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New Producer Contract Terms and Uncertainty: Lessons From the Recent Past

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Key messages

- The discoveries of major deposits of oil and gas have historically generated significant hope for economic development in countries not previously known as petroleum-rich—sometimes called "new producers." One source of optimism has been the theory that the discovery would reduce investors' perception of geological risk and enable governments of producing countries to negotiate more favorable future contracts.
- A review of publicly available contracts across eight new producer countries shows that evidence in support of this theory in the recent past is mixed. Three of the eight secured more favorable terms in the contracts they signed after a discovery than in contracts they signed before the discovery. The other five countries studied demonstrated no such pattern.
- In some cases, governments did not take advantage of newfound post-discovery leverage. In others, such leverage did not materialize.
- The climate crisis and the global energy transition pose a further challenge to assumptions about government leverage in new producer countries, with the prospects of lower investor interest and lower value for production. Long-term global investment in the sector must decline dramatically to meet global climate goals, and many investors have begun to shift away from new projects. Governments in new producer countries should undertake sober analysis of market scenarios when deciding whether and how to pursue new projects, and should internally align their petroleum, finance, energy and climate objectives.

Executive summary

The petroleum industry is volatile, and governments in "new producer" countries have operated at a significant information disadvantage when negotiating with international oil companies. This challenge is growing today; new producer countries face intensifying questions around whether to offer fiscal incentives to maintain investment in the face of 1) the pandemic-induced volatility in oil prices and 2) long-term questions about the future of the industry in the face of the climate crisis and the global energy transition.

This confluence of short-term and long-term uncertainty is prompting a reexamination of the narrative that once took hold in many new producer countries. The traditional story was one of linear progression from being non-producers to small levels of production to ultimately having oil and gas become a major economic contributor over the long term.

This notion of progression was associated with a commonly held theory: After a country's first major discovery, the geological risk that wells will be dry was expected to decrease. Countries could therefore shift from a position of having to grant tax breaks (and other concessions) to international investors, to taking a tougher stance in laws and negotiations for new projects going forward.

In this paper we examine whether this theory has been borne out in practice and make recommendations to support new producers in their navigation of the uncertainty associated with the energy transition.

Among the eight "new producer" countries, for which we analyzed a total of 26 contracts signed before and 25 contracts signed after discovery events (all occurring between 2001 and 2014), the evidence is mixed.

Only three of the eight countries in our sample—Ghana, Mozambique and Uganda—demonstrated a clear pattern in the direction of more stringent terms in post-discovery contracts. They featured definitive steps to increase some of the obligations of contractors to the state, and no significant terms that became less stringent. Five out of eight countries did not meaningfully alter their approach to gain greater concessions from their company partners.

Category: operational/ fiscal	Term type	Countries where terms became clearly more stringent	Countries where terms became clearly less stringent
Operational	Relinquishment of portions of the oil block back to the state		Guyana, Senegal
	Duration of first "exploration period"	Uganda, Mozambique (Rovuma and PT), Kenya	Senegal
	Minimum expenditure for first period of exploration	Ghana, Mauritania, Liberia, Senegal	Kenya
	Stabilization clause	Ghana, Mozambique (Rovuma and PT)	
Fiscal	Income tax	Ghana (additional oil entitlement)	
	Exemptions from income tax	Mozambique (Rovuma and PT)	
	Royalty	Ghana, Uganda, Mozambique (Rovuma and PT)	
	Profit oil	Mozambique (Rovuma and PT); Guyana, Liberia	Mauritania, Senegal
	Cost oil	Mozambique (Rovuma and PT); Mauritania	Kenya
	Bonus (signature and production)	Uganda, Mozambique (PT), Mauritania, Liberia, Kenya	
	State equity	Ghana, Kenya	Mauritania
	Contribution to community	Kenya	
	Local content	Mozambique (Rovuma), Uganda (1 of 2 contracts), Senegal, Kenya	Guyana, Liberia

In some cases, this could be because governments did not take advantage of their newfound post-discovery leverage. In others, it could be because the leverage did not materialize: geology may have proven disappointing after a flurry of excitement, global market shifts impacted investor confidence, or internal political dynamics steered the government toward other priorities. Today, the evolution of the global energy transition are surely factors further dampening the leverage of these governments.

Experience from the recent past offers some valuable lessons for government officials when it comes to making decisions about whether and when to conduct licensing exercises and on how to structure government demands on any new projects going forward. We recommend that new producer governments:

- *Undertake sober analysis of market scenarios* when deciding whether to pursue new projects, and internally coordinate to align petroleum, finance, energy and climate objectives.
- *Set clear priorities and objectives* and integrate them coherently into planning processes; a strategic vision for decisions about negotiations, informed by public consultation, will be more important than ever as profit margins shrink going forward.

- *Communicate regularly and openly with industry counterparts.* This is important for understanding the market's perceptions of the country, its geology and its fiscal terms, as well as broader market trends.
- *Award contracts by competitive bidding (where governments decide to pursue licensing or to negotiate new contracts)*. This is the surest way for government officials to understand the market, select partners effectively, and maximize company contributions.
- *Standardize terms in legislation* to the maximum degree possible, and reduce the scope of terms that are up for negotiation on individual contracts. This can help the government set the terms for deals according to a coherent strategy that takes account of emerging realities.
- *Build the institutional memory of the government and learn from the performance of past contract bidding, negotiation and implementation.* This can strengthen sector management and help to avoid past mistakes.
- *Stress-test contract terms, fiscal regimes and the position of the country's overall approach to the sector with an eye to where the country's resources sit on the cost curve.* This can enable governments to manage national risk across a variety of energy transition scenarios.

At a broader level, governments of new producer countries must seek opportunities to innovate, including by working within government and with prospective partners. Government should:

- *Systematically adopt built-in terms within extractive contracts* that better protect governments and companies against long-term volatility and uncertainty (e.g., periodic review, progressive fiscal terms).
- *Coordinate closely across government*, to align objectives across the bodies responsible for petroleum, finance, energy and climate and ensure a coherent strategy that keeps expectations in check and enables citizens to thrive in a low-carbon future.
- *Develop new kinds of terms that provide for minimizing the carbon footprint* in operations that remain cost competitive (through zero routine flaring and the use of renewable energies to power the needs of the operations).
- *Apply the skills and practices developed in the hydrocarbons sector to new areas of potential growth*, including climate smart mining and agriculture, renewable energy technology and/or green hydrogen.

Introduction

During the last two decades, the world saw a wave of discoveries of oil and gas in countries not traditionally known as petroleum-rich, from Ghana to Guyana to Tanzania. Petroleum is a volatile industry, and governments in these "new producer" countries have operated at a significant information disadvantage when negotiating with international oil companies.

This challenge is growing today. New producer countries face intensifying questions around whether to offer fiscal incentives to maintain investment in light of pandemic-induced volatility in oil prices and long-term questions about the future of the industry, given the global energy transition.[1] The coronavirus pandemic prompted substantial revenue declines for new producer governments, which also reported declining interest in investment. This led to delays in final investment decisions and performance of work-plan obligations in ongoing projects; requests by companies to change contract terms, and the postponement of licensing rounds for new projects.[2] Oil prices began to rebound in 2021, but some industry analysts and officials in producer governments have treated the shock as a wake-up call to spur reflection on whether technological changes and consumer-country commitments to "build back better" in the aftermath of the pandemic could further accelerate the energy transition, with disruptive effects on producer countries' plans.[3]

This confluence of short-term crisis and long-term uncertainty is prompting a reexamination of the narrative common in new producer countries, of a linear progression from being non-producers to small levels of production to ultimately having oil and gas as a major economic contributor over the long term.

One component of this narrative has centered around the question of leverage in contracting. Governments in many countries expected that a first major oil discovery would raise them out of the ranks of the "frontier" of the industry and increase their leverage in the negotiation of subsequent contracts with international oil companies. This implied that these countries could shift from a position where they are expected to grant tax breaks and other concessions—to attract oil and gas

1 As of early April, Rystad Energy estimated that worldwide investment in exploration and production would fall by USD100 billion (20 percent) in 2020 as a result of the COVID-19 crisis and associated economic impacts. Rystad Energy, COVID-19 Report, Fifth Edition, 7 April 2020), p.42. New producer governments have expressed significant uncertainty associated with how to attract investment in the face of the energy transition. See, for example, Libby George, "African Oil States Offer New Deals to Lure More Selective Investors," Reuters, 11 November 2019, af.reuters.com/article/investingNews/idAFKBN1XL1F7-OZABS.

2 Valérie Marcel, *Fostering Resilience in Emerging Oil Producers: Responding to COVID-19 and Preparing for the Energy Transition*, Chatham House, 2020, www.chathamhouse.org/sites/default/files/2020-12/2020-12-15-fostering-resilience-in-emerging-oil-producers-marcel.pdf_0.pdf. Sixty-seven percent of new producer government representatives who participated in a March 2020 survey—near the beginning of pandemic-induced lockdowns—reported that their countries had experienced delays to final investment decisions or work plans; 50 percent reported lower licensing interest and 43 percent reported companies seeking to change terms.

3 See, for example, Damian Carrington, Jillian Ambrose and Matthew Taylor, "Will the Coronavirus Kill the Oil Industry and Help Save the Climate?" *The Guardian*, 1 April 2020; Reuters, "Pandemic Brings Forward Predictions for Peak Oil Demand," 27 November 2020, www.reuters.com/article/us-oil-demand-factbox/factbox-pandemic-brings-forward-predictions-for-peak-oil-demand-idUSKBN2870NY. Filipe Barbosa, Giorgio Bresciani, Pat Graham, Scott Nyquist and Kassia Yanosek "Oil and Gas after COVID-19: The Day of Reckoning or a New Age of Opportunity?"McKinsey Insights, 15 May 2020, www.mckinsey.com/industries/oil-and-gas/our-insights/oil-and-gas-after-covid-19-the-day-of-reckoning-or-a-new-age-of-opportunity. Half of the new producer officials who participated in a discussion of the impacts of the pandemic in March 2020 believed that global peak demand had been reached, as per Marcel, 2020.

companies into uncharted territory—to a position enabling them to take a tougher stance in laws and negotiations for new projects going forward. The logic was based on a reduction of geological risk. After a discovery demonstrates a viable hydrocarbon deposit, oil companies and investors would perceive the investments necessary for exploration as less risky. In theory, this should enable governments to interest companies in investing, even with terms more favorable to the country—higher taxes, a larger share of equity or profit oil or gas, fewer or shorter tax holidays or tighter requirements from companies in a post-discovery world.

In this paper we examine whether this theory has borne out in practice. This question has traditionally been difficult to answer systematically, because the terms of contracts signed between governments and oil companies have been secret. However, the growing norm of contract transparency has created new opportunities to see what terms parties have agreed.[4] At least 44 countries now publish their contracts with companies for natural resource exploitation or licenses they grant, and 27 have laws in place making this publication mandatory.[5]

We looked across more than 1,500 hydrocarbons contracts between companies and host governments available on www.resourcecontracts.org,[6] seeking examples of countries that had published contracts signed both before and after making discoveries that changed the country's oil and gas prospects. We identified eight such countries, for which we analyzed a total of 26 contracts before their discovery events and 25 subsequent contracts.

The Resource Contracts Database

The contracts analyzed in this document were gathered from the Resource Contracts database, available at www.resourcecontracts.org. The database is the world's largest repository of publicly available oil, gas and mineral contracts. As of January 2022, the database housed more than 2,700 contracts and associated documents from 97 countries.

Among the tools available on the Resource Contracts site are options to filter and sort documents by contract type, country, company or date. The contracts are fully searchable, facilitating the cross-country analysis featured in this report.

Our review of available contracts and their domestic governing laws suggests that the evidence is mixed for whether new-producer governments exert more leverage in contracts with oil companies after a significant discovery. Three of the eight countries in our sample—Ghana, Uganda and Mozambique—demonstrated an unequivocal pattern in the direction of more stringent terms in the post-discovery contracts, with clear steps to increase contractors' obligations to the state and no significant terms that became less stringent. This suggests that these countries took advantage of the post-discovery opportunities and their increased leverage in the marketplace. The other countries in our sample demonstrated mixed results, with post-discovery contracts becoming more stringent in some areas and less stringent in others.

4 Open Contracting Partnership and Natural Resource Governance Institute, *Open Contracting for Oil, Gas and Mineral Rights: Shining a Light on Good Practice*, June 2018, resourcegovernance.org/sites/default/files/documents/open-contracting-for-oil-and-gas-mineral-rights.pdf.

5 See Natural Resource Governance Institute, *Contract Disclosure Practice and Policy*, docs.google.com/spreadsheets/d/1FXEeD43jw6VYHV8yS-8KJ5-rR5I0XtKxVQZBWzr-ohY/edit#gid=0.

6 ResourceContracts.org is an open database of over 2,000 extractive sector contracts and associated documents.

We did not construct detailed models of these individual contracts to attempt to assess whether a specific post-discovery contract was on balance "better" for the state. But examining the direction of travel in these cases illustrates that some governments did not meaningfully alter their approach to gain greater concessions from their company partners. This demonstrates that there is not a predictable or linear path from being perceived as a frontier petroleum state to a mature producer. In some cases, this could be because the government did not take advantage of its newfound post-discovery leverage. In others, it could be because the leverage did not materialize—because geology proved disappointing after initial excitement, global market shifts impacted investor confidence or internal political dynamics steered the government toward other priorities.

