divested assets	Promoting regional market	Refineries	Midstream	Retail sector	Petrochemicals		Scope 1	Scope 2		
KMG	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓	✓	
PTT	✓	✓		✓	✓	✓		✓	✓	✓	✓	✓	✓
QatarEnergy	✓	✓	✓	✓	✓	✓		✓		✓	✓	✓	
Petronas	✓	✓	✓	✓	✓			✓	✓	✓	✓	✓	
ADNOC	✓	✓			✓	✓	✓	✓		✓	✓	✓	✓
Pertamina	✓	✓	✓		✓		✓	✓		✓	✓	✓	✓
CNPC	✓	✓	✓	✓	✓	✓	✓	✓				✓	
Ecopetrol	✓	✓			✓	✓		✓		✓	✓	✓	
Sonangol	✓	✓		✓	✓	✓		✓	✓			✓	
NNPC	✓	✓	✓		✓	✓	✓	✓				✓	
YPF	✓	✓			✓	✓				✓	✓	✓	✓
Sonatrach	✓	✓	✓		✓	✓		✓				✓	✓
Petrobras	✓	✓				✓			✓	✓	✓	✓	
GNPC	✓	✓	✓		✓	✓		✓					
PetroSA	✓	✓		✓	✓			✓				✓	
CNOOC	✓	✓					✓					✓	
ETAP	✓	✓				✓						✓	
Pemex	✓	✓	✓		✓								
LNOC	✓				✓			✓				✓	
PDVSA				✓					✓				
NOCK							✓						

Table 3. NOC upstream acquisitions (2018-2022)⁶⁴

NOC	Deals value (USD, millions)	Number of deals	Main deals (USD)
Qatar Energy	\$9,991	23	Qatar Petroleum acquires offshore ISND oil field in Qatar from Oxy (\$2.4B); Qatar Petroleum to take over Qatargas Liquefied Natural Gas Company Limited (QG1) JV from partners Total and others (\$1.7B); Petronas and QatarEnergy acquire a 12.69 percent stake in the Sepia joint reservoir, from Petrobras (\$1.4B).
PTTEP	\$9,975	19	PTTEP (Thailand) acquires a 20 percent stake in Block 61 of Oman from BP (\$2.6B); PTTEP to acquire Erawan asset in Thailand from Chevron (\$2.2B); PTTEP acquires Murphy Oil's Malaysian assets (\$2.1B).
ADNOC	\$8,456	4	ADNOC acquires 13.33 percent in offshore ADMA UAE concession from Total (\$5.2B); ADNOC acquires 12 percent in offshore ADMA UAE block from Inpex (\$2.4B).
KMG	\$9,114	3	KazMunayGaz (parent) buys back shares of KazMunayGaz (listed), increasing its share to 100 percent (\$5.2B); KazMunayGaz acquires additional stake in the Kashagan project from Samruk Kazyna (\$3.8B).
Pertamina	\$7,819	26	Pertamina takes over the management of Offshore Mahakam Block in Indonesia after production sharing arrangement expired on 31 December 2017 (\$3.4B); Pertamina to acquire Rokan block in Indonesia from Chevron post-contract expiry (\$3B); Pertamina takes over working interest and operatorship of Sanga Sanga block in Indonesia after the previous contract expired (\$336M).
CNOOC	\$7,544	18	CNOOC acquires a 10 percent stake in Arctic LNG 2 project from Novatek (\$2B); CNOOC acquires additional stake in Buzios field in Brazil from Petrobras (\$2B); CNOOC acquires stake in two concessions in UAE from CNPC (\$1.5B).
Petronas	\$5,353	28	Petronas and QatarEnergy acquire a 12.69 percent stake in the Sepia joint reservoir, from Petrobras (\$1.4B); Petronas acquires a stake in Al Khazzan gas field in Oman from OOC (\$1.3B); Petronas acquires assets in Brazil from Petrobras (\$1.3B).

