

TOGETHER FOR CLIMATE ACTION
ENERGY TRANSITION
CAMPAIGN FOR NET ZERO · COP26



Shaping fossil fuel extraction strategies in developing countries in a decarbonizing world



Shaping fossil fuel extraction strategies in developing countries in a decarbonizing world

Steve Pye, Nick Hughes, Baltazar Solano Rodriguez, Julia Tomei and Annalisa Marini

Overview

- Many developing countries see prospects for exploiting domestic fossil fuel resources as an integral part of their development strategy. At the same time, in order to address the climate emergency the world as a whole needs rapidly to reduce the use of fossil fuels.
- Developing countries need to balance the perceived economic opportunities of their strategy against some of the emerging risks.
- These risks include the changes in energy markets and technologies, and the priorities of the investment community, in response to the climate challenge.
- The Covid 19 pandemic, which has resulted in a downturn for oil and gas producers, provides a possible foretaste of future fossil fuel sector decline.
- There are three priorities for just, climate-compatible development: the risks of further fossil fuel investment need to be robustly assessed by countries themselves; wealthier producing countries should take the lead in a managed decline of fossil fuels; and development assistance and investment must align with broader climate objectives.

The problem: Disruptive change in the energy sector makes fossil fuel production an increasingly risky bet

A large number of lower income developing countries have either invested heavily in the oil and gas sector or are exploring opportunities to do so¹. In Africa, this includes larger existing producers such as Nigeria, Angola, Algeria, and Libya, all whom have high dependency on the revenues generated to maintain government budgets². Other newer producers, such as Tanzania and Mozambique, foresee relatively high levels of growth in production going forward, and a basis for generating much needed government revenues.

However, at the same time the international community has committed in the Paris Agreement to keep global heating well below 2°C and pursue efforts to limit it to 1.5°C. This goal will not be achieved without a substantial reduction in the rate of fossil fuel production and use, and will require most fossil fuel reserves to be left in the ground. This energy transition is already well underway³ but the implications for

fossil fuel producing countries are still widely ignored.

Both established and emerging producers are therefore faced with deep uncertainties around prospective oil and gas revenues that may not be realised in the future. This goes beyond the disruption that markets experienced due to the Covid 19 pandemic. The prospects for fossil fuels are changing rapidly, due to the strengthening of climate policies, which is changing investment priorities, and the rapid cost reductions in clean energy technologies¹.

Over the last few years, in recognition of the 1.5°C global target, many countries are in the process of strengthening climate ambition, notably through setting net-zero targets⁴. A key announcement came from China in 2020 setting a net zero target for 2060; this is critical given that it is the second largest consumer of oil and gas after the USA⁵. The US has recently announced a halving of emissions by 2030 (relative to 2005 levels), again a critical step as both the largest producer and consumer of oil and gas. This is going to severely disrupt global markets, as demand decreases in these large economies.

This move towards more ambitious climate policy has started to shift how the investment community views investments in fossil fuels. The oil and gas sector is looking like a less attractive opportunity; for example, in 2020, a number of companies reduced the reported value of their assets by more than \$50 billion⁵. Most of these write downs reflected a recognition of lower forecast prices in the longer term, driven by lower demand.

Figure 1 shows the investment profile in oil and gas supply since 2000; the growth to a high point in 2014 has been reversed, with significant decline in overall investment thereafter. The gradual recovery in investment between 2016 and 2019 has been curtailed by the Covid pandemic, which has impacted investments in this sector much more than those in clean energy⁶. Investors have become more cautious about new investment opportunities in oil and gas, looking for lower-cost opportunities in which returns will not be put at risk by future price reductions⁵.

Investment in clean energy is growing fast, and with comparatively higher returns on investment, makes it a much more attractive investment proposition⁷. Investors can also see the potential for growth in the sector; in their recent outlook, the International Renewable Energy Agency (IRENA) put the clean energy investment opportunity at a staggering \$131 trillion to 2050, or \$4.4 trillion per year⁸. Crucially, the very large cost reductions in renewable energy technologies and storage have changed the outlook over the last 5 years as to what renewable electricity generation can supply^{9,10}. For example, in Europe in 2020, more electricity came from renewable generation than from fossil fuel generating plants¹¹. This trend towards high renewable generation growth means that severe disruption to fossil fuel supply is inevitable.