These questions are even more challenging today than they were a decade ago, as countries that once expected to be on the cusp of major oil or gas revenues face an accelerating global transition away from fossil fuels. On one hand, governments face pressure from investors to grant pro-company incentives in order to lower production costs, maintain non-competitive activities and attract ever-scarcer investment. However, this risks negotiations becoming a "race to the bottom" that does not serve the long-term national interest. On the other hand, governments are appropriately wrestling with economic concerns about the perils of fossil-fuel-led development in an era in which the sector faces long-term decline.

In this brief, we invite policymakers in new producer countries to reflect on the experience of countries negotiating in what they thought was a boom time, as they make difficult decisions about how they want to engage with the sector in an era with significantly greater uncertainty. Drawing lessons from these experiences in the petroleum sector may also inform governments' policy and negotiating practice as they consider opportunities in the booming energy transition sector, including clean-technology minerals, climate-smart agriculture, renewable energy and green hydrogen.

1. Context: Major discoveries in unexpected places

The high commodity price era starting in the early 2000s fueled a wave of oil and gas exploration around the world. Across Africa and in Latin America this led to multiple oil and gas finds, which in turn encouraged further exploration and interest in developing them.[7] As a result, various countries went from being resource-poor or frontier countries to "prospective exporters" or "emerging producers" of oil and gas.[8]

In conducting this analysis, we looked only at countries which had no or only modest oil and gas discoveries to start with. In each of these countries, we identified one key trigger event—the announcement of a specific discovery or sequence of discoveries—that led to a significant shift in the conversation and expectations regarding oil or gas prospects in the country. Shortly after these trigger events, companies, governments and international experts started planning for the quick expansion of petroleum sector investment and, in many cases, production.

These events, shown in Table 1 below, are either a first discovery or, in several cases, discoveries classed as "giant," substantially larger than the previous petroleum finds in the country combined.[9] We focus on the discovery event, rather than on the declaration of commerciality, which often takes years to establish in a new-producer context, where costs of production are unknown.[10] In retrospect, not all the discoveries prove equally lucrative. The fields discovered in Ghana and Guyana are producing and were followed by many more finds, whereas the discovery announcement in Liberia, while initially seen as promising, turned out to be inflated, and exploration in the country was abandoned a few years later.

For each of these eight countries, we provide further details below on the discovery and its aftermath and discuss why the discovery can be treated as a trigger event.

7 AAPG Datapages: Giant Oil and Gas Fields of the World 2000-2010.

8 David Mihalyi and Thomas Scurfield, How Did Africa's Prospective Petroleum Producers Fall Victim to the Presource Curse? World Bank Policy Research Working Paper 9384, 2020, documents1.worldbank.org/curated/en/274381599578080257/pdf/How-Did-Africas-Prospective-Petroleum-Producers-Fall-Victim-to-the-Presource-Curse.pdf.

9 In Mihalyi and Scurfield (2020), we show that the new finds increase volumes of oil and gas discovered at least fourfold (Senegal) and over tenfold in the other cases listed. A giant discovery is one exceeding 500 million barrels (mbbl) and giant fields are those with estimated ultimate recoverable reserves of 500 mbbl of oil or gas equivalent. See M.K. Horn, *Giant Oil and Gas Fields of the World*, 2011, edx.netl.doe.gov/dataset/aapg-datapages-giant-oil-and-gas-fields-of-the-world.

10 Though these initial discoveries were followed by subsequent appraisal drillings, rarely have the companies squarely pronounced these finds as commercial or non-commercial when announcing the appraisal results.

Table 1. List of countries and discoveries analyzed[11]

Country	Date	Field/ Block and well	Discovery type	Company	Announcements
Ghana	June 2007	Jubilee (Mahagony-1 well)	First giant discovery	Kosmos Energy	Link
Guyana	May 2015	Liza (Liza-1)	First giant discovery	ExxonMobil	Link
Kenya	March 2012	Block 10BB (Ngamia-1)	First discovery	Tullow	Link
Liberia	November 2011	LB-15 (Montserrado-1)	First discovery (ultimately proved non-commercial, so referred to as "announcement" in the analysis)	Anadarko	Link
Mauritania	May 2001	Chinguetti (Chinguetti-1)	First discovery	Woodside Petroleum	Link
Mozambique	February 2010	Area 1 (Windjammer well)	First giant discovery	Anadarko	Link
Senegal	October 2014	SNE (FAN-1 well)	First giant discovery	Cairn Energy	Link
Uganda	January 2006	Block 2 (Mputa-1)	First discovery	Tullow	Link

11 The table above is limited to countries in which we found publicly available oil and gas contracts that were signed both prior to and post the discovery event.

2. Factors impacting government leverage after a discovery

GEOLOGICAL RISK

Oil and gas contracts sit within a wider legal framework governing the relationship between the state—often including a state-owned oil company—and private companies that bring capital and technology to explore and extract oil deposits. In some countries, such contracts serve as the specific application of the legislative or regulatory framework, with contracts hewing closely to the standardized set of rules. In other countries, however, contracts may either deviate significantly from legislation or regulations, or establish rules at a much greater level of detail than is contained in the general framework.[12]

Decisions about the provisions of a specific contract are generally reached via a process of competitive bidding or negotiation. Some governments negotiate contracts directly with an individual company, either on a "first come, first-served" basis or after the government has publicized a willingness to open certain petroleum blocs for negotiation. In other cases, governments organize competitive processes for allocating the rights to explore in a particular bloc and to extract any oil or gas eventually discovered. The perceived benefits of a competitive approach are that it gives the government the ability to choose the best-qualified partner and that by requiring companies to compete against each other, the government maximizes its chances of getting the best possible deal for the state. In both direct negotiations and competitive processes, the state may standardize many terms in accordance with the generally applicable framework, sometimes using a model contract as a starting point, and set a limit as to which issues are open for negotiation.[13]

A critical feature of the overwhelming majority of petroleum contracts—concessions and production-sharing contracts—is that they are signed before the company has begun exploration in earnest. This means that the contracts are designed to cover scenarios in which no resource is ever discovered and those in which there are commercial petroleum deposits. This has important implications for the content of contracts. First, almost all oil and gas contracts contain terms covering the conduct of parties during the exploration phase and governing their rights and responsibilities in the event of a commercial discovery. In theory, this helps both parties set expectations and safeguard the benefits of their good fortune

12 This can happen because legislation or regulation is not considered well-adapted to evolving market or industry conditions, or because investors signal that mandatory rules are insufficiently attractive. The systems in some countries (including Ghana and Liberia) require parliamentary ratification of natural resource contracts negotiated by the executive, which can serve to establish contracts as a sort of specialized law applying to a particular project.

13 For an overview of key factors in the contract process, see Natural Resource Governance Institute, Granting Rights to Natural Resources, March 2015, resourcegovernance.org/sites/default/files/documents/nrgi_primer_granting-rights.pdf.

if they make a discovery, reducing the risk of the "obsolescing bargain", whereby a state unilaterally imposes stricter conditions once a company has already sunk large expenditures into exploration.[14]

Second, the parties' assumptions at the time of contract signature about the likelihood that a discovery will be made is a key determinant of how much a company is willing to commit to paying the government in the event of a discovery, and how much a government will accept. Other factors being equal, the more likely a company considers it that exploration of a particular bloc will lead to production, the more willing the company may be to share the proceeds of any eventual success. Where a project is seen as inordinately risky, with wells drilled likely to be dry, many companies will insist on an extremely attractive contract package in order to compensate for their upfront risk.[15]

Table 2 helps us examine how geological risks impact countries' bargaining leverage at different stages of their petroleum-sector lifecycle. In geological plays seen as "frontier," generally meaning where there has not been a discovery of commercially viable oil or there has not been extensive exploration and drilling,[16] only eight percent of wells resulted in a commercial discovery, compared to over 30 percent in wells drilled in plays that are proven to be commercial. The finding costs tend to be lowest, and the returns to the explorer highest, in the "emerging" phase immediately after a new play has been found, when the biggest oil discoveries are typically made.

	Frontier	Emerging	Maturing	Mature
Commercial success rate	8%	32%	32%	35%
Drilling cost, $/barrel of oil equivalent (boe)	1.6	0.6	1.5	1.7

Table 2. Drilling success rates and drilling cost, 2010-2014[17]

Source: Westwood Wildcat Database based on sample of 3,900 wells

Conventional wisdom calls for countries to take as strong a line as they can when negotiating with oil companies, and to select companies by competitive auction whenever possible.[18] However, understanding the amount of leverage a country has in practice can be difficult, and if a government is too tough in the presence of high risk (geological, market or political), there is a chance that it will fail to attract companies to invest. These risks weigh heavily on policymakers in countries whose geology is completely unproven, in light of the low rates of success and high costs of exploration.

14 For a discussion of obsolescing bargain risk (and alternative theoretical lenses on oil contract negotiations), see Vlado Vivoda, "Bargaining Model for the International Oil Industry," *Business and Politics* 13, no. 4 (2011). Many oil contracts contain "stabilization clauses," which protect companies against legal changes taking place after the contract is signed. These clauses may provide for freezing some or all legislative terms at the time of contract signature, so that subsequent legislative changes enacted in the country are not binding on the contract parties regarding the project at issue. They may also provide for renegotiation or some form of compensation to restore the economic balance between the parties after changes in law affect that balance. For a sample of stabilization clauses across more than 100 oil and gas contracts, see resourcecontracts.org/search/group?q=&resource%5B%5D=Hydrocarbons&key_clause%5B%5D=Stabilization.

15 Peter D. Cameron and Michael C. Stanley, "Fiscal Regime Design and Administration," *Oil, Gas and Mining: A Sourcebook for Understanding Extractive Industries*, World Bank: 2017, 149-150.

16 Dev George, "National Energy Demands, Desire to Export, Maturing Plays Driving Frontier Exploration," *Offshore*, 1 April 1996.

17 Richmond Energy Partners, Westwood Wildcat Database.

18 The Natural Resource Charter suggests, "Well-designed auctions are preferable [to individual negotiations] since competitive bidding should secure greater value for the country and auctions can also help overcome information deficits that the government may have relative to international companies." Natural Resource Governance Institute, Natural Resource Charter, Second Edition, 2014, resourcegovernance.org/sites/default/files/NRCJ1193_natural_resource_charter_19.6.14.pdf.

A sensitivity to risk calls for a nuanced approach to establishing licensing processes and setting contract terms. The New Petroleum Producers Discussion Group—which has gathered experiences from emerging oil and gas producers around the world—recommends in its Guidelines for Good Governance in Emerging Oil and Gas Producers that countries consider a staged approach. During the period before a first significant commercial discovery, the guidelines recommend that a country invest in understanding its geology, developing institutions and reaching out to investors. Where there is significant investor interest, a frontier country may organize a bidding round, but when geology is uncertain it may be necessary to engage in direct negotiations. The guidelines advise against rushing to award licenses at all costs in times of low investor interest or low geological knowledge, to reduce the risk that highly prospective areas will be governed by disadvantageous terms or placed in the hands of companies without strong ability to explore. Nonetheless, they acknowledge that in some cases governments have felt pressure to give up on tough fiscal terms or exploration requirements during the pre-discovery "frontier" period.[19]

After a discovery, the government and the market have additional information on the country's geology that should, in principle, "increase a country's attractiveness to investors," and "can lead to a surge in exploration interest from oil companies."[20] Moving from the frontier stage to the emerging stage, with its corresponding reduction in risk and cost, should increase the scope for competition among potential investors and allow the government to achieve more favorable terms.

Of course, the evolution of a contracting approach is more complex than a binary pre- and post-discovery system. Many advisors counsel that even in a pre-discovery time period, governments should focus on progressive fiscal terms, which allow companies to invest without severe risk of over-taxation of unsuccessful or expensive projects, but give the government a growing share of financial benefits in the event of a profitable project.[21] On the other side of the ledger, even once there has been a commercial discovery, investor interest can be negatively impacted by perceived political risk or other factors. The transformation in terms from pre- to post-discovery would therefore likely never be guaranteed.

19 Valérie Marcel, *Guidelines for Good Governance in Emerging Oil and Gas Producers 2016*, Chatham House, July 2016, www.chathamhouse.org/sites/default/files/publications/research/2016-07-13-guidelines-good-governance-2016-marcel.pdf, 17-21. NRGI is a core organizing partner of the New Producers Project, in collaboration with Chatham House and the Commonwealth Secretariat.

20 Marcel, *Guidelines for Good Governance in Emerging Oil and Gas Producers 2016*, 23.

21 Carole Nakhle, "Petroleum Fiscal Systems: Evolution and Challenges," in Philip Daniel, Michael Keen and Charles McPherson, eds., *The Taxation of Petroleum and Minerals: Principles, Problems and Practice*, London: Routledge, 2020, 89-120.

POLITICAL RISK

Politics plays a critical role in the equation, complicating any attempt at neat narratives in terms of what "tends to happen" post-discovery. High public expectations are an important factor. On one hand, increased public expectations can generate pressure on governments to demonstrate strength through improved terms. Political pressure is not one-directional, however, and discoveries can lead to factionalism and the pursuit of narrow interests that can impede well-coordinated and strategic government action. It is beyond the scope of this paper to examine the political determinants of the contract outcomes in our sample countries, but it is important to note the salience of these factors.

Despite these complicating factors, the potential for a change in leverage is strong. Governments have cited the importance of taking a stronger, forward-looking approach to contracting in the aftermath of a discovery.[22] So too have oil companies, which have cited the special risks existent in frontier settings as a justification for needing more incentives pre-discovery than would subsequently be required.[23] Third-party analysts also recognize that the fairness of contracts signed pre-discovery needs to be assessed differently from the terms of contracts signed after a country's petroleum has been proved.[24]

22 The government of Guyana, for example, announced plans to change the terms applying to new oil contracts in the wake of the country's major offshore discoveries. See "Guyana Holds off on New Licensing Pending Seismic," *Argus Media,* 22 November 2019, www.argusmedia.com/en/news/2021258-guyana-holds-off-on-new-licensing-pending-seismic. Tanzania and Ghana both revised their legislation governing oil and gas relationships with contractors in the wake of their discoveries.