Table 3. NOC upstream acquisitions (2018-2022) (continued)

NOC	Deals value (USD, millions)	Number of deals	Main deals (USD)
CNPC	\$2,920	2	CNPC acquires a 10 percent interest in Arctic LNG 2 project from Novatek (\$2B); Petrobras, along with CNOOC and CNODC, acquire the Buzios field in the “surplus volume” bidding round for a signature bonus of \$17 billion (\$840M).
Petrobras	\$2,821	27	Murphy Oil acquires assets in the Gulf of Mexico from Petrobras as the companies form a joint venture (\$900M); Shell increases its stake in the Lula field, following unitization agreement (\$860M); Brazil approves unitization, resulting in a new ownership structure (\$240M).
Sonatrach	\$1,717	8	Sonatrach seizes Ain Tsila gas field asset from Sunny Hill Energy (\$1B) and from Enel divestiture from its stake in Isarene (\$370M).
Ecopetrol	\$1,443	20	Ecopetrol acquires interests in the Permian Basin from Oxy (\$750M), and Shell’s interests in a concession in Brazil (\$225M). Ecopetrol receives transfer of Repsol’s expired assets in Colombia (\$343M).
Sonangol	\$1,008	14	Sonangol acquires BP and SSI divestment from their 8 percent equity interest in block 18 of Angola (\$179M).
NNPC	\$225	6	NNPC acquires stake in OML 11 in Nigeria from Shell, Total and Eni (\$115M); NNPC acquires stakes in OML 86 and 88 in Nigeria from Chevron (\$41M).
PDVSA	\$38	5	PDVSA acquires stake in Petrocedeno oil joint venture in Venezuela as TotalEnergies and Equinor exit (\$24M).
YPF	\$12	1	YPF acquires Llançanelo in Argentina from NG energy International (\$12M).

Seven of the analyzed NOCs plan to divest from some oil and gas assets. However, only three—Petrobras, Petronas and Sonangol—describe this approach as a means to reduce high-risk assets. Petrobras' Strategic Plan 2022-2027 sets as a priority to "maximize portfolio value"⁶⁵ — divesting from its refinery assets and natural gas, and shifting its focus towards "deep and ultra-deepwater assets, in which we have been strengthening our competitive advantage over the years, resulting in the production of a better-quality oil with lower greenhouse gas

emissions."⁶⁶ Sonangol is privatizing many of its projects and has announced plans to divest 52 joint ventures.⁶⁷ However, in both cases it is unclear whether these intentions are part of the NOCs' strategies to mitigate transition risk, or just general approaches to sell less efficient assets. For Petrobras this strategy covers the period after its involvement in the high-level Lava Jato corruption scandal;⁶⁸ Sonangol's moves similarly follow the Luanda Leaks controversy in Angola.⁶⁹

Table 4. NOC upstream divestments (2018-2022)⁷⁰

NOC	Deals value (USD, millions)	Number of deals	Main deals (USD)
Petrobras	\$24,537	51	TotalEnergies acquires a 11.17 percent stake in the Atapu joint reservoir and a 16.91 percent stake in the Sepia joint reservoir, and Petronas and QatarEnergy acquire a 12.69 percent stake in the Sepia joint reservoir, from Petrobras (\$2.8B); CNOOC acquires an additional stake in Buzios field in Brazil (\$2B); PetroRio acquires the Albacora Leste oil field (\$2B).
ADNOC	\$9,650	13	OMV gains a stake in Satah Al Razboot and Umm Lulu concessions (\$1.5B); Cepsa acquires 20 percent stake in SARB ann Umm Lulu concessions in UAE from ADNOC (\$1.5B); Total receives a 20 percent participating interest in the new Umm Shaif and Nasr concession and 5 percent in the Lower Zakum concession (\$1.5B).
KMG	\$5,317	2	KazMunayGaz (parent) buys back shares of KazMunayGaz (listed), increasing its share to 100 percent (\$5.2B).
Petronas	\$5,111	17	Lukoil acquires additional interest in Shah Deniz gas project, offshore Azerbaijan, from Petronas (\$1.5B); Petros acquires 50 percent shares in Kumang Cluster PSC, Malaysia, from Petronas in 2021 (\$1.4B).

