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Reforming Venezuela's oil and gas sector

An analysis of competing fiscal, contractual and institutional regimes

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Summary

- Venezuela has experienced a dramatic decline in its oil and gas industry. Reversing its fortunes will demand a complete overhaul of its legal and institutional framework for the sector, with attracting international investments the key objective. In October 2020, the opposition parties in the National Assembly introduced a draft Hydrocarbons Bill that proposed to reform the sector.
- Oil and gas sector reform in Venezuela will need to achieve multiple goals and address potentially conflicting interests. It must find a compromise between stakeholders looking for a complete overhaul of the sector and those wary of further legal changes and negotiations. The priority will be to overcome the recent missteps that have led to the deterioration of institutions, inefficient state control and failed economic policies. Finally, the country must strike a balance between granting attractive fiscal terms to lure investors and collecting sufficient revenues to rebuild the state. Policies that prioritize projects that deliver value over volume will be required for an oil and gas sector that is attractive to investors, generates fiscal revenues and meets market needs during the energy transition.
- This paper looks at five potential competitors to Venezuela, examining their respective frameworks for the oil and gas sector, which provide examples of the necessary conditions for companies to invest. These include independent regulatory agencies within a stable institutional context, flexible and robust contractual systems with competitive bidding as an instrument to allocate projects, mechanisms to settle disputes, and progressive fiscal systems that can react to volatile oil and gas markets. However, implementation of these measures will take time and can be derailed by political developments.
- The changes proposed in the Hydrocarbons Bill would reduce the role of the state in the operation of the oil and gas industry, improve governance with the creation of a hydrocarbons agency and allow for greater contractual and fiscal flexibility.
- The Hydrocarbons Bill would still need to fit into an overall energy policy for Venezuela. Pending issues include the role of natural gas; the operation of domestic energy markets; adoption of environmental, social and governance policies; and harmonization with other legal instruments.
- An exhaustive analysis of oil and gas reform in Venezuela remains a challenge at this stage. First, there are multiple sources of uncertainty regarding the true scope of the proposed reforms and the timing and conditions of an eventual political transition. Economic sanctions and global transformations in energy markets can stymie efforts to attract investments, even with successful reforms. But failure to engage in wide reforms soon will place an increasing burden on Venezuela’s ability to re-engage in international energy markets in the long run.

01 Introduction

The proposal of a Hydrocarbons Bill is a vital step in efforts to reform Venezuela's oil and gas sector and mobilize investments.

Despite its enormous hydrocarbons resource base, Venezuela's oil and gas industry has experienced a dramatic decline since 2013. The main causes include the country's legal and institutional framework for the sector that discourages international investors; government pressure to extract revenues from Petróleos de Venezuela, S.A. (PDVSA) that ruined the national oil company's (NOC) operational capacity; and the mismanagement of the overall industry and oil revenues. Recent US economic sanctions targeting PDVSA also constrained the company's operations and financing, further accelerating the decline of the sector.

The recovery of Venezuela's oil and gas industry has the potential to bolster economic growth and diversification. Rising oil exports could provide the fiscal revenue needed to rebuild the country's economy, infrastructure and state institutions. At the same time, an increased supply of natural gas can complement the country's electricity sector and unlock additional industrial and economic opportunities. Furthermore, new oil and gas projects can attract foreign direct investment (FDI) flows and boost the wider economy.

Despite these opportunities, Venezuela faces many challenges in bringing FDI into the sector given its recent history. The existing laws that govern oil and gas developments expose potential investors to constraints affecting operational autonomy, security and financing, all of which increase the risk profile of projects. The country remains a precarious destination for investment, especially after the wave of expropriations that started in 2006; international oil companies (IOCs) are very sensitive to political risks involved in FDI and Venezuela has tarnished its reputation. Deteriorating infrastructure, depleted human capital, and an ongoing political and economic crisis have all increased the cost of the sector's recovery. Additionally, environmental concerns and the global energy transition may reduce the appetite of international investors for large and costly projects, like the development of heavy oil resources that make up most of the country's reserves.

Reversing the fortunes of Venezuela's oil and gas industry will require a complete overhaul of the sector's legal and institutional framework. Attracting international investments will be key to achieving this as the state lacks the financial resources to invest in the industry. But the country's protracted political conflict makes reform much harder.[1] The political opposition to President Nicolás Maduro's government, which coalesced in the National Assembly elected in 2015, has discussed several reforms to the existing 2001 Hydrocarbons Law and proposed a new Organic Hydrocarbons Law (Hydrocarbons Bill) in October 2020 (revised in December 2020) that aims to rebuild the sector.