23 Deloitte, *Stabilization Clauses in International Petroleum Agreements: Illusion or Safeguard?* April 2014. Tullow's Head of Media Relations exhibited the views of many oil companies in relation to their project in Guyana, stating "What I can say is that our licence is entirely in line with licences around the world in frontier exploration areas. Don't forget that the Jethro well had a one in four chance of success at our risk."

24 See, for example, Johnny West, *Stabroek Oil Field, Guyana,* Open Oil, March 2018, openoil.net/wp/wp-content/uploads/2016/12/oo_gy_stabroek_narrative_v1.0_180315_1025_jw.pdf In analyzing the contract governing Guyana's first major oil field, the author explicitly compares its fiscal terms against those of "seven other frontier province projects." See also David Manley and Thomas Lassourd, *Tanzania and Statoil: What Does the Leaked Agreement Mean for Citizens?* August 2014, resourcegovernance.org/sites/default/files/Tanzania_Statoil_20140808.pdf

3. Methodology

In order to assess how much the theory explored above is reflected in practice, we analyzed select fiscal and operational terms in publicly available petroleum contracts to see whether governments have leveraged the perceived change in exploration risk after a key discovery event to negotiate more state-friendly contracts for other blocks. We also considered whether there were any changes in petroleum and tax laws which in turn altered the rules applying to the contracted projects. As part of this process, we examined whether contracts signed after a change in law reflected the relevant legislative changes. This aimed to capture higher government leverage expressed in the laws, rather than in contracts.

Table 3 below lists the fiscal and operational terms we considered in our analysis of each country's contracts – and laws, where applicable – and explains what kinds of changes in these terms lead to more onerous investor obligations.[25]

Table 3. Fiscal and operational terms assessed in contract analysis

Category	Term type	What would it mean for the term to become more onerous for the investor?	Why would the state pursue such a change?
Operational	Relinquishment of portions of the oil block back to the state	A higher percentage of land to give up ("relinquish") after the first exploration phase or across all phases	Accelerates the investment program and reduces the possibility of speculation
	Duration of first "exploration period"—the time during which the company is required to carry out exploration activities	Shortening of first exploration period	Accelerates the investment program and reduces the possibility of speculation
	Minimum expenditure for first period of exploration	Increase in the amount required to be spent on exploration	Requires companies to invest more in exploration activities and reduces the possibility of speculation. In addition, robust work obligations mean that even on relinquished parts, governments can gain valuable geological and geophysical data that can be used in the future.
	Stabilization clause	Suppression of the clause or reduction in scope and time	A stabilization clause enables the terms of the contracts to survive any change in law, in particular those unfavorable to the investor. Removing or reducing the benefits of the clause increases the state's ability to make changes as circumstances evolve.
Fiscal	Income tax	Higher tax rate	Increases the share of revenues to the state in the event of production
	Exemption to income tax	Lower or fewer exemptions	Increases the share of revenues to the state in the event of production
	Royalty	Higher royalty rate or higher royalty base	Increases the share of revenues to the state in the event of production
	Profit oil	Higher allocation of profit oil to the state in production-sharing contracts	Increases the share of oil (in kind or in cash) to the state in the event of production
	Cost oil	Lower share of oil that can be retained or sold by the investor to recoup costs (i.e., lower cost oil "ceiling" or cap)	Diminishes the amount of gross revenue that could be used to cover costs, or the amount of cost that is recoverable. Consequently, a lower cost oil limit increases the tranche of gross revenues that remain with the government.[25]

25 The biggest impact is in the early years of production. If there is no limit (i.e., 100 percent cost recovery), there will not be revenue flowing to the government during those years, which is often politically problematic.

Category	Term type	What would it mean for the term to become more onerous for the investor?	Why would the state pursue such a change?
Fiscal	Bonus (signature and production)	Higher amount	Increases revenue to the state from the project
	State equity	Higher percentage of equity to the state or more generous terms accorded to state equity (e.g., investor "carries" state share through exploration or development phase, with a carry interest rate lower than the project's internal rate of return, which will lower the investor's returns)	Increases state control over project and can also increase financial benefits that accrue to the state
	Contribution to community	Higher amount in monetary terms or greater obligations	Increases direct financial contribution of oil and gas project to neighboring communities or municipalities
	Local content	Higher requirements for the share or amount that investors must allocate to train or hire local professionals or firms (although unless penalties for default are very dissuasive, many investors would not see these as material)	Increases the impact that the project can have on local markets

For each country, we divided the contracts into two groups: those entered into before the discovery event and those entered into after it (see Table 1 on discovery events). We also differentiated contracts by their location across basins and specified the type of play (onshore, offshore shallow water, offshore deep water). Looking only at the upstream levels, onshore locations are usually the least costly to exploit, followed by offshore shallow water and finally offshore deep water. While in theory onshore fields might present a lower cost of extraction than offshore fields, and therefore more leeway for governments to tighten the terms, some onshore fields are associated with long and expensive pipelines. This makes them costlier and more subject to community disruption, so the type of play should be analyzed carefully.

Wherever possible, we focused our analysis on contracts located in or as near as possible to the geological basin where the discovery was made. Where relevant, we also looked at the other basins to understand if there was a knock-on effect, with some transmission of the pattern in contract terms to other basins. We also looked for any material changes in the contract area sizes (where available) and explained any observed change over time that may impact the analysis.

In analyzing the evolution of the operational and fiscal terms in pre-discovery contracts and post-discovery contracts, we drew conclusions on whether there was a "pattern" that supports the theory that if a country's geological attractiveness has been evidenced by a commercial discovery, the government may be in a stronger position to negotiate fiscal and operational terms more advantageous to the state. We distinguish between:

"Clear pattern of more stringent terms": A country is characterized as having a consistent pattern where we observed overall consistency across terms and contracts pointing towards the strengthening of fiscal and operational terms from the state's perspective, with little evidence of significant regression of terms. Such a designation does not mean that all relevant terms in the contract became more advantageous for the state. Within this category, some countries display a clearer pattern than others, but all exhibit clear movement in one direction.

"No clear pattern": A country is characterized as having no clear pattern either where we observed contract shifts in both directions (some terms becoming more stringent to the investor, others less so), or where there were a small number of minor changes that seem unlikely to meaningfully impact the balance of benefits and obligations. Assessing the overall direction of mixed changes in contract terms would have required modeling each contract based on questionable assumptions (especially on geology) and is beyond the scope of this analysis. We erred on the side of caution and put all contracts in this group where a clear judgement of direction could not be made based on a review of terms alone.

"Clear pattern of less stringent terms": A country is characterized as having a clear pattern of less stringent terms where we observed overall consistency across contracts, pointing towards fiscal and operational terms weakening from the state's perspective. Interestingly, we did not find any such cases in our sample.

For ease of reference, each contract reviewed is numbered in the text. The full names of all the contracts included in our analysis, along with links to each contract, are listed in the Annex, with the corresponding number reference.

METHODOLOGICAL CAVEATS

This analysis offers an imperfect account of an observed correlation between significant discovery events and changes in contract terms in the same country, and does not purport to prove direct causation. We observe the following caveats as to whether these findings can be further generalized. First, our review is limited to publicly available contracts, whose terms may differ from non-public ones.[26] Second, we did not review how contracts changed in all other countries across the same volatile years.[27] Third, the sample of contracts is relatively small, and there is a degree of uncertainty as to contract negotiation timelines, which disrupts the true understanding of the timeline.[28] Fourth, we did not model the contract terms to systematically analyze the total impact of changes in terms of estimated returns to the state across a range of production and cost assumptions. Similarly, we did not review the extent of loopholes in the fiscal regimes (related to transfer pricing, thin capitalization, ringfencing or cost recovery and tax deductibility rules), which

26 According to our research, among the countries reviewed, Ghana, Guyana, Liberia, Mozambique and Senegal have systematically published their petroleum contracts.

27 We note that even though the 2014 oil price crash affected contract terms globally (see resourcegovernance.org/blog/taxing-question-arises-when-commodity-prices-fall), the analyzed contracts in this paper do not lend themselves to a clear interpretation of the impact of the crash.

28 According to an oil expert, contract negotiation in relation to a significant discovery in a frontier country could take roughly between 6 and 12 months. This duration will depend on several factors, such as whether the country has a model contract, whether the host government has hired outside advisors, whether the negotiation site is logistically hard to reach, how well organized the host government is, how easy it is to get decisions made and whether parliamentary approval is required for the agreement.

can considerably impact the performance of a fiscal instrument. Our observations are therefore limited to the directional pattern among the identified terms, and do not allow us to assess the magnitude of changes observed. Fifth, we did not review amendments to contracts or renegotiated contracts, in order to avoid mixing the types of situations analyzed. This was especially because a renegotiation remains tied to the economic equilibrium agreed in the original contract, where some form of stabilization clause was included. Renegotiation of a contract where a discovery has been made also differs from the negotiation of subsequent contracts for neighboring petroleum blocs, because in the former, the geological risk has been demonstrably removed by the discovery, whereas in the latter, risk remains present, though reduced.

4. Evidence from available contracts

GHANA: CLEAR PATTERN OF MORE STRINGENT TERMS

Oil was discovered and has been produced in small quantities in Ghana since the 1970s.[29] But the country's game-changing Jubilee oil field was discovered by a Kosmos-led joint venture in June 2007 (Mahagony-1 well). The field's significance was confirmed two months later by the drilling of a second exploration well by Tullow (Hyedua-1) on the adjacent oil block. Further appraisal wells drilled in 2008 confirmed that the Jubilee field was a giant, with over 500 million barrels in reserves, and commercially viable.

We analyzed eight Ghanaian contracts,[30] the earliest signed in 2004 (we designate this contract "Ghana 1," and name the other contracts accordingly) and the latest dated 2015 (Ghana 8). Two of these contracts are dated 1-3 years before the giant Jubilee field discovery (Ghana 1 and 2), and six are dated 1-8 years after the discovery (Ghana 3-8). The contracts signed a year before the discovery and a year after the discovery concerned license areas that include the Jubilee field, and the rest of the contracts reviewed largely concern blocks in the same basin as the Jubilee discovery—the Western Basin—bar two contracts concerning blocks in the Accra/Keta Basin (Ghana 6 and 7).

Even with this variation, taken together, we observed a clear pattern toward more stringent contractual terms when comparing contracts signed pre-discovery and those signed post-discovery. The contracts signed post-discovery include fiscal terms designed to provide stronger returns for the state, suggesting that the government sought to take advantage of the country's decreased risk profile to negotiate more advantageous fiscal terms. For example, we observed clear increases in royalty rates (with the royalty base remaining the same) and improvement in the progressivity of the additional oil entitlement (AOE)[31] when comparing contracts signed before and after the giant discovery. In addition, we observed increases in the percentage of state equity in the post-discovery contracts, as well as increases in the minimum exploration investment commitments. One contract (Ghana 5)—signed in September 2014, six years after the giant discovery and two months into the commodity price decline starting in July 2014—stands out. It has the highest state participation level of the Ghanaian contracts reviewed, and the minimum exploration investment is 60 percent higher than the next-highest investment requirement found in the contracts reviewed.

29 The Saltpond Oil Field, Ghana's oldest, started commercial production in 1978. See *The Oil and Gas Law Review*, Edition 6, Ghana, thelawreviews.co.uk/edition/the-oil-and-gas-law-review-edition-6/1175809/ghana

30 Ghana's hydrocarbon contracts on resourcecontracts.org, resourcecontracts.org/search?q=&country%5B%5D=gh&resource%5B%5D=Hydrocarbons

31 Additional Oil Entitlement (AOE) is a type of resource rent tax. It grants Ghana an additional share of petroleum produced and is computed on the basis of the after-tax inflation-adjusted rate of return that the contractor achieved in each field. The resource rent tax is an important tax instrument to collect rent, but is rarely applied. In our sample, only Ghana's fiscal regime uses a resource rent tax, so we did not make it a cross-country term to systematically analyze.

Ghana contracts pre- and post-Jubilee: Key features

- 2007 giant discovery of the Jubilee Oilfield.
- Our sample contained two contracts signed before the discovery and six signed after it. Of the post-discovery contracts, one combines onshore and offshore acreage; the others are offshore.

Category	Term type	Observation
Operational	Relinquishment of portions of the oil block back to the state	No clear pattern
	Duration of first "exploration period"—the time during which the company is required to carry out exploration activities	No clear pattern
	Minimum expenditure for first period of exploration	Expenditure requirements are higher in post-discovery contracts compared to pre-discovery contracts, with the exception of Ghana 6, which dips below one of the pre-discovery contracts
	Stabilization clause	Almost all contracts reviewed contained stabilization clauses.[32] With the exception of the first contract post-discovery (Ghana 3), the stabilization clauses become less absolute post-discovery[33]
Fiscal	Income tax	Tax rate remains consistent with reference to the law
	Exemption to income tax	Consistent
	Additional profit tax	There is a trend toward more progressive additional oil entitlements in the post-discovery contracts
	Royalty	Clear increase in royalties (with the royalty base remaining the same)
	Profit oil	N/A
	Cost oil	N/A
	Bonus (signature and production)	None
	State equity	Overall increase in post-discovery contracts
	Contribution to community	Consistent
	Local content	Largely consistent

32 Ghana 8 may contain a stabilization clause, but because the copy of the contract was incomplete, we cannot say for certain.