Table 4. NOC upstream divestments (2018-2022) (continued)

NOC	Deals value (USD, millions)	Number of deals	Main deals (USD)
Qatar Energy	\$4,202	4	Shell acquires 9.375 percent stake in North Field South expansion project in Qatar (\$1.6B); TotalEnergies selected as QatarEnergy's first partner in the North Field South LNG project (\$1.4B).
CNPC (parent)	\$3,840	10	NIOC (Iran) acquires assets in Iran from CNPC (\$3.4B).
Pertamina	\$649	9	Pertamina transfers 10 percent participating interest in Offshore Mahakam block in Indonesia to PT MMPKM (\$318M).
Sonangol	\$502	3	Total acquires stakes in two offshore blocks in Angola (\$500M).
Sonatrach	\$398	2	Eni acquires 49 percent interest in three blocks in Libya from Sonatrach (\$366M).
CNOOC	\$338	10	Wintershall Dea acquires stake in Hokchi Block offshore Mexico from BP, Bidas Energy, CNOOC (\$117M).
YPF	\$341	7	Shell and Equinor acquire 5.5 percent additional stake each in Bandurria Sur from YPF (\$164M per company).
Ecopetrol	\$306	15	Repsol acquires Ecopetrol's 40 percent interest in Keathley Canyon blocks 642 and 687 (\$200M).
PTTEP	\$201	3	Jadestone Energy acquires the Montara field from PTTEP (\$195M).
Pemex	\$156	5	DS Servicios acquires 55 percent stake in Ebano block in Mexico from Pemex through new PSA contract (\$56M).

Decarbonization and clean energy



Nine of the analyzed NOCs plan to reduce scope 1 and 2 emissions. Petrobras, Ecopetrol, YPF, KMG, Petronas, Pertamina, PTT, QatarEnergy and ADNOC have committed goals in scope 1 (direct emissions from sources controlled by the NOC) and scope 2 (indirect emissions by the generation and purchase of electricity and other forms of energy used by the NOC).

Only Ecopetrol has stated an intention to reduce its scope 3 emissions—those created by consumption of its products. Scope 3 accounts by far for the largest share of emissions associated with hydrocarbons. However, it is unclear how Ecopetrol plans to achieve this goal and to what degree the company will rely on carbon offsets.⁷¹ Pemex and the two Chinese NOCs, CNPC and CNOOC, have stated general GHG emissions goals without defining targets by scope.⁷²

Sonatrach is even vaguer in its commitments, mentioning intentions to reduce GHG emissions, but without establishing any target.⁷³ None of the Sub-Saharan African NOCs in the sample have stated plans to reduce GHG emissions. Most NOCs are investing or have plans to invest in renewable energy.

PDVSA, LNOC, GNPC and Pemex are the only NOCs analyzed that have not mentioned intentions or plans to invest in renewable energy. The most common model is direct ownership of renewable energy projects, outlined by 10 NOCs. Many NOCs in the Middle East and North Africa region have large-scale renewable projects, and may be following Saudi Aramco and capitalizing on the region's abundant solar irradiation. This result aligns with the IEA's World Energy Investment 2023 analysis, which shows that 50 NOCs have plans to invest and in some cases realized investments in renewable power.⁷⁴

Some NOCs in the sample describe themselves as integrated energy companies. Ecopetrol aims to become an "integrated energy group"⁷⁵ and YPF describes itself as "Argentina's leading integrated energy company."⁷⁶ The landing page for ETAP's strategic vision mentions its intention to transition from an NOC to a "national energy company" by 2030, although ETAP provides no further details.⁷⁷ In 2021, Qatar Petroleum changed its name to QatarEnergy.⁷⁸ PTT is also aiming to change the direction of its business, from oil and natural gas "to future energy business."⁷⁹

Table 5. NOC references to clean energy projects

NOC	Models			Technologies			
	Direct ownership	PPAs	Solar	Hydrogen	Wind	Storage	Transmission
ADNOC	✓	✓	✓	✓		✓	✓
Petronas	✓	✓	✓	✓	✓	✓	
YPF	✓		✓	✓	✓	✓	
Ecopetrol	✓	✓	✓	✓			✓
PTT	✓		✓	✓	✓	✓	
CNPC	✓		✓	✓	✓	✓	
CNOOC	✓	✓	✓	✓	✓		
QatarEnergy	✓		✓	✓		✓	
Pertamina	✓		✓	✓		✓	
KMG	✓			✓	✓	✓	
Sonatrach	✓		✓	✓			
NNPC	✓		✓		✓		
Sonangol	✓		✓	✓			
Petrobras	✓				✓		
ETAP	✓		✓				
NOCL	✓						
PetroSA		✓					
Pemex							
PDVSA							
NOCK							
GNPC							
Total	16	5	13	12	8	8	2



NOCs are increasingly interested in green hydrogen. Twelve of the analyzed NOCs mention projects around hydrogen. Most are primarily investing in grey hydrogen (produced using natural gas) rather than green hydrogen (produced from electrolysis powered by renewable energy).