This paper studies the reforms contained in the bill and how they could support a recovery in oil production, as well as development of the gas sector, which is often overshadowed by oil in terms of domestic production and world markets. The focus here is on several aspects both within the current reform discussions and beyond, including:

- proposed institutional arrangements;
- proposed changes to the fiscal and contractual framework; and
- some of the main internal and external implementation challenges of a broader reform.

The paper examines the experiences of five countries that are either potential competitors to Venezuela in this sector or that possess a high resource endowment and depend on hydrocarbons revenue. It presents some of the current legal constraints viewed by analysts and companies as deterrents for investment that the proposed reforms seek to address. These include the government's high share of the sector's profits (government take), regulatory uncertainty, and lack of institutional independence.

The concerns and reform priorities of stakeholders in the oil and gas sector in Venezuela vary dramatically. Those already established in the country wish to promote changes that would increase their operational autonomy and the profitability of their projects. On the other hand, potential new investors may require an overhaul of the regulatory framework that focuses on transparency and, crucially, on investor protections that reduce overall risk. At the same time, the government must deal with dramatic financial constraints and debt commitments that generate pressure to obtain revenues in the short term.

For some stakeholders in the countries examined in this paper, reforms focussed on the degree of independence of institutions governing the sector, how flexible they are in allowing different types of contracts, how they allocate leases for oil and gas projects, as well as tax systems that effectively adapt to market conditions. The analysis also considered the inclusion of economic and environmental elements in proposed hydrocarbon laws.

1 BBC News (2020), 'Venezuela crisis: How the political situation escalated', 3 December 2020, https://www.bbc.com/news/world-latin-america-36319877.

The paper then assesses the current reform efforts in Venezuela, mostly in relation to the proposed Hydrocarbons Bill, the experiences of other countries undergoing similar changes and the concerns of various stakeholders. The paper also highlights areas that deserve additional attention and raises questions regarding an overall national energy policy and the implementation of the new law, if it is adopted.

Although Venezuela has a de facto president in Maduro, his administration's legitimacy has been challenged by the opposition and several countries do not recognize Maduro as president.[2] Despite these circumstances, new elections were held in December 2020 for the National Assembly – though these were also broadly dismissed as fraudulent.[3]

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The analysis in this paper focuses on the Hydrocarbons Bill discussed by the 2015 elected National Assembly as part of other reform efforts in the energy sector, including frameworks such as Plan País,[4] and refrains from an extended discussion of the Maduro administration's efforts to incentivize investments in Venezuela's oil and gas sector, as there is little publicly available information on this.[5] Regardless of the authority in charge of leading these reforms, this paper aims to present the massive challenges the country will have to overcome. The international comparisons provide a baseline that deserves an extended analysis once more concrete information about reform projects and initiatives in Venezuela are available.

Without denying the importance of a holistic perspective and of analysing reforms in the context of a national energy system, this paper does not engage in a detailed discussion of other legal instruments currently in place that deserve attention when thinking about reforms of the sector. These existing laws affect pricing policies for fuels, environmental impacts of operations, procurement processes and access to infrastructure, all of which also require changes to revamp the sector. While

2 Organization of American States (2018), 'OAS Permanent Council Agrees to not recognize the legitimacy of Nicolas Maduro's new term', press release, 10 January 2019, https://www.oas.org/en/media_center/press_release.asp?sCodigo=E-001/19.
3 Permanent Council of the Organization of American States (2020), 'Rejection of the Parliamentary Elections Held on December 6 in Venezuela', Resolution CP/RES. 1164 (2309/20), 10 December 2020, http://scm.oas.org/doc_public/english/hist_20/cp43343e03.docx.
4 National Assembly of Venezuela (2020), 'Plan País Energía plantea incrementar producción petrolera a 2,2 millones de barriles y cubrir demanda interna de combustible' [Plan País Energía plans to increase oil production to 2.2 million barrels and meet domestic fuel demand], 17 July 2020, https://www.asambleanacionalvenezuela.org/noticias/plan-pais-energia-plantea-incrementar-produccion-petrolera-a-22-millones-de-barriles-y-cubrir-demanda-interna-de-combustible#:~:text=%2D%20El%20Plan%20Pa%C3%ADs%20Energ%C3%ADa%20ha,satisfacer%20la%20demanda%20de%20combustible.
5 We mention some initiatives such as the Anti-blockade Law and possible implications later in the text that deserve further research. We also acknowledge that the National Assembly elected in December 2020 has excluded the Hydrocarbons Bill from any further discussion of reforms to the oil and gas sector. See *Petroguía* (2021), 'Jorge Rodríguez reactiva reforma legal de hidrocarburos pero descarta trabajo hecho por equipo de Guaidó' [Jorge Rodriguez reactivates legal hydrocarbons reform but discards work done by Guaidó's team], 4 March 2021, http://www.petroguia.com/pet/noticias/petr%C3%B3leo-gas/jorge-rodr%C3%ADguez-reactiva-reforma-legal-de-hidrocarburos-pero-descarta-trabajo.

the issues explored here are specific, they encompass most of the current debate regarding reforms in oil and gas sectors. Nevertheless, due to the complexity of the legal system, the use of legal instruments and their impact on sector reforms deserves a more comprehensive analysis.