33 For example, in Ghana 1, which was signed pre-discovery, any attempt to apply a legislative or administrative act that varies the terms of the contract constitutes a breach of contract, unless the change in law varies the terms in a way favorable to the contractor, in which case the contractor takes the benefit of the favorable changes (article 26.3-4). In Ghana 7, which was signed post-discovery, the contractor must comply with applicable laws, but may request a renegotiation of terms if it considers that any law, rule or decree that enters into effect after the date of the contract makes performance impossible or has a material adverse effect on the contractor's rights, obligations, or economic benefits under the contract (article 26.2-3).

UGANDA: CLEAR PATTERN OF MORE STRINGENT TERMS

After nearly a century of intermittent exploration in Uganda, a higher oil price led to an upturn in activity in the early 2000s.[34] Oil was discovered in January 2006, quickly followed by further discoveries later that year and in subsequent years. These discoveries were reported as commercial in 2009.[35] By 2014, there had been 21 discoveries—all onshore and all within the Albertine Graben.[36] At this point, the Ugandan government increased its estimate of Uganda's oil in place from 3.5 billion to 6.5 billion barrels, of which it estimated that 1.4 billion were recoverable.[37] The Ugandan government and its partners encountered years of delay in progressing these discoveries to development, but in early 2021 the Ugandan government, Total and the China National Offshore Oil Corporation reached a final investment decision (FID) to begin developing oil on their Lake Albert project.

We analyzed three publicly available Ugandan contracts, the earliest dated 2004 (Uganda 1) and the two latest both from 2012 (Uganda 2 and 3).[38] The contracts reviewed concern blocks in the area around Lake Albert—the Albertine Graben.

Some terms appear to have become more stringent in the post-discovery contracts. Most notably, the 2012 contracts include an additional royalty and a new category of bonus that was not included in the 2004 contract. There was also a significant reduction in the maximum length of the exploration period compared to the 2004 contract. This contract allows for a maximum exploration period of six years, as also specified in the law, whereas the 2012 contracts only allow six months and one year, respectively.

However, we saw no changes in cost recovery limits, state participation or the percentage of cost and profit oil recovery in the post-discovery contracts. We did not find evidence that laws of the relevant period determined any of the contractual provisions we reviewed, except for the maximum length in exploration period, which applied to all contracts reviewed.[39]

34 Paul Bagabo and Thomas Lassourd, "Low Oil Prices Impose Difficult Choices in Uganda," Natural Resource Governance Institute, 8 June 2015, resourcegovernance.org/blog/low-oil-prices-impose-difficult-choices-uganda.

35 Tullow Oil, "Tullow in Uganda," www.tullowoil.com/our-operations/africa/uganda/.

36 Directorate of Petroleum, Government of Uganda "Petroleum Exploration History," www.petroleum.go.ug/index.php/who-we-are/who-weare/petroleum-exploration-history

37 Elias Biryabarema, "Uganda Ups Oil Reserves by 85 Percent, Finds Natural Gas," Reuters, 29 August 2014, www.reuters.com/article/uganda-oil/update-2-uganda-ups-oil-reserves-estimate-by-85-pct-finds-natural-gas-idUSL5N0QZ1EW20140829; International Monetary Fund, *Uganda: 2017 Article IV Consultation and Eighth Review Under the Policy Support Instrument*, 2017, www.imf.org/en/Publications/CR/Issues/2017/07/12/Uganda-2017-Article-IV-Consultation-and-Eighth-Review-Under-the-Policy-Support-Instrument-45069.

38 Uganda's hydrocarbon contracts on resourcecontracts.org, resourcecontracts.org/search?q=&country%5B%5D=UG&resource%5B%5D=Hydrocarbons

39 While capital gains tax is not among the tax instruments we analyzed, in Uganda this may have been one vehicle that the government used to exercise increased leverage over time. When Heritage (Uganda 1) flipped the license to Tullow in 2010, the government forcefully asked for the payment of capital gains tax. Source: www.acode-u.org/uploadedFiles/infosheet16.pdf

Uganda contracts pre- and post-discovery: Key features

- Analysis of three contracts dated between 2004 and 2012.
- The first oil discovery was made in 2006, so our sample includes one pre-discovery contract and two post-discovery contracts.
- The 2004 contract (Uganda 1) used in this analysis is an incomplete version, with some sections missing from the publicly available version, and some of the contents of the provisions analyzed were taken from a summary table attached to the incomplete contract.

Category	Term type	Observation
Operational	Relinquishment of portions of the oil block back to the state	Not specified in post-discovery contracts because there is no possibility of renewal in the later contracts
	Duration of first "exploration period"—the time during which the company is required to carry out exploration activities	Significant reduction in the maximum length of exploration period in the 2012 contracts compared to the 2004 contract, down from a maximum of six years in the 2004 contract (allowing for potentially two renewals) to one year and six months respectively in the 2012 contracts (which do not allow for renewal after the first exploration period)
	Minimum expenditure for first period of exploration	No clear pattern (changes in both directions)
	Stabilization clause	Unclear because of incomplete 2004 contract (Uganda 1)
Fiscal	Income tax	Consistent across contracts (in accordance with the law)
	Exemption to income tax	None
	Royalty	Additional royalty in contracts entered into post-discovery
	Profit oil	No pattern in share of profit oil—largely consistent, with a one percentage point difference in one of the 2012 contracts in favor of the operator (Uganda 3)
	Cost oil	Consistent
	Bonus (signature and production)	Inclusion of a discovery bonus in 2012 contracts, in addition to the signature bonus; pre-discovery contracts only included a signature bonus
	State equity	No modifications in state participation
	Contribution to community	None
	Local content	Increase in training expenditure in one of the 2012 contracts (Uganda 2). The local content provision in the other 2012 contract reviewed (Uganda 3) is identical to the pre-discovery contract.

MOZAMBIQUE: CLEAR PATTERN OF MORE STRINGENT TERMS

Exploration for oil and gas in Mozambique began in the 1950s and led to the discovery of gas in the Pande and Temane onshore fields in the 1960s.[40] These fields have been producing relatively modest quantities of gas since 2004. However, it was Anadarko's large offshore discovery in the Windjammer well of Area 1 of the Rovuma Basin in February 2010 that announced Mozambique as a potential large-scale gas producer.[41] As the company noted in a statement in February 2010, "[t]he Windjammer discovery de-risks a substantial portion of approximately 50 leads and prospects that we've identified across our 2.6-million-acre position in the basin."[42]

This was followed by two further discoveries in Area 1 in 2010, in the Barquentine and Lagosta wells. After the third discovery, an Anadarko vice-president was quoted in a press statement as saying that the three discoveries to date were already large enough to support an LNG project.[43] A giant discovery was then made by Eni in Mamba South 1 in the adjacent Area 4 in October 2011.[44] Subsequent discoveries in Areas 1 and 4 in 2011–2014 saw estimates of recoverable reserves rapidly increase. Company websites indicate that, to date, an estimated 75 trillion cubic feet (tcf) of recoverable gas has been discovered in Area 1 and 85 tcf in Area 4 (with a significant amount of these reserves in fields that straddle the two areas: the Mamba-Prosperidade complex).[45] The Energy Information Administration suggests that around 100 tcf of this gas has the potential to be classified proven (provided they reach FID stage), meaning that Mozambique's potential gas reserves would rank third-largest in Africa (after Nigeria and Algeria).[46] The gas find in Area 1 reached an FID in 2019.[47]

We analyzed 12 Mozambican contracts[48] from 2000 to 2018, covering two basins. While the first commercial discovery was in the Rovuma Basin, we also assessed the evolution of terms in contracts concerning the older Pande Temane (PT) Basin, to understand whether there was a knock-on effect on this other basin.

Mozambique demonstrated a clear overall pattern of more stringent terms across the two basins, though these seem to have been driven more by legislative changes that preceded the discovery (but took place after the pre-discovery contracts had been signed), rather than by a change in the government's approach to negotiations.

40 National Petroleum Institute of Mozambique, *Overview of Oil and Gas in Mozambique*, October 2013, www.esi-africa.com/wp-content/uploads/2013/10/INP.pdf.
41 Anadarko Petroleum, *Anadarko Announces First Deepwater Discovery Offshore Mozambique*, 18 February 2010.
42 "This is true rank wildcat exploration, and to have our first deep-water exploration well result in a discovery with more than 480 net feet of pay, thus far, is a strong indication of the potential of this basin. The Windjammer discovery de-risks a substantial portion of approximately 50 leads and prospects that we've identified across our 2.6-million-acre position in the basin." *Anadarko Petroleum, Anadarko Announces First Deepwater Discovery Offshore Mozambique*, 18 February 2010.
43 Anadarko Petroleum, *Anadarko Announces Discovery Offshore Mozambique*, 7 February 2011.
44 Eni, *Eni Announces a Giant Gas Discovery Offshore Mozambique*, 20 October 2011, www.eni.com/en_IT/media/2011/10/eni-announces-a-giant-gas-discovery-offshore-mozambique
45 Eni, "Our Work in Mozambique," www.eni.com/enipedia/en_IT/international-presence/africa/enis-activities-in-mozambique.page, accessed 22 January 2021.
46 Energy Information Administration, "Natural Gas Reserves," www.eia.gov/beta/international/rankings/#?prodact=3-6&cy=2017. Proven reserves in Areas 1 and 4 will be slightly less than 100 tcf, given that this figure includes Pande and Temane's proven reserves.
47 Eric Yep and Lucy Roux, "Anadarko Reaches FID on 12.88 Mil/mt/year Area 1 Mozambique LNG Project," S&P Global, 19 June 2019, www.spglobal.com/platts/en/market-insights/latest-news/natural-gas/061919-anadarko-reaches-fid-on-1288-mil-mt-year-area-1-mozambique-lng-project.
48 Mozambique's hydrocarbon contracts on resourcecontracts.org, resourcecontracts.org/search?q=mozambique&country%5B%5D=MZ&resource%5B%5D=Hydrocarbons.

Changes to the 2007 petroleum tax law[49] eliminated several exemptions to corporate income tax and increased the royalty burden for all contracts from 2008. Changes to the petroleum tax law in 2007 and petroleum law in 2014[50] rendered the stabilization clause narrower in scope and time. These changes were applied in the contracts signed after discovery in both basins. `

Other contract changes varied across the two basins. In the Rovuma Basin, the two post-discovery contracts are from 2018, nine years after the discovery, and are overall more onerous on the investor than their predecessors. They include the terms of the new legislation, mentioned above, and contract-specific increases in the state's share of profit petroleum, generally stricter rules on cost recovery and stronger local content provisions. Despite this overall trend toward more stringent terms, the changes in the Rovuma Basin contracts were not consistent across all the contracts in the sample. One pre-discovery contract signed with Anadarko on Area 1 (Mozambique 1) was already tough on the investor in 2006 (with the highest bonus in the sample), and a 2008 contract (Mozambique 4) mandates the highest profit share for the government for the last three tranches among all contracts.[51]

The PT Basin contracts similarly reflected the legislative changes and a more stringent approach to profit and cost petroleum, as well as larger bonuses. It is worth noting that the 2010 contract (Mozambique 3b) signed seven months after the giant discovery in the Rovuma Basin, has the toughest profit and cost oil and gas terms among all contracts reviewed. For this basin, we also observed that the prescription to pay amounts directly to communities only appears post-discovery. We note that PT had already proved its commerciality in the 1990s by selling gas to South Africa. The improvement from the Mozambican government's perspective of fiscal terms over time might therefore not be most closely related to Rovuma's giant discovery, but rather to the ability of Sasol (the main investor in PT) to leverage its own investments in the basin, for knowledge, infrastructure and approach to risk.

Mozambique's model contracts also reflect a trend toward greater stringency. Fewer terms are negotiable in the 2016 (post-discovery) model contract compared to the 2006 (pre-discovery) model. This is consistent with the hypothesis that states should be able to exert more control over oil projects after a leverage-increasing discovery.

We conclude that Mozambique follows a consistent path towards stringency, but observe that term-strengthening began through legislation that pre-dated the discovery.

49 Republic of Mozambique, *Law No. 13/2007*, 27 June 2007, www.acismoz.com/wp-content/uploads/2017/06/Law-13-2007-tax-incentives-for-mining-and-petroleum.pdf.

50 National Petroleum Institute, *Unofficial Translation of Mozambique Petroleum Law, Law No. 27/2014*, September 2014, www.inp-mz.com/core/uploads/Schedule-1-PetLaw-EN.pdf.

51 The first tranche is lower than in later contracts, which can have an important impact on the internal rate of return of the project, given the time value of money.

Mozambique contracts pre- and post-Windjammer: Key features

- Analysis among 12 contracts from 2000 to 2018, before and after the giant gas discovery of 2010.
- Our sample included seven pre-discovery contracts and five post-discovery contracts (one of which was signed in 2010, just seven months after the discovery). Among these are two model contracts: one pre-discovery, from 2006, and one post-discovery from 2016.
- The 2016 model contract contains fewer terms left open to negotiation than the 2006 model, reflecting reforms enacted in legislation on terms including royalties, income tax and stabilization.
- The contracts spanned two basins: one off the country's southern coastline (PT Basin) and one off the country's northern coastline (Rovuma).
- Among the Rovuma contracts, our sample included four pre-discovery contracts and two post-discovery contracts.