For example, ADNOC already produces “300,000 tonnes of hydrogen per year” and is “exploring” the production of green and blue hydrogen (using carbon capture and storage).⁸⁰ The company plans to begin production in 2025 of blue ammonia in its “world-scale” production facility, with a capacity of one million tons per year. YPF is also producing grey hydrogen and plans to produce blue and green hydrogen.⁸¹

In 2022, QatarEnergy announced its plan to build a \$1 billion facility to produce blue ammonia by 2026, with the goal of exporting this as a hydrogen carrier.⁸² QatarEnergy also signed agreements with Korea’s Hydrogen Convergence Alliance (H2Korea) for cooperation in the field of hydrogen, and with Shell to work on blue and green hydrogen projects in the U.K.⁸³

Sonatrach is also planning new hydrogen projects, announcing in 2022 its intention to launch two pilot green hydrogen projects in the south of Algeria⁸⁴ and a blue hydrogen project in Italy in collaboration with Sasol.⁸⁵ Sonangol plans to produce green hydrogen by 2024,⁸⁶ while Ecopetrol started producing green hydrogen in a pilot project in March 2022 and its “low-carbon hydrogen strategic plan” includes projects worth \$2.5 billion by 2040.⁸⁷

Two NOCs are investing in the electricity transmission sector. Ecopetrol acquired a 51.4 percent stake in Interconexión Eléctrica (ISA), a Colombian conglomerate that operates in the transmission sector, through a \$3.6 billion deal with the Colombian Ministry of Finance and Public Credit.⁸⁸ ADNOC is developing a new transmission project in partnership with Abu Dhabi’s national energy company PJSC, although this is to supply electricity to its offshore oil and gas operations. ADNOC anticipates that the \$3.8 billion-project will be operational in 2025.⁸⁹

Despite their stated plans, most NOCs do not disclose the scale of their investments in renewable energy projects. Petronas, KMG and PTT are exceptions. In many other cases, NOCs disclose expenditure only for specific projects, making it unclear whether these investments are sufficient to fulfil the NOCs’ or their countries’ decarbonization and renewable energy targets. Pertamina’s sustainability program indicates that the NOC allocated 14 percent of total capital expenditure in 2022 to clean, new and renewable energy.⁹⁰

Only three of the NOCs with GHG reduction targets (Ecopetrol, Petrobras and Petronas) have indicated spending levels associated with decarbonization. Ecopetrol includes decarbonization with other sustainability investments: “The Ecopetrol Group aims to execute annual investments totaling over \$250 million in decarbonization projects, energy efficiency, fuel quality and comprehensive water management and hydrogen to strengthen the action lines associated with the energy transition.”⁹¹

This amounts to five percent of Ecopetrol’s 2022 capital expenditure.⁹² Petronas also provides an aggregate amount for “decarbonization, renewables projects and clean energy solutions.”⁹³ Petrobras is the only NOC we analyzed that provides a more detailed account of its decarbonization budget.

According to its latest strategic plan (2023-2027), the company plans to invest \$3.7 billion in decarbonizing its operations, \$0.6 billion in biorefining and \$0.1 billion in “skills for the future” such as “R&D for activities not related to the operation” and in “profitable diversification.” This amounts to \$4.4 billion (or six percent of the company’s total capital expenditure).⁹⁴

Table 6. NOC disclosure on spending on renewable energies and decarbonization

NOC	Decarbonization target	Claims to invest in renewable energies	Discloses decarbonization spending	Renewable energy: Disclosure on spending level
Petronas	Yes	Yes	Yes	Yes
Ecopetrol	Yes	Yes	Yes	No
Petrobras	Yes	Yes	Yes	No
KMG	Yes	Yes	No	Yes
PTT	Yes	Yes	No	Yes
QatarEnergy	Yes	Yes	No	No
ADNOC	Yes	Yes	No	No
YPF	Yes	Yes	No	No
Pertamina	Yes	Yes	No	No
CNPC	Yes	Yes	No	No
CNOOC	Yes	Yes	No	No
Pemex	Yes	No	No	No
Sonangol	No	Yes	No	No
Sonatrach	No	Yes	No	No
ETAP	No	Yes	No	No
NNPC	No	Yes	No	No
LNOC	No	Yes	No	No
PetroSA	No	Yes	No	No
GNPC	No	No	No	No
NOCK	No	No	No	No
PDVSA	No	No	No	No