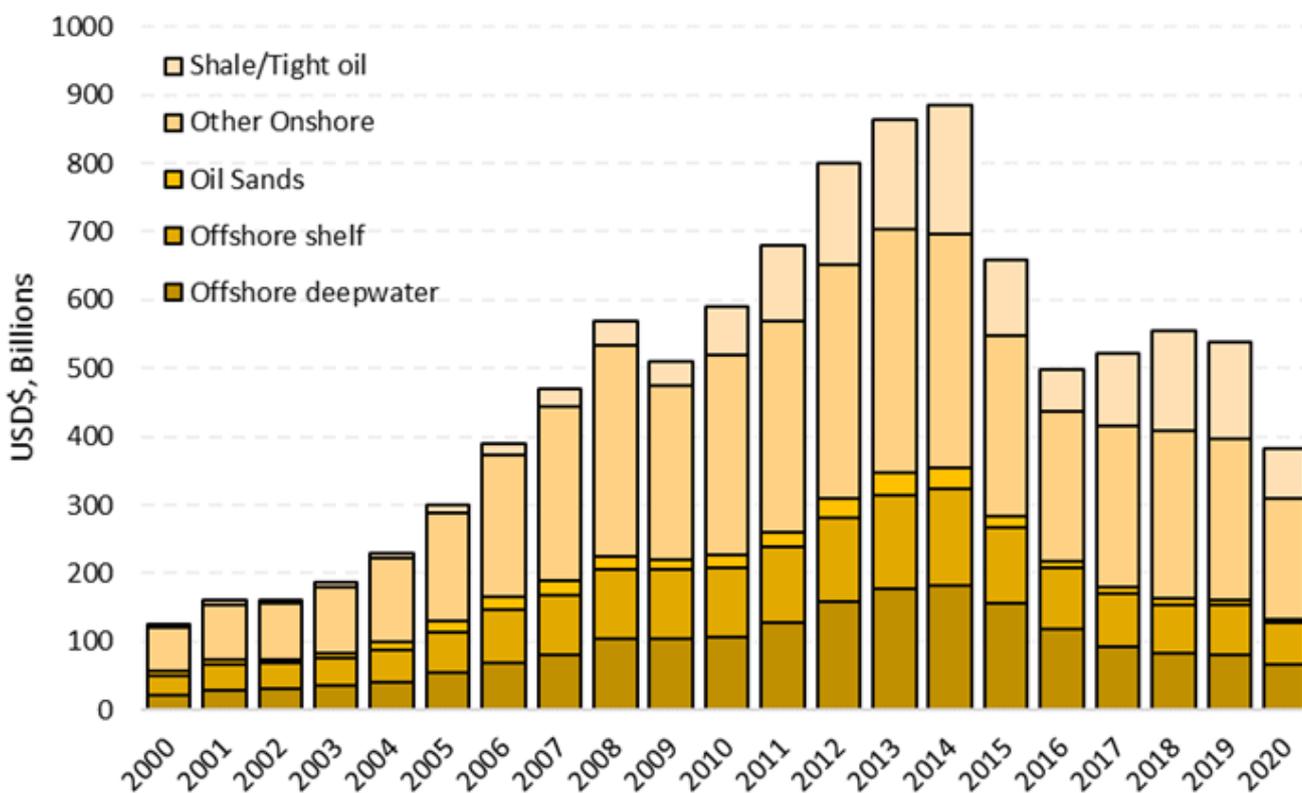


Figure 1. Investment in oil and gas supply, 2000-2020 (Source: Rystad Ucube, April 2021)

The challenge: Fossil fuel producers are yet to reflect the transition risks in their investment strategies

Production plans by fossil fuel producing countries do not yet reflect this new reality. Larger national producers continue to plan for production that is out of line with Paris goals, a disconnect highlighted by the UNEP Production Gap report¹². Oil and gas companies have yet to diversify their investment, with less than 1% of investment being outside of their core business over the last 5 years¹³. National Oil Companies (NOCs) including in many developing countries, are also investing in high-risk projects, to the tune of \$400 billion, that will not be economically viable at an oil price of less than \$40 per barrel, a price that reflects reductions in oil demand aligned with Paris-aligned climate ambition¹⁴.