Category	Term type	Observation
Operational	Relinquishment of portions of the oil block back to the state	No clear pattern
	Duration of first "exploration period"—the time during which the company is required to carry out exploration activities	Period grew shorter over time
	Minimum expenditure for first period of exploration	No clear pattern
	Stabilization clause	Scope limited to fiscal terms (2007 Amendment to Petroleum Tax Law), and the clause has become optional since the 2014 Petroleum Law
Fiscal	Income tax or exemption	Over time, there were fewer exemptions from corporate income taxes (change driven by the 2007 Amendment to Mozambique's Petroleum Tax Law, which impacts our contract sample from 2008 onwards)
	Royalty	Increase in royalties in post-discovery contracts (change driven by the 2007 Amendment to Mozambique's Petroleum Tax Law, which impacts our contract sample from 2008 onwards)
	Profit oil or gas	Overall increase
	Cost oil or gas	Stricter in 2018 contracts than in others (although cost oil in Mozambique 1 contract is also fairly stringent, it is less so than in 2018)
	Bonus (signature and production) Continu	No clear pattern (highest bonus across all contracts in Mozambique 1 contract)
	State equity	No pattern. However, the state equity of the 2018 Mozambique 6 contract[52] is the highest across all available Mozambican contracts
	Contribution to community	No clear pattern
	Local content	Increased over time (although the requirements in the Mozambique 1 contract are also strict)

Continued on next page>

52 Both 2018 contracts, Mozambique 5 and 6, were signed in October 2018, so we cannot say that one is significantly more recent than the other

Mozambique contracts pre- and post-Windjammer: Key features *(continued)*

- Among the PT Basin contracts, the sample included two pre-discovery contracts and two post-discovery contracts. Patterns were as follows:

Category	Term type	Observation
Operational	Relinquishment of portions of the oil block back to the state	No clear pattern
	Duration of first "exploration period"—the time during which the company is required to carry out exploration activities	Period is significantly shorter in the most recent contract in this basin (Mozambique 4b)
	Minimum expenditure for first period of exploration	No clear pattern
	Stabilization clause	Scope limited to fiscal terms (2007 Amendment to Petroleum Tax Law), and the clause has become optional since the 2014 Petroleum Law
Fiscal	Income tax/Exemption to income tax	Over time there were fewer exemptions from corporate income taxes (change driven by the 2007 Amendment to Mozambique's Petroleum Tax Law, which impacts our contract sample from 2008 onwards)
	Royalty	Increase in royalties in post-discovery contracts (change driven by the 2007 Amendment to Mozambique's Petroleum Tax Law, which impacts our contract sample from 2008 onwards)
	Profit oil or gas	Overall increase in profit oil share to the state post-discovery, though it is noteworthy that the requirement in a 2018 contract was more investor-friendly than the contract signed in 2010, just seven months post-discovery
	Cost oil or gas	Grew stricter post-discovery, though it is noteworthy that the requirement in a 2018 contract was more investor-friendly than the contract signed in 2010
	Bonus (signature and production)	More onerous for investors over time
	State equity	No pattern. However, the state equity of the 2018 Mozambique 4b contract is the highest across all available Mozambican contracts
	Contribution to community	Only in post-discovery
	Local content	No clear pattern

GUYANA: MIXED (WITH A SIGNIFICANT PRO-GOVERNMENT CHANGE IN FISCAL TERMS)

Following decades of unsuccessful exploration, a consortium of international oil companies led by ExxonMobil made an exceptional oil discovery off the coast of Guyana, announced in May 2015.[53] They labelled the so-called Liza field as "significant" and signalled their commitment to intensify exploration. Drilling results announced in June 2016 from a second well found further oil and revealed recoverable resources of about 1 billion barrels. The company labeled the field "world class."[54]

Since this initial discovery, additional drilling activities in the same block have found more oil in the Payara, Snoek and Turbot fields. By April 2019, the number of discoveries had reached 13,[55] and the estimated reserves stood at 6 billion barrels.[56]

We analyzed four Guyanese contracts,[57] dated from 1999 to 2016. Three of these relate to projects in deep water (Guyana 1,2 and 4) and one to a project in shallow water (Guyana 3). In deep water, two are pre-discovery (Guyana 1 and 2) and one is post-discovery (Guyana 4). In shallow water, the only contract is pre-discovery. We did not include in our analysis a renegotiated contract that the government signed with ExxonMobil in 2016, after the Liza discovery, because as explained above in the methodology, our focus is on the evolution of government practice around the terms negotiated for new exploration and production contracts in a post-discovery environment, not on the renegotiation of existing deals.[58] While it could have been interesting to understand if contracts post this renegotiation have incorporated Exxon's renegotiated contract changes, we did not have access to contracts signed after this renegotiation.

The deep-water contracts are overall very similar, though some differ with regards to profit oil—in particular, the post-discovery 2016 Guyana 4 contract. The pre-discovery contracts have a flat profit-oil-sharing structure, whereby the share accorded to the state is constant irrespective of production. The Guyana 1 contract (with ExxonMobil for the Liza field) and the Guyana 2 contract both contain a 50-50 split between government and contractor that does not vary based on production. The shallow-water Guyana 3 contract features a flat 53-47 percent split in favor of the government, which is understandable, as shallow-water oil is less expensive to extract and associated contracts generally command tougher terms. The post-discovery contract, by contrast, contains a 50-50 split for the first 25,000 barrels of daily production, and gives the government a rising share of profit oil as production increases, up to a maximum of 60-40 for any production above 80,000 barrels per

53 See Offshore Energy, "ExxonMobil encouraged by oil discovery offshore Guyana," 21 May 2015, www.offshoreenergytoday.com/exxonmobil-encouraged-by-oil-discovery-offshore-guyana/.
54 See Offshore Energy, "ExxonMobil hits 'world-class discovery' in second well off Guyana," 30 June 2016, www.offshoreenergytoday.com/exxonmobil-hits-world-class-discovery-in-second-well-offshore-guyana/.
55 Valerie Jones, "Exxon Makes 13th Oil Discovery Offshore Guyana," *Rigzone*, 19 April 2019, www.rigzone.com/news/exxon_makes_13th_oil_discovery_offshore_guyana-19-apr-2019-158645-article/.
56 "Morgan Stanley Pegs Guyana Oil Reserves at 6 Billion Barrels," *Oil Now*, 28 May 2019, oilnow.gy/featured/morgan-stanley-pegs-guyana-oil-reserves-at-6-billion-barrels/.
57 Guyana's hydrocarbon contracts on resourcecontracts.org, resourcecontracts.org/search?q=&country%5B%5D=GY&resource%5B%5D=Hydrocarbons.
58 The renegotiated contract, resourcecontracts.org/contract/ocds-591adf-1399550295/view#/. Among the terms that were revised in the renegotiation were those related to royalties, training contributions and relinquishment. We also opted not to include the 2015 Kaieteur block contract, as this was signed less than a month before the commercial discovery announcement was made, which we deemed too close to confidently categorize as either pre- or post-discovery.

day. This is an improvement and could potentially bring additional revenues to the state, though application will depend on how narrowly a field is defined and how big the production levels are in order for the last tranche to be reached.

Given that the area of this post-discovery Guyana 4 contract is substantially smaller than the pre-discovery contracts (Guyana 1 and 2), the overall revenues to the state might not improve. This difference in size is so significant that the more generous relinquishment obligation in the Guyana 4 contract does not help reduce the gap. Guyana 4 requires relinquishment of 20 percent of the original contract area by the end of the seventh contract year, compared to relinquishment of 50 and 25 percent of the initial contract area, less any discovery areas, in Guyana 1 and 2 contracts respectively.

In addition, the training contributions required of contractors were also reduced to a non-material amount in post-discovery Guyana 4. The law[59] does not seem to have determined the contractual terms analyzed, as it dates back to 1986, was amended in 1992 and only vaguely formulates these terms.

Taking all elements of this analysis into account, we have observed a mixed situation in Guyana. On balance, the government-friendly changes to the profit oil split seem likely to be more significant in fiscal revenues than the changes to the relinquishment or training provisions. However, given the small contract area in Guyana 4, the impact remains to be seen. We note that granting small-area contracts is an improvement in itself for the government, as this improves its leverage and control.[60]

59 *Guyana Petroleum (Exploration and Production) Act 1986*, parliament.gov.gy/documents/acts/8170-act_no._3_of_1986_petroleum_(exploration_and_production)_act_1986.pdf; *Guyana Petroleum (Exploration and Production) Act 1986 (Amendment) Act 1992*, http://parliament.gov.gy/documents/acts/5883-4_of_1992_petroleum_(exploration_and_production)_act_1986(amendment)_act_1992.pdf.

60 "[I]f the license area is very large (like the Exxon's Guyana Stabroek block[1] comprising 26,800 square kilometers) then the power of the IOC [international oil company] becomes even greater. This is because they have the freedom to choose to explore a wide range of prospects in diverse geologic trends within that block without necessarily having to seek government approvals to proceed. The IOC also can "hold" the exploration license longer by exploring a relatively small part of such a large block." Thomas Mitro, Columbia Center for Sustainable Investment, forthcoming 2021.

Guyana contracts pre- and post-Liza: Key features

- Analysis among four contracts from 1999 to 2016.
- Giant discovery in 2015.
- Analysis of two pre-discovery contracts, one post-discovery for deep water and one pre-discovery in shallow water.

Category	Term type	Observation
Operational	Relinquishment of portions of the oil block back to the state	Guyana 4 is more advantageous to the contractor than the other contracts in either deep or shallow water, but the contract area is much smaller, so impact is limited.
	Duration of first "exploration period"—the time during which the company is required to carry out exploration activities	Consistent
	Minimum expenditure for first period of exploration	No clear pattern
	Stabilization clause	Consistent
Fiscal	Income tax	Consistent and paid from government share
	Exemption to income tax	None
	Royalty	Constant and paid from government share
	Profit oil	The post-discovery contract in deep water is on paper more onerous on the investor, but the revenue impact might be limited by the size of the block; the pre-discovery shallow water contract also shows a less investor-friendly profit sharing
	Cost oil	Consistent
	Bonus (signature and production)	None
	State equity	None
	Contribution to community	None
	Local content	In deep water, obligations are lower in post-discovery contracts than in pre-discovery ones, but the shallow-water contract shows the highest amount in training contribution among all contracts

MAURITANIA: MIXED

In May 2001, Woodside discovered the Chinguetti oil field in deep water off Mauritania by the Chinguetti-1 well.[61] This discovery paved the way for further exploration and discoveries.[62] The Banda (2002), Pelican (2003), Tiof (2003) and Tevet (2004) gas finds followed. Chinguetti was declared commercially viable in June 2004, and Woodside announced it would invest $600 million to develop the field.[63] The company successfully reached first oil in 2006, as planned. It is worth noting that the Chinguetti field proved disappointing from a commercial perspective. It produced at much lower levels than had been anticipated and is now being decommissioned. The country is currently awaiting production from the much larger (giant) Grand Tortue/Ahmeyim (GTA) field (2015), shared with Senegal.

We analyzed seven Mauritanian contracts[64] from 1999 to 2016, all in deep water. Two are pre-discovery and five are post-discovery. We observed a pattern of larger bonus requirements in contracts after discovery, beginning with a contract signed in 2007 that introduced a signature bonus and higher production bonus tranches (Mauritania 4). Interestingly, the highest bonus comes with the 2016 Mauritania 7 contract, which has the smallest area among all contracts. The country also required higher minimum investment expenditures in the post-discovery period than the pre-discovery contracts (though among the post-discovery contracts, there is no clear pattern over time). Beginning with the 2012 contract (Mauritania 5), the scope of the stabilization clause is reduced, so that it only covers fiscal terms.[65]

Beyond the bonus and minimum expenditure provisions, we did not observe a clear pattern for other provisions in the Mauritanian contracts post-discovery. Some terms became less stringent on investors, which might be explained by the fact that Chinguetti ended up being disappointing. Therefore we conclude that overall, Mauritania follows a mixed path. Regarding profit oil, cost oil, state equity and income tax rate, we did not observe conclusive changes. While the 2006 post-discovery contract (Mauritania 3) is similar to the pre-discovery contracts, the 2007 contract (Mauritania 4) is the most onerous on the investor across all available Mauritanian contracts vis-a-vis fiscal terms.

Among the contracts signed from 2012 onwards, we observed both a harmonization of terms and investor-friendly changes when it comes to profit oil (which transitions from being allocated according to production levels to being allocated based on profitability in 2012), income tax rate, state equity and duration of first exploration period. However, changes for cost oil were less favorable to investors. Part of this harmonization was driven by the 2010 Petroleum Law,[66] which set the maximum cost oil, maximum duration of exploration period and

61 "Mauritania Moves Closer to First Oil," *Offshore*, 1 April 2004, www.offshore-mag.com/geosciences/article/16759807/mauritania-drilling-campaign-indicates-emerging-deepwater-province www.offshore-mag.com/home/article/16756799/mauritania-moves-closer-to-first-oil.

62 "Woodside to Drill More Wells Offshore Mauritania," *Rigzone*, 9 May 2002, www.rigzone.com/news/oil_gas/a/3297/woodside_to_drill_more_wells_offshore_mauritania/.

63 International Monetary Fund, *Islamic Republic of Mauritania: Selected Issues and Statistical Appendix*, 2006, www.imf.org/external/pubs/ft/scr/2006/cr06248.pdf.

64 Mauritania's hydrocarbon contracts on resourcecontracts.org, resourcecontracts.org/search?q=&country%5B%5D=MR&resource%5B%5D=Hydrocarbons.

65 Interestingly, this is not a change driven by the 2010 Petroleum Law, as the law includes a broad-based stabilization clause.