Diversification outside of the oil and gas sector

Some analyzed NOCs intend to pursue other forms of diversification. This is evident for Sonatrach and YPF, which are expanding into new extractive sectors such as phosphate (Sonatrach)⁹⁵ and lithium (YPF and Sonatrach).⁹⁶ Sonatrach is developing lithium “prospecting projects” in partnership with Eni in the in Algeria’s Berkine North Basin.⁹⁷ Pertamina is part of the Indonesia Battery Corporation,

a joint venture with other Indonesians state companies that intends to produce battery precursors, cathodes, battery cells and battery packs.⁹⁸ In the UAE, ADNOC has stated it has plans to invest in real estate.⁹⁹ PTT is investing in the “health industry,” particularly in medications, nutrition products and medical technologies—some as an extension to the petrochemical industry.¹⁰⁰

Beyond stated intentions

We analyzed the stated intentions of 21 NOCs in relation to the energy transition and the risks to NOC business models it brings.

However, government ministries and regulators, climate advocates and observers of the energy sector should undertake further analysis to assess whether these statements represent robust plans, with assigned budgets, and whether they represent valid strategies to mitigate transition risk.

Based on their public statements, signs of risk readiness among analyzed NOCs varies significantly. While some NOCs have publicly acknowledged and assessed these risks, and formulated plans to address them—e.g., Ecopetrol, Petrobras—many others have yet to acknowledge the existence of such risks. NOCK, PetroSA, ETAP, PDVSA, ADNOC and Sonatrach are among the NOCs least apparently ready to manage energy transition risk.

NOCs' overall openness correlates with more robust approaches to energy transition risk management. NOCs' openness to influence beyond their own leaders and governments varies. Generally, NOCs in countries with stronger democracies are more responsive to social pressures than those in weaker democracies.

Similarly, international backers who increasingly require oil companies to show they are responding to energy transition risk seem to have more influence over NOCs publicly listed on international stock exchanges (CNOOC, Ecopetrol, Petrobras, Petronas and YPF) and those reliant on bond markets or foreign lenders.¹⁰¹ However, we do not know with certainty whether NOC statements describe robust actions in reality, or whether they are intended to appease certain audiences.