There are a number of reasons as to why investment strategies have not shifted to fully reflect the emerging risks to the fossil fuel sector. Firstly, established producers are dependent on the revenues generated from oil and gas, with few obvious alternatives for raising revenues. Newer producers similarly see the use of their fossil fuel resources as a key opportunity for new revenue generation.

The massive investment in Mozambique LNG (liquid natural gas) led by Total has estimated lifetime revenues of \$35 billion to \$63.6 billion over the projects' lifetimes¹⁵, over twice to four times the size of their economy, just over \$15 billion, in 2019.

In some contexts, countries have not identified or do not recognise the level of risk inherent in their production outlooks. Many countries have based projections of future revenues on oil and gas prices that may never be realised. The estimates of revenue generation for the Mozambique LNG project are based on a \$60-80 per barrel oil price, well above a price commensurate with Paris-aligned climate targets. In a report by Chatham House involving UCL1, an analysis was undertaken of the prospects of revenue generation from oil and gas production in Ghana and Tanzania. It explored how revenues reduced in a climate-constrained world, where prices were impacted by reduced demand. Ghana's

oil revenues fell by an estimated 50% while Tanzania's natural gas revenues dropped by around 80%. Such levels were well below those forecast in national strategies.

This is a challenging dilemma for many developing countries. They understandably wish to exploit their fossil fuel resources, as most other producing countries have historically. On the other hand, evidence of current and future disruption to oil and gas prospects, and of the emerging risks, is becoming clear, raising critical questions about the benefits of such a strategy.

Solutions: Support to developing countries for managing risks and assisting a just transition

Given the emerging risks to future fossil fuel production, how can developing countries be supported in their planning strategies in assessing the risks and benefits of oil and gas investment, and enabled to make a just transition away from fossil fuel production, if that is their agreed strategy?

Robust scenario planning

A key approach is to embed scenario planning into the decision-making process that comprehensively explores risks of fossil fuel investments versus other opportunities, for example in clean energy. Countries need to explore worst-case scenarios of fossil fuel production, not just optimistic cases, to adequately assess risks. And consideration is also needed of the opportunities for clean energy investment. Such a scenario approach needs to be visible across government, to provide cross-cutting insights across ministries. This is crucial, as the focus on future fossil fuel production cuts across a range of priorities, including economic growth, energy security, environmental protection, and climate change.

Those providing investment into fossil fuel projects, whether fossil energy companies, Multilateral Development Banks (MDBs) or other governments e.g. through export finance, would

ideally be open about the underlying risks of such projects. However, this often does not happen, so countries need robust planning to explore the risks themselves.

UCL analysis conducted for the Inter-American Development Bank (IDB) adopted a scenario approach to highlight how projections of future oil revenue generation are optimistic as demand declines under climate policy¹⁶. It found that under strong climate action, 66-81% of oil reserves would remain unexploited (Figure 2 for national ranges), and that revenues from oil would only be \$1.3-2.6 trillion – substantially lower than the \$2.7-6.8 trillion of expected revenues under a high-carbon scenario in which reserves were strongly exploited. The key insight was that governments need to stress test future investments in oil production through a climate lens, and consider how to diversify away from high dependency on this sector.

Developed country leadership

A transition away from fossil fuels should require developed producing countries to move first

and faster. Focusing on the principle of common but differentiated responsibilities, such countries have benefited from historical production, and often have greater capacity to move towards a managed decline. This more just transition would demonstrate to developing countries that the international community is serious about tackling climate change, and leaving fossil fuels in the ground.

The Lofoten Declaration on the Managed Decline of Fossil Fuels¹⁷, signed by hundreds of international organisations, stated that developed countries have a responsibility and moral obligation to take the lead ‘in putting an end to fossil fuel development and to manage the decline of existing production’. Some countries have started to take the lead, albeit small producers, including Costa Rica and Denmark¹⁸. The fossil fuel non-proliferation treaty is also generating momentum towards a process where producing countries can manage a decline in production^{19,20}. The UK could take leadership in this COP26 year by announcing definitive plans not to invest further in the North Sea or other onshore oil and gas possibilities.