Finally, while legal and institutional reforms are necessary in any industrial restructuring effort, in isolation they are not sufficient to promote investments in the sector. Venezuela currently faces the colossal prospect of rebuilding its state institutions after multiple crises while attempting to project stability and boost investor confidence. The global transition to renewable energy sources, growing concerns about climate change, the social impact of projects, and governance conditions will continue to hamper Venezuela's ability to attract investments. These issues will determine the relative success or failure of any reform effort, and they deserve a separate and more extensive analysis. The focus here on evaluating the strengths and weaknesses of the Hydrocarbons Bill reflects the fact that we do not know the timing, the actors or conditions of a political transition that might allow the implementation of such reforms.

While acknowledging all these limitations, the Hydrocarbons Bill represents a step in the right direction. However, several important issues remain unclear, including whether new institutional structures will effectively separate the roles of policymaking, regulation and operations in the oil and gas sector. Furthermore, recent reform processes in other countries highlight the value of including hydrocarbons sector reform within broader clean energy and climate policy objectives, aimed not only at increasing hydrocarbons production and government revenues but also at developing an energy market, promoting industrialization and increasing access to energy while reducing emissions.

02 The context in Venezuela

Venezuela has squandered the potential to develop its oil and gas sector over the last 20 years. A successful reform process must balance competing stakeholder interests while rebuilding the nation.

Venezuela's economy has historically relied on revenue generated from oil exports. Since 1970, oil rents[6] have accounted for around 20 per cent of GDP while fuel exports (crude oil and petroleum products) have represented about 85 per cent of total exports.[7] The irregular, but at times massive, inflow of oil revenues combined with poor institutions has led the country to experience classic symptoms of the 'resource curse': dependence on oil production, low economic growth, persistent volatility, rent-seeking and pervasive corruption.

In recent decades, Venezuela's oil sector has experienced two different institutional periods: its opening up through the 'Apertura' process between 1991 and 2001; and the changes introduced by the administration of President Hugo Chávez, particularly after 2002.

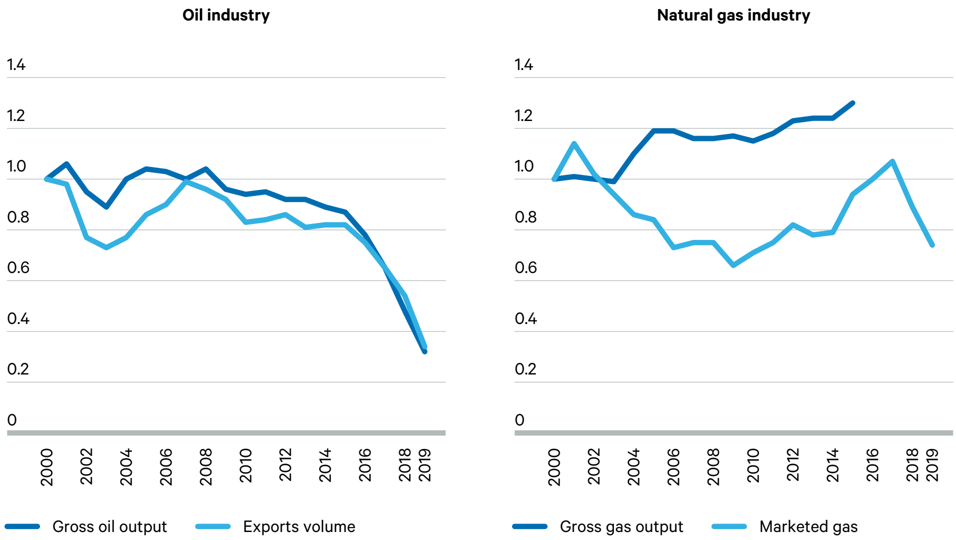
The Apertura process granted operational control of oil projects to private companies and introduced an attractive fiscal regime and investor protection clauses. The reforms were led by PDVSA, which was focused on operational

6 Oil rents are the difference between the value of crude oil production at world prices and total costs of production. See World Bank (2011), *The Changing Wealth of Nations: Measuring Sustainable Development in the New Millennium*, Washington, DC, https://documents.worldbank.org/en/publication/documents-reports/documentdetail/630181468339656734/the-changing-wealth-of-nations-measuring-sustainable-development-in-the-new-millennium.
7 World Bank (2021), 'Oil Rents (per cent of GDP)', The World Bank World Development Indicators, https://databank.worldbank.org/Venezuela-Oil-Rents/id/b944c795.