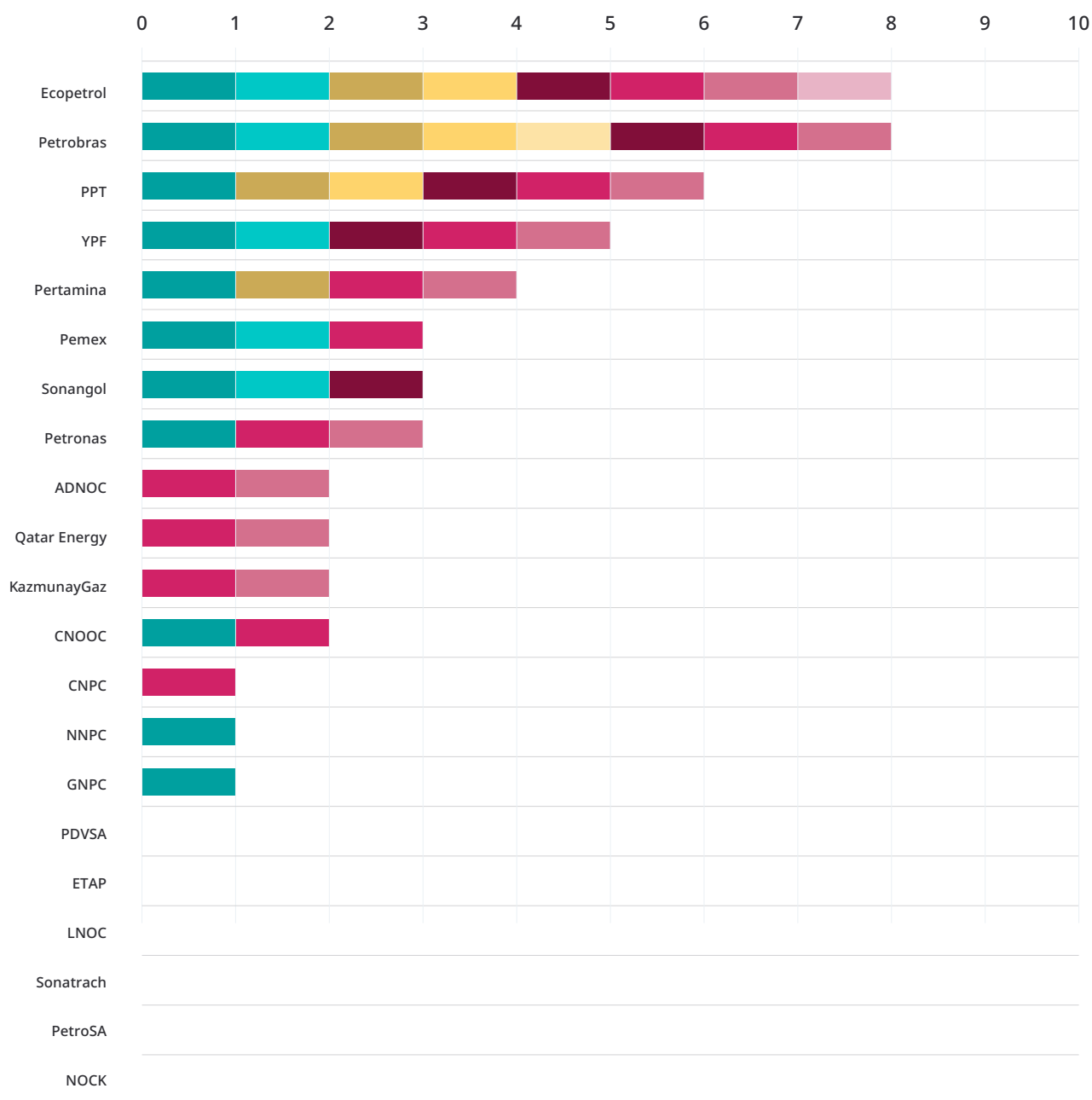
We may be discounting the quality of risk management in less transparent NOCs and overvaluing the risk management of more public NOCs.

Some climate organizations have outlined good practices in the disclosure of transition risk, to ensure companies are not just “ticking the box.” For example, Carbon Tracker argues that oil companies should align their financial statements with other reporting such as climate reports. They should also disclose the assumptions and estimates they use, and clearly show that these are aligned with achieving net-zero goals, or provide sensitivity analysis on their potential implications.¹⁰²

Risk acknowledgment is not a guarantee of effective mitigation plans. As described above, representatives of GNPC and NNPC use transition risk to justify more investment in expensive upstream assets that may not be developed soon enough to profit before a decline in prices. This demonstrates how statements acknowledging risk do not necessarily translate into less risky investment decisions. Comparing the results of this analysis with our analysis on the “risky bets” that NOCs are making amid the energy transition, we do not find that the NOCs disclosing more transition risk information are also those reducing higher-risk investments.¹⁰³

For example, Ecopetrol is among the NOCs showing more risk readiness. But over 30 percent of Ecopetrol's investment pipeline over the next decade is unlikely to break even if governments around the world meet their climate pledges (IEA's “announced pledges scenario”)—a scenario that is becoming more credible as clean energy technologies take market share from fossil fuel incumbents.

Figure 1.
NOCs' readiness to manage energy transition risk (based on public statements)¹⁰⁴