66 Islamic Republic of Mauritania, *Loi Numero 2010-033 du 20 Juillet 2010 Portant Approbation du Code des Hydrocarbures Bruts*, www.resourcedata.org/dataset/rgi-code-des-hydrocarbures-bruts-law-2010-033-/resource/8a633593-aeba-4ebc-b885-63ef52d01270.

minimum state equity share, as well as stipulating that the contracts specify the applicable rate above a minimum rate to be prescribed by the tax law (which dates back to 1981). The law also sets the term of relinquishment, although these were the same throughout the contracts, bar the 2007 contract (Mauritania 4) mentioned above. While the direction of the changes brought about by the law does not follow a clear pattern, it is noteworthy that nine years post-discovery, the law seeks to leave fewer terms on the negotiation table.

Mauritania contracts pre- and post-Chinguetti: Key features

- Analysis among seven contracts from 1999 to 2016.
- Discovery in 2001.
- Analysis of two pre-discovery and five post-discovery contracts.
- Post-discovery 2006 contract is similar to pre-discovery contracts, while post-discovery 2007 contract (Mauritania 4) has the most onerous fiscal and operational terms for investors across all available Mauritanian contracts.
- The 2010 Petroleum Law leaves fewer terms for negotiating.

Category	Term type	Observation
Operational	Relinquishment of portions of the oil block back to the state	Same throughout, except for the 2007 contract
	Duration of first "exploration period"—the time during which the company is required to carry out exploration activities	More investor-friendly from 2012 and driven by the 2010 Petroleum Law
	Minimum expenditure for first period of exploration	Higher in post- than pre-discovery contracts, with no pattern within the former
	Stabilization clause	Scope restricted to fiscal terms from 2012
Fiscal	Income tax	Driven by 2010 Petroleum Law
	Exemption to income tax	Driven by 2010 Petroleum Law
	Royalty	None
	Profit oil	More investor-friendly from 2012 and driven by 2010 Petroleum Law
	Cost oil	More onerous on the investor from 2012 and driven by 2010 Petroleum Law
	Bonus (signature and production)	Larger post-discovery, starting from 2007
	State equity	More investor-friendly from 2012 and driven by 2010 Petroleum Law
	Contribution to community	None
	Local content	Consistent

LIBERIA: MIXED

Liberia illustrates that discovery announcements can be illusory, and that the impact of such announcements on contract terms can be fleeting. Oil exploration activities offshore from Liberia, first undertaken in the 1970s and the 1980s, reported shows of hydrocarbon in the basin. But low oil prices, the high cost of deep-water drilling, and the deadly civil war ravaging the country led to companies abandoning exploration efforts in the 1990s. From 2004, as the country was returning to peace, a number of licenses were awarded to international oil companies, and Liberia conducted several bid rounds. Neighboring finds in Ghana and Sierra Leone raised interest in the basin. The entry of major oil companies such as Chevron, which became the operator of three blocks in 2010, signaled a real interest in Liberia's oil sector.[67]

In November 2011, Anadarko found oil in offshore Liberia with its Montserrado-1 well. Although the company immediately decided to abandon that exploration effort, as oil was not found in commercial quantities, the discovery was still important news, as it "established there was a working hydrocarbon system in the Liberian basin."[68] In February 2012, African Petroleum announced a "significant oil discovery" on one of the blocks it operated (Narina-1).[69] A year later, it announced another oil discovery in the same block, suggesting these could have been part of one large oil formation.[70] While both exploration efforts found traces of oil, neither was able to confirm the existence of a commercially viable field.[71] The entrance of ExxonMobil, acquiring a majority stake in a block in 2013, also showed the heightened interest in the sector. In the meantime, Anadarko made additional discoveries on a license next to African Petroleum in 2014 (Timbo and Iroko), but these also proved to be non-commercial.

By 2015-2016, the country's oil fortunes declined rapidly, partly because initial prospects were found to be non-commercial, and partly because of a failure to bring in new investors via a bid round,[72] as the devastating Ebola outbreak raised investor concerns.[73] A number of companies (including Anadarko and Repsol) decided not

67 National Oil Company of Liberia, *Background Briefing on Liberia*, www.nocal.com.lr/pdf/Press_Releases/Background_Briefing_on_Liberia.pdf

68 Hart Energy, "Liberian Well Comes Up Short With Non-Commercial Oil," 11 November 2011, www.epmag.com/liberian-well-comes-short-non-commercial-oil-669356.

69 National Oil Company of Liberia, *Presentation on African Petroleum, Oil Discovery*, February 2012, www.nocal.com.lr/pdf/Speeches_Presentations/African_Petroleum_Oil_Discovery_Feb2012.pdf.

70 "African Petroleum Makes Oil Discovery Offshore Liberia," *Offshore Energy*, 20 February 2013, www.offshore-energy.biz/african-petroleum-makes-oil-discovery-offshore-liberia/.

71 "African Petroleum Exits Liberia," *Rigzone*, 23 November 2016, www.rigzone.com/news/oil_gas/a/147523/african_petroleum_exits_liberia/.

72 "NOCAL Collapses One Year On—Liberia's Oil Basin Goes Quiet," Front Page Africa, 14 September 2016, frontpageafricaonline.com/business/nocal-collapses-one-year-on-liberia-s-oil-basin-goes-quiet/.

73 National Oil Company of Liberia, *NOCAL Bid Round Explained*, 17 December 2014, allafrica.com/stories/201412171656.html.

to renew their expiring licenses in 2016.[74] African Petroleum also relinquished its license in 2016, after failing to attract additional investors.[75] Exxon drilled a dry hole in late 2016, in what it had hoped to be a promising prospect,[76] and relinquished its license in 2017.[77] By the end of 2017, most of the key explorers were gone.

We analyzed seven Liberian contracts[78] from 2004 to 2015. Five of these are from before the Anadarko and African Petroleum announcements and two are post-announcement. All contracts relate to offshore projects. Over time, the terms of these contracts featured an increase in the government share of profit oil and in the minimum exploration expenditures companies were required to make. The other fiscal terms are consistent over time. The operational terms present no pattern, except for the minimum required expenditure in the first exploration period, which does show an increase after the initial discovery headlines. The local content requirements loosen slightly over time, removing the joint-venture requirement above a certain threshold of contract value. Of the two contracts signed post-announcement, the 2013 Exxon contract (Liberia 6)[79] stands out, with pro-state terms governing royalty, signature bonus and state equity that go beyond the other contracts. The other post-announcement contract, signed with Repsol in 2015 (Liberia 7), features fewer notable changes from the pre-discovery regime.

The 2002[80] and 2014[81] Petroleum Laws specify equity shares, length of exploration, relinquishment allocations and—only in the 2002 law—royalty rates. The 2000 Revenue Code and its 2011 Amendment[82] define income tax for the petroleum sector. Many of the provisions in these laws were not reflected in the contracts that succeeded them, therefore it appears that these laws did not drive the above changes. However, it is noteworthy the 2014 Petroleum Law is more lenient in the terms that it set for state equity, exploration length and relinquishment than the 2002 Petroleum Law.

74 "NOCAL Collapses One Year On—Liberia's Oil Basin Goes Quiet," Front Page Africa, 14 September 2016, frontpageafricaonline.com/business/nocal-collapses-one-year-on-liberia-s-oil-basin-goes-quiet/.
75 "African Petroleum Exits Liberia," *Rigzone*, 23 November 2016, www.rigzone.com/news/oil_gas/a/147523/african_petroleum_exits_liberia/.
76 "Liberia's Hope for Oil Falters as ExxonMobil Fails to Find Oil," Front Page Africa, 11 January 2018, frontpageafricaonline.com/business/liberia-s-hope-for-oil-falters-as-exxonmobil-fails-to-find-oil/.
77 "Liberia: ExxonMobil and Canadian Overseas Petroleum Relinquish Block LB-13, Offshore Liberia," Energy-pedia News, 3 November 2017, www.energy-pedia.com/news/liberia/exxonmobil-and-canadian-overseas-petroleum-relinquish-block-lb-13--offshore-liberia-172166.
78 Liberia's hydrocarbon contracts on resourcecontracts.org, resourcecontracts.org/search?q=&country%5B%5D=LR&resource%5B%5D=Hydrocarbons.
79 Full contract, http://resourcecontracts.org/contract/ocds-591adf-6713867467/view#/pdf.
80 Republic of Liberia, *Petroleum Law of 2002*, www.eisourcebook.org/cms/December%202015/Liberia%20Petroleum%20Law%202002.pdf.
81 Republic of Liberia, *An Act to Amend and Restate the New Petroleum Law of Liberia 2002 Thereby Establishing the New Petroleum (Exploration and Production) Reform Law of Liberia, 2014*, www.nocal.com.lr/operations/New%20Petroleum%20Law/Petroleum%20E&P%20Law%202016%20Final.pdf.
82 Republic of Liberia, *Amendments to the Revenue Code of Liberia Act of 2000—Consolidated Tax Amendments Act of 2011*, www.lra.gov.lr/Admin/Official_Files/revenue_code/05cbe7e98773ea91aa94aea6d86b91e1.pdf.

Liberia contracts pre- and post-discovery: Key features

- We analyzed seven contracts from 2004 to 2015.
- The first announcement of a purported discovery was in 2011, with a second discovery in 2012.
- Both discoveries were subsequently deemed non-commercial and have been abandoned.
- Our sample includes five pre-discovery and two post-discovery contracts.

Category	Term type	Observation
Operational	Relinquishment of portions of the oil block back to the state	No clear pattern
	Duration of first "exploration period"—the time during which the company is required to carry out exploration activities	No clear pattern
	Minimum expenditure for first period of exploration	Overall increase in minimum expenditure in post- vs pre-announcement contracts
	Stabilization clause	Consistent
Fiscal	Income tax	No clear pattern
	Exemption to income tax	None
	Royalty	One of the post-announcement contracts (with ExxonMobil, Liberia 6) includes a provision on royalties. These are not included in the pre-discovery contracts
	Profit oil	Slight increase in post-announcement agreements.
	Cost oil	No clear pattern
	Bonus (signature and production)	One of the post-announcement contracts (with ExxonMobil, Liberia 6) includes an additional bonus not seen in the pre-announcement contracts
	State equity	The post-announcement Liberia 6 contract with ExxonMobil includes an option for state equity which is absent from the pre-announcement contracts
	Contribution to community	None
	Local content	Loosening of local content requirements, which started pre-announcement. Terms set by 2002 and 2014 Petroleum Laws have been largely overridden by contract. However, the 2014 law is more lenient on the terms that it set for state equity, exploration length and relinquishment.

SENEGAL: MIXED

Petroleum was discovered in Senegal in 1967, but in small and uncommercial quantities. The gamechanger was the SNE Deepwater Oil Field, discovered in November 2014 on the Senegalese portion of the Mauritania-Senegal-Guinea Bissau Basin. The discovery is classified as giant and was announced by the joint venture managing the project as the largest oil discovery of 2014: "We have encountered a very substantial oil-bearing interval which may have significant potential as a standalone discovery. Furthermore, this result materially upgrades the prospectivity of the block with a proven petroleum system and a number of deep fan and shelf prospects established."[83]

Following the SNE discovery, further appraisal wells were subsequently drilled in 2015 and 2016. These evaluations confirmed that the SNE field had oil and gas in commercial quantities, with additional appraisal wells showing increasing amounts of contingent recoverable resources from the field.[84] A large gas field (Grande Tortue/Ahmeyim) was also discovered by Kosmos Energy in 2015, straddling the Senegal-Mauritania border. The SNE field (renamed to Sangomar) reached FID in 2020.[85]

We analyzed five Senegalese contracts[86] from 2004 to 2017—three pre-discovery and two post-discovery. All relate to deep-water projects, with Senegal 5 being in ultra-deep water. While some contract terms are tougher in the post-discovery period (including on local content, minimum expenditure and work programs), others became more pro-investor over time (including on profit oil, length of exploration and relinquishment) or showed no pattern (cost oil). We note that the ultra-deep-water Senegal 5 contract is more advantageous to the investor than the other post-discovery Senegal 4 deep-water contract. This is expected, as ultra-deep water entails higher uncertainty and cost of extraction. Terms related to corporate income tax were set by the fiscal law changed in 2012, before the discovery.[87] The petroleum law[88] and its decree,[89] dating back to 1998, did not drive the above observed changes, being vague on all terms besides royalties, which interestingly do not feature in the contracts we analyzed.

83 Full quotation: "The oil discovered in the FAN-1 prospect is an important event for Senegal and the Joint Venture. We have encountered a very substantial oil-bearing interval which may have significant potential as a standalone discovery. Furthermore, this result materially upgrades the prospectivity of the block with a proven petroleum system and a number of deep fan and shelf prospects established. Work is already underway with the Joint Venture partners to determine follow-up activity which is targeted for 2015 onwards. Cairn looks forward to working with the Government of Senegal and our partners to realise the full potential from this large acreage position off the West coast of Senegal." FAR Ltd., *The World's Largest Oil Discovery 2014—Presentation to Melbourne Mining Club*, 15 March 2016, www.melbourneminingclub.com/wp-content/uploads/2015/11/CE-Presentations-March-15-2016.pdf.

84 FAR Ltd., *The World's Largest Oil Discovery 2014—Presentation to Melbourne Mining Club*, 15 March 2016, http://www.melbourneminingclub.com/wp-content/uploads/2015/11/CE-Presentations-March-15-2016.pdf; "SNE Deepwater Oil Field," Offshore Technology, www.offshore-technology.com/projects/sne-deepwater-oil-field/, accessed 22 January 2021.

85 Cairn Energy, *Cairn Takes Final Investment Decision on Sangomar Field Development in Senegal*, 15 January 2020, www.cairnenergy.com/news-media/news/2020/cairn-takes-final-investment-decision-on-sangomar-field-development-in-senegal/#Tabundefined=1.

86 Senegal's hydrocarbon contracts on resourcecontracts.org, resourcecontracts.org/search?q=&country%5B%5D=SN&resource%5B%5D=Hydrocarbons.