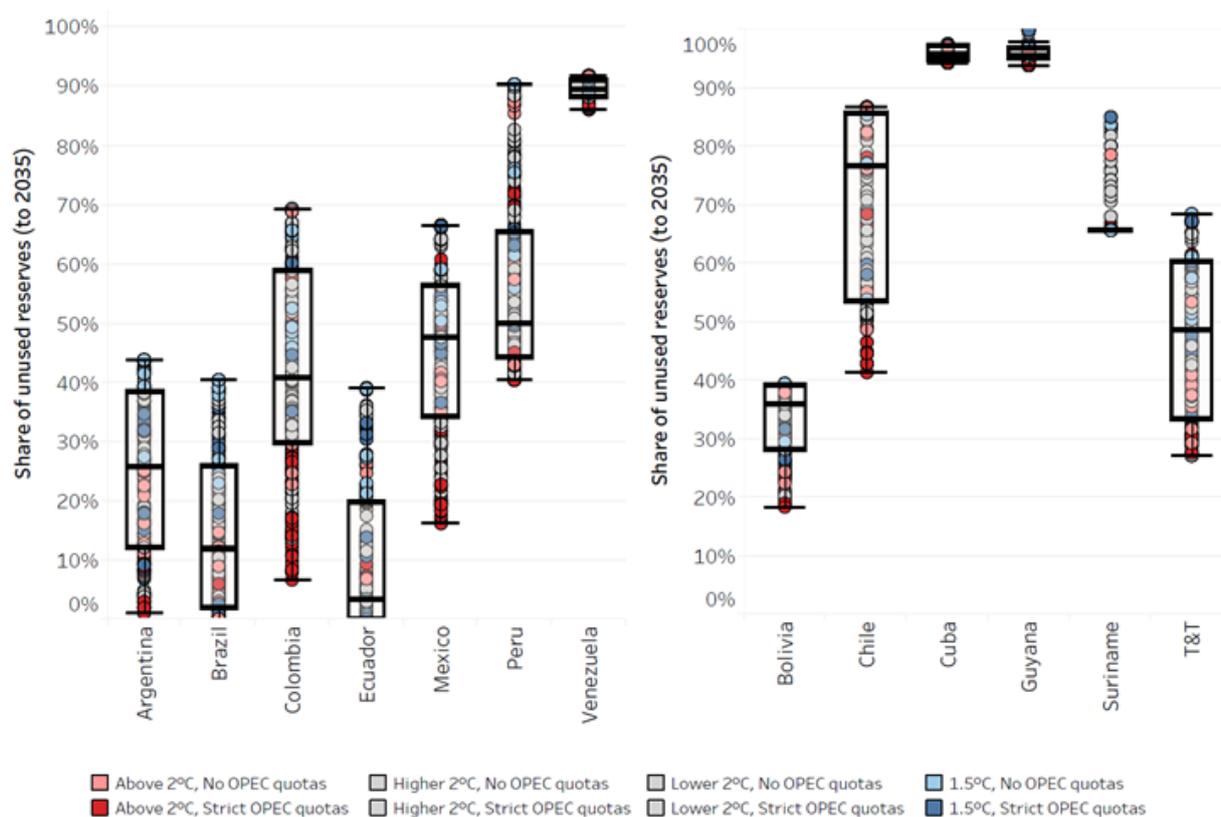


Figure 2. Unused oil reserves in Latin America in 2035. The boxes shows the interquartile range, with the line across the box the median. The whiskers of the boxes represent the minimum and maximum. Individual circles (markers) represent individual scenarios, with the colour indicating the global climate ambition (Source: BUEGO model analysis in Solano et al., 2018¹⁶)

Global initiatives as described above, and specific policies to curb fossil fuel production are gaining traction²¹. It is crucial that such initiatives focus on principles of equity as they are implemented, to provide developing countries with more time and assistance for a managed transition. Muttitt and Kartha²² provide a set of useful principles for a managed decline, including faster decline based on their increased economic capacity to do so, and financial assistance to also support developing countries with their transition.

Alignment of international development assistance and investment

In addition to building capacity to identify and explore risks, and promoting leadership towards managed decline, it is key that investment and development assistance is aligned with development priorities and climate change.