Risk acknowledgment

- Risk of the global transition
- Risk of the domestic transition

Risk assessment

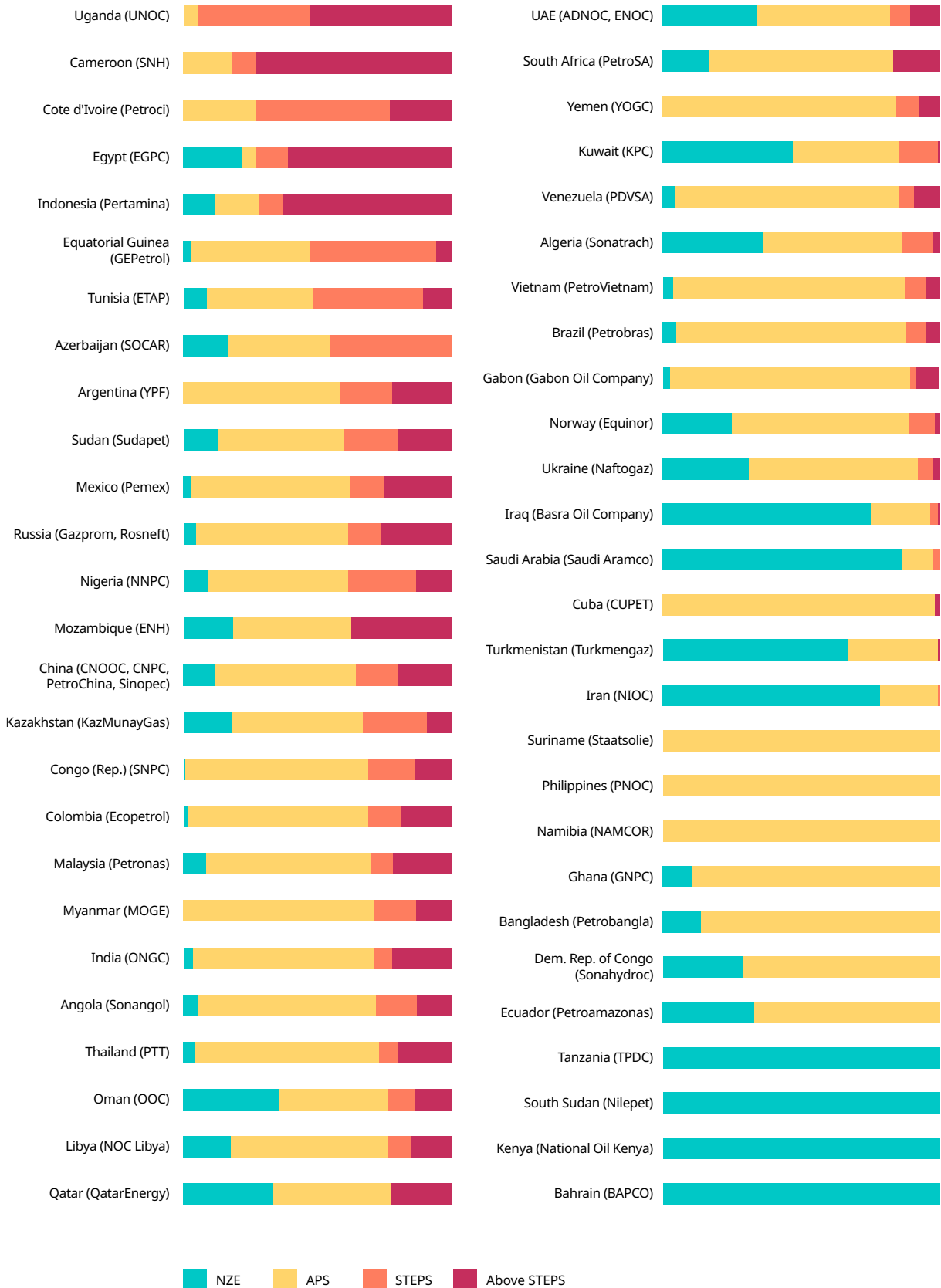
- Use of risk analysis tools
- Disclosure of methodology used
- Use of price scenarios and disclosure of price assumptions

Risk mitigation

- Mention of strategy to address transition risk
- GHG reduction target
- GHG reduction target by scope
- Scope 3 target
- Just transition plan

Figure 2.

Proportion of NOC upstream investment plans that break even under each IEA scenario¹⁰⁵



Endnotes

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- 2 Natural Resource Governance Institute, 2021, National Oil Companies and Climate Change: Insights for Advocates. Natural Resource Governance Institute, resourcegovernance.org/analysis-tools/publications/national-oil-companies-climate-change-insights-advocates.
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About NRGI

The Natural Resource Governance Institute is an independent, non-profit organization that supports informed, inclusive decision-making about natural resources and the energy transition. We partner with reformers in government and civil society to design and implement just policies based on evidence and the priorities of citizens in resource-rich developing countries. Learn more at www.resourcegovernance.org