87 Republique du Senegal, *Code General des Impots*, 31 December 2012, http://www.jo.gouv.sn/spip.php?article9554.

88 Republique du Senegal, *Loi Numero 98-05 Portant Code Pétrolier*, 8 January 1998, itie.sn/reglementation/.

89 Republique du Senegal, *Projet de Decret Numero 98-810, Fixant les Modalités et Conditions d'Application de la Loi Numero 98-05 du 08 Janvier 1998 Portant Code Pétrolier*, www.slideshare.net/rignese/dcret-n-98810-du-06-octobre-1998-fixant-les-modalits-et-conditions-dapplication-de-la-loi-n-9805-du-08-janvier-1998-portant-code-ptrolier.

Senegal contracts pre- and post-discovery: Key features

- Analysis among five contracts from 2004 to 2017 in deep water.
- Giant discovery in 2014.
- Analysis of three pre-discovery and two post-discovery contracts (including one in ultra-deep water)
- All changes are contractual, as the laws regulating contracts, the 1998 Petroleum Law and further decrees, are very vague.

Category	Term type	Observation
Operational	Relinquishment of portions of the oil block back to the state	Less stringent post-discovery
	Duration of first "exploration period"—the time during which the company is required to carry out exploration activities	Less onerous for the investor over time
	Minimum expenditure for first period of exploration	Overall increase over time
	Stabilization clause	Consistent
Fiscal	Income tax	Driven by the tax law that changed pre-discovery, in 2012
	Exemption to income tax	Driven by the tax law that changed pre-discovery
	Royalty	Range of royalty rates is set by 1998 law, but contracts do not mention royalties
	Profit oil	Slight loosening in favor of the investor, in particular for Senegal 4 and Senegal 5
	Cost oil	No clear pattern
	Bonus (signature and production)	None
	State equity	Consistent
	Contribution to community	None
	Local content	Contributions to training, promotion, and equipment of the sector; overall increase over time

KENYA: MIXED

While exploration for oil in Kenya began in 1954, high oil prices from 2004, accompanied by large-scale oil and gas discoveries in neighboring Tanzania and Uganda, resulted in an increase in exploration activity.[90] Oil was discovered, and in commercially viable quantities, in March 2012.[91] This was followed by a series of discoveries in two blocks in the South Lokichar basin (blocks 10BB and 13T). Confirmed recoverable reserves in these blocks increased from an initial 300 million barrels to 600 million barrels in 2014 and then to 750 million barrels in 2016. However, in early 2018, this figure was revised down to 540 million barrels.[92] While oil exploration in other parts of Kenya has slowed since the fall in global oil prices in 2014,[93] it is still taking place with some success.[94] Estimates of potential recoverable reserves in Kenya as a whole have ranged from 1.4 billion to 10 billion barrels, but it remains to be seen whether such expectations will be met.[95] No final investment decision has been made, but the country started small-scale production in 2018 from the South Lokichar basin, as part of an early oil pilot scheme.[96]

We analyzed five publicly available Kenyan contracts,[97] the earliest signed in 2007 and the latest in 2015, two of which were model contracts (one pre-discovery, Kenya 3, and one post-discovery, Kenya 5). The contracts all concerned onshore blocks, though none was in the same basin as the 2012 discovery, which could limit the impact of Lokichar on the government's negotiating leverage.

We did not discern a pattern in the contracts reviewed. Some terms became more onerous for investors over time. For example, the length of the first exploration period was reduced by a year post-discovery, the bonus payment went up, state equity increased and investors were required to contribute to community development projects, as well as comply with more detailed local content provisions.

However, we also saw some terms become less onerous for investors. We observed a reduction in the minimum exploration investment required, and a higher cost-oil limit. While it is difficult to discern an overall pattern in the contracts signed with investors, there was a noteworthy evolution in the model contract. The 2015

90 PWC, *Towards a Petroleum Sector Master Plan for Kenya*, www.pwc.com/ke/en/assets/pdf/petroleum-sector-master-plan-for-kenya.pdf; Luke Patey, *A Belated Boom: Uganda, Kenya, South Sudan and Prospects and Risks for Oil in East Africa*, Oxford Institute for Energy Studies, May 2017, www.oxfordenergy.org/wpcms/wp-content/uploads/2017/05/A-Belated-Boom-Uganda-Kenya-South-Sudan-and-prospects-and-risks-for-oil-in-East-Africa-WPM-71.pdf.

91 Tullow Oil Plc., *Ngamia1 Oil Discovery in Kenya Rift Basin*, 26 March 2012, www.tullowoil.com/media/press-releases/ngamia-1-oil-discovery-in-kenya-rift-basin.

92 Tullow Oil Plc., *2017 Annual Report*, www.annualreports.com/HostedData/AnnualReportArchive/T/LSE_TLW_2017.pdf.

93 Luke Patey, A Belated Boom: *Uganda, Kenya, South Sudan and Prospects and Risks for Oil in East Africa, Oxford Institute for Energy Studies*, May 2017, www.oxfordenergy.org/wpcms/wp-content/uploads/2017/05/A-Belated-Boom-Uganda-Kenya-South-Sudan-and-prospects-and-risks-for-oil-in-East-Africa-WPM-71.pdf.

94 See, for example, Rick Wilkinson, "BG Group Make Oil, Gas Discovery Off Kenya, *Oil & Gas Journal*, 19 June 2014, www.ogj.com/articles/2014/06/bg-led-group-make-oil-gas-discovery-off-kenya.html.

95 PWC, *Towards a Petroleum Sector Master Plan for Kenya*, www.pwc.com/ke/en/assets/pdf/petroleum-sector-master-plan-for-kenya.pdf; Katrina Manson, "Kenya's Oil and Mineral Prospects Fire Global Interest," Financial Times, 25 November 2013, www.ft.com/content/20badca4-504b-11e3-9f0d-00144feabdc0.

96 "Kenya Project On Track Despite Unrest," *Petroleum Economist*, www.petroleum-economist.com/articles/politics-economics/africa/2018/kenya-project-on-track-despite-unrest.

97 Kenya's hydrocarbon contracts on resourcecontracts.org, resourcecontracts.org/search?q=&country%5B%5D=ke&resource%5B%5D=Hydrocarbons.

model, adopted post-discovery, left fewer terms open for negotiation, specifying relinquishment, cost oil and profit oil. We did not find evidence that laws of the relevant period determined any of the contractual provisions.

One possible explanation for the mixed changes in terms is that the contract areas analyzed are geographically further apart, in what may constitute different onshore basins, and only one has proven reserves. The different locations may also have different pipeline requirements for commercialization, which may be reflected in contract terms because of cost implications.

Kenya contracts pre- and post-discovery: Key features

- Kenya made a commercial discovery of oil in March 2012.
- Our sample included five contracts from 2007-2015.
- Three contracts were pre-discovery (two signed contracts and a 2008 model contract) and two were post-discovery (one from May 2012, two months post-discovery, and a model contract from 2015).
- Comparing the model contracts alone, there does seem to be some pattern: relinquishment, cost oil and profit oil splits are all specified in the later model contract, whereas pre-discovery, they are left open to negotiation.

Category	Term type	Observation
Operational	Relinquishment of portions of the oil block back to the state	Largely consistent, but the pre-discovery model contract leaves the relinquishment percentage to be negotiated, whereas the post-discovery model does not
	Duration of first "exploration period"—the time during which the company is required to carry out exploration activities	A one-year reduction in the post-discovery contract
	Minimum expenditure for first period of exploration	Reduction in minimum exploration investment in post-discovery contract
	Stabilization clause	Consistent
Fiscal	Income tax	Consistent and in accordance with the law
	Exemption to income tax	None
	Royalty	None
	Profit oil	No significant pattern
	Cost oil	Cost oil limit higher in post-discovery contracts
	Bonus (signature and production)	Increase in bonus payment in post-discovery contract
	State equity	Slightly higher state participation in post-discovery contract
	Contribution to community	Requirement to contribute money toward community development projects in a post-discovery contract
	Local content	More detailed and onerous local content provisions in post-discovery contracts

5. Discussion of results

Our contract analysis shows that some new producer countries did seem to take advantage of apparent leverage in the wake of a discovery to negotiate deals that sought to give the state a larger share of the financial and other benefits from potential future discoveries. Three of the eight countries with available contracts exhibited a clear pattern of strengthening the state's hand once a discovery took them beyond the realm of being seen as "frontier" countries.

In some cases, the change in approach appears to be dramatic. In one (Ghana 5), Ghana negotiated a post-discovery contract that increased the contractor's royalty obligation from 7.5 percent to 12.5 percent, and more than doubled the maximum equity share for the national oil company. In other cases, the changes, while clear, do not seem to dramatically increase the government's prospects for revenues or control. It was beyond the scope of this analysis to assess the overall impact of changes or to compare them against some hypothetical assessment of how well a country could have done in a post-discovery landscape. But the public contracts from these three countries suggest that the theory is valid, and that countries did, in practice, attempt to strengthen their hand after discovery.

Perhaps a more interesting observation is that the other five countries we examined did not demonstrate any clear pattern in the direction of more state-friendly terms in the wake of their discoveries. In some cases, our designation of "mixed" results reflects divergences across different contracts. The contract that Liberia signed with ExxonMobil in 2013 (Liberia 6) contained significant steps that increased the government's prospective take, for example, but another contract signed subsequently did not contain similar changes, and a revised law in 2014 made additional concessions to investors. In other cases, even within specific contracts there was no clear directional trend, with some post-discovery terms more government friendly and others more pro-investor within the same contract.

Table 4 summarizes the changes across the countries. The terms in which pro-government changes were most common included duration of and minimum expenditure on exploration; royalties and bonuses. In common, these terms are relatively straightforward to design and implement. This could mean that it is reasonably easy for governments to incorporate them into negotiation strategies and new contracts. Cross-country patterns are less apparent for other terms, such as income tax, profit and cost oil, and local content.

Table 4: Cross-country changes per contract term

Category	Term type	Countries where terms became clearly more stringent	Countries where terms became clearly less stringent
Operational	Relinquishment of portions of the oil block back to the state		Guyana, Senegal
	Duration of first "exploration period"	Uganda, Mozambique (Rovuma and PT), Kenya	Senegal
	Minimum expenditure for first period of exploration	Ghana, Mauritania, Liberia, Senegal	Kenya
	Stabilization clause	Ghana, Mozambique (Rovuma and PT)	
Fiscal	Income tax	Ghana (additional oil entitlement)	
	Exemptions from income tax	Mozambique (Rovuma and PT)	
	Royalty	Ghana, Uganda, Mozambique (Rovuma and PT)	
	Profit oil	Mozambique (Rovuma and PT); Guyana, Liberia	Mauritania, Senegal
	Cost oil	Mozambique (Rovuma and PT); Mauritania	Kenya
	Bonus (signature and production)	Uganda, Mozambique (PT), Mauritania, Liberia, Kenya	
	State equity	Ghana, Kenya	Mauritania
	Contribution to community	Kenya	
	Local content	Mozambique (Rovuma), Uganda (1 of 2 contracts), Senegal, Kenya	Guyana, Liberia

4. Conclusion and policy implications

Our results show that the path from being a frontier country to a producer country with leverage to insist on dramatically more stringent contract terms has never been linear or predictable. This research adds to recent work highlighting other challenges that new producers face in meeting the dramatic expectations that arise in the wake of a discovery.[98] Major discoveries did not necessarily translate directly to increased leverage in contract negotiations. Our results point to several other factors that impacted the pathways of these negotiations:

- Not all "discoveries" are created equal. Some prove illusory (Liberia, most clearly among our cases), while others generate strong investor enthusiasm for a time before fading into disappointment (such as Mauritania's Chinguetti).
- Leverage and industry perception vary by geological basin, not just by country. Although political leaders sometimes talk about a country emerging from frontier status, the industry's perception of potential and risk depend in large measure on geology. In countries including Kenya and Mozambique, the discovery of one viable basin did not fundamentally transform assessments of prospectivity in other parts of the country.
- Regulatory factors may also impact risk perception, especially in situations in which governments and companies struggle for years to reach FID or to move from discovery to production.
- Gas is not oil, and commercial discoveries where gas plays a prominent role in total project value will not necessarily lead to increased leverage for the government on new gas projects, as these depend heavily on the associated gas infrastructure, such as for liquid natural gas or pipelines to enable transportation to market.
- Politics and capacity matter. The government's strategic approach, capacity to execute its strategy and relationships with various stakeholders have a major impact on goals and results.

Overhanging all these considerations is the fact that market conditions are the most significant drivers of investor interest and government leverage. When prices plummeted in 2014, exploration budgets tightened worldwide.[99] This changed perceptions of the thresholds for commercial viability, and generally altered the leverage governments could exert in trying to attract investor dollars.

98 See, for example, Mihalyi and Scurfield, *How Did Africa's Prospective Petroleum Producers Fall Victim to the Presource Curse?*, James Cust and David Mihalyi, *Evidence for a Presource Curse? Oil Discoveries, Elevated Expectations and Growth Disappointments*, World Bank, 2017, openknowledge.worldbank.org/handle/10986/27643.

99 Gerhard Toews and Alexander Naumov. The Relationship Between Oil Price and Costs in the Oil and Gas Industry, (Oxford Centre for the Analysis of Resource Rich Economies, 2015), www.economics.ox.ac.uk/materials/papers/13819/paper152.pdf.