Multilateral Development Banks (MDBs) have been making some progress on aligning assistance in view of global climate goals, but further progress is needed. For example, the E3G Public Bank Climate Tracker Matrix scores banks on the extent to which they exclude fossil fuel investments, with only the European Investment Bank fully aligned²³. Institutions such as export finance agencies have long been known to finance fossil fuel projects abroad, such as the UK agency's \$1 billion loan guarantee for the development of Mozambique LNG, a decision which is now facing judicial review²⁴. A number of European countries, including the UK, have recently committed to ending export finance for fossil fuel projects. While institutions such as MDBs re-consider investment in fossil fuels, other financial institutions continue to pour money into fossil fuel projects, to the tune of \$3.8 trillion from 2016–2020²⁵.

Last, but not least, international organizations should provide guidance about how to promote alternative investments in each country. This should be compatible with net-zero emission targets, and should be able to detect the potential alternative fields of specialization of specific local communities and countries in order to promote a just transition compatible with the sustainable development goals²⁶.

References

1. Bradley, S., Lahn, G. & Pye, S. Carbon Risk and Resilience: How Energy Transition is Changing the Prospects for Developing Countries with Fossil Fuels. (2018).
2. Hailu, D. & Kipgen, C. The Extractives Dependence Index (EDI). *Resour. Policy* 51, 251–264 (2017).
3. Carbon Tracker Initiative. *Decline and Fall: The Size & Vulnerability of the Fossil Fuel System*. (2020).
4. ECIU & Oxford Net Zero. *Taking stock: A global assessment of net zero targets*. (2021).
5. IEA. *World Energy Outlook 2020*. (2020).
6. IEA. *World Energy Investment 2020*. (2020).
7. Imperial College & IEA. *Clean Energy Investing: Global Comparison of Investment Returns*. (2021).
8. IRENA. *World Energy Transitions Outlook: 1.5°C Pathway*. (2021).
9. IRENA. *Renewable Power Generation Costs in 2019*. (2020).
10. Ziegler, M. S. & Trancik, J. E. Re-examining rates of lithium-ion battery technology improvement and cost decline. *Energy Environ. Sci.* 14, 1635–1651 (2021).
11. Agora Energiewende and Ember. *The European Power Sector in 2020: Up-to-Date Analysis on the Electricity Transition*. (2021).
12. SEI, IISD, ODI, E3G & UNEP. *The Production Gap Report: 2020 Special Report*. (2020).
13. IEA. *The Oil and Gas Industry in Energy Transitions*. (2020).
14. Manley, D. & Heller, P. *Risky Bet: National Oil Companies in the Energy Transition*. (2021).
15. Elston, L. & Darby, M. Gas curse: Mozambique’s multi-billion dollar gamble on LNG. *Climate Home News* (2020).
16. Solano-Rodriguez, B. et al. Implications of Climate Targets on Oil Production and Fiscal Revenues in Latin America and the Caribbean. (2019). doi:<http://dx.doi.org/10.18235/0001802>
17. The Lofoten Declaration. *The Lofoten Declaration: Climate Leadership Requires a Managed Decline of Fossil Fuel Production*. (2017). Available at: <http://www.lofotendeclaration.org/>. (Accessed: 23rd September 2019)
18. Jørgensen, D. & Murillo, A. We have set an end date for oil and gas production. The world should follow. *Climate Home News* (2020).
19. Taylor, M. 101 Nobel laureates call for global fossil fuel non-proliferation treaty. *The Guardian* (2021).
20. Newell, P. & Simms, A. Towards a fossil fuel non-proliferation treaty. *Clim. Policy* 20, 1043–1054 (2020).
21. Erickson, P., Lazarus, M. & Piggot, G. Limiting fossil fuel production as the next big step in climate policy. *Nat. Clim. Chang.* 8, 1037–1043 (2018).
22. Muttitt, G. & Kartha, S. Equity, climate justice and fossil fuel extraction: principles for a managed phase out. *Clim. Policy* 20, 1024–1042 (2020).
23. E3G. *E3G Public Bank Climate Tracker Matrix*. (2021). Available at: <https://www.e3g.org/matrix/>. (Accessed: 3rd May 2021)
24. Reed, E. FoE wins review on UKEF’s Mozambique LNG support. *Energy Voice* (2021).
25. Rainforest Action Network et al. *Banking on Climate Chaos: Fossil Fuel Finance Report 2021*. (2021).
26. Saget, C., Vogt-Schilb, A. & Luu, T. Jobs in a net-zero emissions future in Latin America and the Caribbean. (2020).