2020 brought new challenges, with COVID-19 dramatically reducing oil demand and the investment budgets of oil companies.[100] At a more fundamental level, the prospect of long-term decline in fossil fuel prices amid the global energy transition is exacerbating uncertainties. The International Energy Agency has found that in order for the world to reach net-zero emissions by 2050, no new oil and gas fields that have not already reached FID should be approved.[101] The drive to reduce global emissions has major implications for decisions that governments will make about whether to engage in additional licensing or contracting at all, and what terms to prioritize were they do so. The think-tank Carbon Tracker estimates that the revenues governments collect from oil and gas projects could decline by $13 trillion below usual expectations if the world achieves the reductions in demand for fossil fuels necessary to reach the International Energy Agency's low-carbon Sustainable Demand Scenario.[102] With fewer profits in the industry and smaller available investment pools, there is the prospect of a "race to the bottom" in contract terms, and some new producer governments have indicated that they are considering speeding up licensing or loosening fiscal terms in order to be more attractive.[103] In making decisions about whether and when to conduct licensing exercises, and on how to structure government demands on new projects going forward, recent experience suggests that new producer governments should aim to:

- Integrate oil sector decisions with government priorities on national development, energy and climate. It is more important than ever that ministries of petroleum and energy or national oil companies avoid making decisions in a silo. With the increasing pressure on governments to take advantage of extraction for development, live up to climate commitments and increase energy access—on an ever-tightening timetable—cross-governmental coordination is critical to promote coherence.
- Set clear priorities and objectives. Governments should and integrate their objectives coherently into planning processes, licensing decisions and negotiations. This will be more important than ever before, as profit margins in the industry are squeezed more tightly going forward. One factor that can spur a "race to the bottom" is a lack of prioritization, wherein governments rush to award contracts as a goal in itself, rather than focusing on achieving defined economic and development objectives and determining regulatory and contractual frameworks based on these objectives.
- Communicate regularly and openly with industry counterparts. This is important in order to understand the market's perceptions of the country, its geology and its fiscal terms, as well as broader trends in the market.

100 See Rystad Energy Research, COVID-19 Report, 8th Edition: Global Outbreak Overview and Its Impact on the Energy Sector, 29 April 2020, which forecast a 24 percent year-on-year decrease in oil-sector capital expenditure.

101 International Energy Agency, *Net Zero by 2050: A Roadmap for the Global Energy Sector*, May 2021, https://www.iea.org/reports/net-zero-by-2050.

102 Mike Coffin, Axel Dalman and Andrew Grant, *Beyond Petrostates: The Burning Need to Cut Oil Dependence in the Energy Transition, Carbon Tracker*, February 2021, https://carbontracker.org/reports/petrostates-energy-transition-report/.

103 See, for example, Libby George, "African oil states offer new deals to lure more selective investors," Reuters, 11 November 2019, af.reuters.com/article/investingNews/idAFKBN1XL1F7-OZABS; Alastair O'Dell, "Ghana aims to speed up," Petroleum Economist, 7 November 2019, www.petroleum-economist.com/articles/politics-economics/africa/2019/ghana-aims-to-speed-up.

- Award contracts by competitive bidding. Where governments decide to pursue licensing or to negotiate new contracts, competitive bidding is the surest way for the state to understand the market, select partners effectively and maximize company contributions.
- Standardize terms in legislation. By setting contract terms in law to the maximum degree possible and reducing the scope of terms open to negotiation on individual contracts, governments increase their opportunity to set the terms for deals, based on a coherent strategy reflecting emerging realities.
- Build institutional memory and learning. By drawing on experience from past contract bidding, negotiation and implementation, governments can build strength in sector management and avoid repeating mistakes.
- Stress-test contract terms, fiscal regimes and the country's cost of production. This can enable governments to manage national risk against a variety of energy transition scenarios. The exact pace at which the global energy transition will proceed is uncertain, but many countries and companies have already announced plans to reach carbon neutrality by 2050.[104] Several international oil companies have begun to lower their long-term price forecasts, write down projects that are no longer expected to be profitable and limit exploration in new frontiers.[105] Not all oil companies publish their price forecasts, but several—including BP, Shell and Total—have recently published long-term forecasts of $60 per barrel, and analysts estimate the world keeping to a Paris-aligned carbon budget would result in long-term prices of $40-50 per barrel. These figures are below the cost of production for many projects in new producer countries, meaning these projects could struggle to break even.[106] In this context, assessing whether a project would deliver strong returns to the state under a range of price and demand scenarios is critical to enable governments to make informed decisions about whether to proceed with licensing, and on which terms.

104 Energy and Climate Intelligence Unit, Net Zero Tracker, eciu.net/netzerotracker; NS Energy, *Which major oil companies have set net-zero emissions targets?*, 16 December 2020, www.nsenergybusiness.com/features/oil-companies-net-zero/; Carbon Intelligence, *Following the UK Government's announcement to be Net Zero by 2050 many businesses have set their own ambitious targets to tackle climate change*, February 2021, carbon.ci/insights/companies-with-net-zero-targets/

105 See Jillian Ambrose, "Seven Top Oil Firms Downgrade Assets by $87bn in Nine Months," *The Guardian*, 15 August 2020, www.theguardian.com/business/2020/aug/14/seven-top-oil-firms-downgrade-assets-by-87bn-in-nine-months (on write-downs by oil companies in the wake of lowering price estimates); Stanley Reed, "BP Reports a Huge Loss and Vows to Increase Renewable Investment," *New York Times*, 4 August 2020, www.nytimes.com/2020/08/04/business/energy-environment/bp-renewable-investment.html (highlighting the company's commitment not to start exploring in any new countries).

106 For an overview of a range of long-term price estimates and their implications for new oil and gas projects, see David Manley and Patrick R.P. Heller, *Risky Bet: National Oil Companies in the Energy Transition*, Natural Resource Governance Institute, February 2021, resourcegovernance.org/analysis-tools/publications/risky-bet-national-oil-companies-energy-transition, 3-6; Espen Erlingsen, "Oil Production Costs Reach New Lows, Making Deepwater One of the Cheapest Sources of Novel Supply," *Rystad Energy Press Release*, 21 October 2020, www.rystadenergy.com/clients/articles/press-releases/oil-production-costs-reach-new-lows-making-deepwater-one-of-the-cheapest-sources-of-novel-supply/.

At a broader level, the time has come for new producers to look for opportunities to innovate, including by working within government and with prospective partners. Approaches include:

- Systematically adopting terms within extractive contracts that better protect governments and companies against long-term volatility and uncertainty, such as periodic review or progressive fiscal terms.
- Developing new terms that minimize the carbon footprint in operations, while keeping them cost-competitive—for example, zero routine flaring and the use of renewable energies to power the operations.
- Apply the skills and practices developed in the hydrocarbons sector to new areas of potential growth, including climate-smart mining and agriculture, renewable energy technology and green hydrogen.

Appendix: Contracts

GHANA

Ghana 1: Kosmos Energy Ghana HC, E.O. Group, West Cape Three Points Block, Concession, 2004

Ghana 2: Tullow Ghana Limited, Sabre Oil and Gas Limited, Kosmos Energy Ghana HC, Deepwater Tano, Concession, 2006

Ghana 3: Ghana National Petroleum Corporation, Vitol Upstream Ghana Limited, Cape Three Points South, PSA, 2008

Ghana 4: Medea Development Limited, Cola Natural Resources, Ghana National Petroleum Corporation, East Cape Three Points, Concession Agreement, 2013

Ghana 5: UB Resources Limited, Royalgate Gh Limited, Houston Drilling Management Ghana Limited, Ghana National Petroleum Corporation, Offshore Cape Three Points South, Concession Agreement, September 2014

Ghana 6: GNPC Operating Services Company Limited, Heritage Exploration and Production Ghana Limited, Blue Star Exploration Ghana Limited, GNPC Exploration and Production Company Limited, East Keta Offshore, Concession Agreement, 2015

Ghana 7: Swiss African Oil Company Limited, Pet Volta Investments Limited, Ghana National Petroleum Corporation, Onshore Offshore Keta Delta Block, Concession Agreement, 2015

Ghana 8: Springfield E&P Limited, Ghana National Petroleum Corporation, GNPC Exploration and Production Company Limited, West Cape Three Points Block 2, Concession Agreement, 2015

GUYANA

Guyana 1: Esso Exploration and Production Guyana Ltd., Liza Well, PSA, 1999

Guyana 2: Anadarko Guyana Company, Roraima, PSA, 2012

Guyana 3: CGX Resources Inc, PSA, 2013

Guyana 4: Tullow Guyana B.V., Eco Oil and Gas Limited, Orinduik Block, PSA, 2016

KENYA

Kenya 1: Lion Petroleum Inc., Block 1, PSA, 2007

Kenya 2: Lion Petroleum Inc., Block 2B, PSA, 2008

Kenya 3: Model Contract, PSA, 2008

Kenya 4: CAMAC Energy Kenya Limited, Block L1B, PSA, 2012

Kenya 5: Model Contract, PSA, 2015

LIBERIA

Liberia 1: Repsol Exploracion SA, National Oil Company of Liberia, Block LB-17, PSA, 2004

Liberia 2: Regal Liberia Limited European Hydrocarbons Limited, National Oil Company of Liberia, Block 8, PSA, 2005

Liberia 3: Broadway Consolidated PLC, National Oil Company of Liberia, Offshore Block 13, PSA, 2005

Liberia 4: Oranto Petroleum Limited, National Oil Company of Liberia, Block LB-12, PSA 2006

Liberia 5: Oranto Petroleum Limited, National Oil Company of Liberia, Block LB-14, PSA, 2009

Liberia 6: ExxonMobil Exploration and Production Liberia Limited, Canadian Overseas Petroleum (Bermuda) Limited, National Oil Company of Liberia, Block 13, PSA, 2013

Liberia 7: Repsol Exploracion S.A., National Oil Company of Liberia, Block LB-16, PSA, 2015

MAURITANIA

Mauritania 1: Dana Petroleum E&P Ltd, Hardman Petroleum Pty Ltd, Elixir Company, PSA, 1999

Mauritania 2: Dana Petroleum (E&P) Limited, Hardman Petroleum (Mauritania) Pty Ltd., Elixir Corporation Pty Ltd., Côtier Block 7, PSA, 1999

Mauritania 3: Woodside Mauritania Pty Ltd., Petronas Carigali Overseas Sdn Bhd, Hardman Petroleum (Mauritania) Pty Ltd., ROC Oil (Mauritania) Company, Planet Oil (Mauritania) Limited, Côtier Block 6, PSA, 2006

Mauritania 4: Blue Chip Energy S.A., Bloc 32, PSA, 2007

Mauritania 5: Kosmos Energy Mauritania, Bloc C13, PSA, 2012

Mauritania 6: Kosmos Energy Mauritania, Bloc C8, PSA, 2012

Mauritania 7: Kosmos Energy Mauritania, Block C6, PSA, 2016

MOZAMBIQUE

Mozambique 1: Empresa Nacional de Hidrocarbonetos E.P., Anadarko Moçambique Área 1 Limitada, Rovuma Offshore Area 1, PSA, 2006

Mozambique 2: Empresa Nacional de Hidrocarbonetos E.P., Eni East Africa S.p.A., Rovuma Offshore Area 4, PSA, 2006

Mozambique 3: Empresa Nacional de Hidrocarbonetos E.P., Artumas Moçambique Petróleos, Limitada, Rovuma Onshore Area, PSA, 2007

Mozambique 4: Empresa Nacional de Hidrocarbonetos E.P., PC Mozambique (Rovuma Basin) Ltd., Rovuma Offshore Area 3-Rovuma Offshore Area 6, PSA, 2008

Mozambique 5: Eni Mozambico, Sasol Petroleum Mozambique Exploration Limitada, Empresa Nacional de Hidrocarbonetos, Block A5-A, PSA, 2018

Mozambique 6: ExxonMobil Moçambique Exploration and Production Limitada, RN Angoche PTE. LTD, Empresa Nacional de Hidrocarbonetos, Block A5-B, PSA, 2018

Mozambique 1b: Empresa Nacional de Hidrocarbonetos E.P., Sasol Petroleum Mozambique Limitada, Pande-Temane, PSA, 2000

Mozambique 2b: Empresa Nacional de Hidrocarbonetos E.P., Sasol Petroleum Sofala Limitada, Offshore Block 16-Offshore Block 19, PSA, 2005

Mozambique 3b: Empresa Nacional de Hidrocarbonetos E.P., Sasol Petroleum Mozambique Exploration Limitada, Onshore Area A, PSA, 2010

Mozambique 4b: Sasol Petroleum Mozambique Exploration Limitada, Empresa Nacional de Hidrocarbonetos, Block PT5-C, PSA, 2018

Mozambique 1c: Model contract, 2006

Mozambique 2c: Model contract, 2016

SENEGAL

Senegal 1: Senegal Hunt Oil Company, Societe des Petroles du Senegal, Rufisque Offshore, Sangomar Offshore Profond, Sangomar Offshore, PSA, 2004

Senegal 2: African Petroleum Senegal Limited, Société des Pétroles du Sénégal, PSA, 2011

Senegal 3: Petro-Tim Limited, Societe des Petroles du Senegal, Cayar Offshore Profond, PSA, 2012

Senegal 4: Total E&P Senegal, Société des Pétroles du Sénégal, Rufisque Offshore Profond block, PSA, 2017

Senegal 5: Total E&P Senegal, Société des Pétroles du Sénégal, Ultra Deep Offshore block, PSA, 2017

UGANDA

Uganda 1: Heritage Oil and Gas Limited, Energy Africa Uganda Limited, Exploration Area 3A ("EA3A"), PSA, 2004 - Part 1

Uganda 2: Tullow Uganda Limited, Kanywataba Prospect Area, PSA, 2012

Uganda 3: Tullow Uganda Limited, Area 1, PSA, 2012

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