and commercial results. These efforts drove substantial interest and investment from foreign companies, leading to an increase in production of up to 3.2 million barrels per day (b/d) in 2005.[8]

However, the Chavez administration introduced several changes that eroded PDVSA's autonomy and technical and financial capacities. Existing contracts were forcefully renegotiated between 2006 and 2007 to give PDVSA a majority ownership share and operational control in oil joint ventures. Taxes on foreign investors and partners were substantially increased. Other changes involved the expropriation of assets belonging to suppliers of critical services to the industry that were needed to maintain output. Further laws strengthened PDVSA's control over activities such as refining, distribution, commerce, retail and petrochemicals.[9] Subsequently, oil production began a downward trend that only accelerated after the 2014 oil price fall and the introduction of US economic sanctions against PDVSA. OPEC reports indicate that Venezuela's oil output fell to 500,000 b/d in 2020.[10] The COVID-19 pandemic has affected oil demand and prices and thus aggravated the damage.

Figure 1. Relative performance of Venezuela's oil and gas industry



Source: Organization of Petroleum Exporting Countries (2020), *OPEC Annual Statistical Bulletin 2020*, https://www.opec.org/opec_web/en/publications/202.htm; BP (2020), *Statistical Review of World Energy*, https://www.bp.com/en/global/corporate/energy-economics/statistical-review-of-world-energy.html; and authors' calculations.
Note: Charts display gross production of oil and natural gas relative to the year 2000.

8 For a discussion on the causes and implications of the oil sector opening up, see Manzano, O. and Monaldi, F. (2010), 'The Political Economy of Oil Contract Renegotiation in Venezuela', in Hogan, W. and Sturzenegger, F. (eds) (2010), *The Natural Resources Trap: Private Investment without Public Commitment*, MIT Press.
9 For a more extensive discussion on the changes in the oil and gas regime and operations in Venezuela, see Corrales, J. and Penfold, M. (2011), *Dragon in the Tropics: Hugo Chávez and the Political Economy of Revolution in Venezuela,* Brookings Latin America Initiative; Gallegos, R. (2016), *Crude Nation: How Oil Riches Ruined Venezuela*, Lincoln: Potomac Books.
10 Organization of Petroleum Exporting Countries (2020), *OPEC Monthly Oil Market Report*, 11 March 2021, https://www.opec.org/opec_web/static_files_project/media/downloads/publications/OPEC_MOMR_March-2021_archive.pdf.

The natural gas industry faces severe constraints stemming from poor infrastructure and low domestic prices that undermine the economics of production. According to the latest available official figures, gross natural gas production grew by 25 per cent between 2000 and 2015[11] (see Figure 1). But, at the same time, actual supply to the domestic market (at heavily subsidized prices) fell throughout most of this period. There was also a fourfold increase in the volume of natural gas burned (flared) or released into the atmosphere (vented). According to World Bank estimates that use satellite data, Venezuela produced the sixth-largest volume of flared natural gas in 2020 – and the second highest intensity of gas flared per barrel of oil produced.[12]

According to World Bank estimates that use satellite data, Venezuela produced the sixth-largest volume of flared natural gas in 2020.

Venezuela's official oil reserves exceeded 300 billion barrels at the end of 2019.[13] Most of this consists of extra-heavy oil in the Orinoco Oil Belt,[14] which needs additional infrastructure and specialized refineries to exploit. By one estimate, Venezuela only has 48 billion barrels of recoverable oil resources.[15] The country also has significant natural gas reserves: officially these stood at 6.3 trillion cubic meters at the end of 2019,[16] the eighth largest in the world. But most of these resources are associated gas from oil fields, meaning that they can only be produced along with oil. The remaining non-associated gas reserves – which can be produced independently – come from offshore fields in which PDVSA has virtually no experience.

Several analysts have highlighted various elements in Venezuela's oil and gas sector that curtail the potential for a recovery of the industry.[17] According to the Fraser Institute's Global Petroleum Survey,[18] over the last decade, Venezuela has often been the country that ranks lowest for investment opportunities in the oil

11 Organization of Petroleum Exporting Countries (2020), *OPEC Annual Statistical Bulletin 2020*, https://www.opec.org/opec_web/en/publications/202.htm.
12 World Bank (2021), *Global Gas Flaring Tracker Report*, Global Gas Flaring Reduction Partnership, Washington DC, April 2021, https://thedocs.worldbank.org/en/doc/1f7221545bf1b7c89b850dd85cb409b0-0400072021/original/WB-GGFR-Report-Design-05a.pdf.
13 BP (2020), *Statistical Review of World Energy,* https://www.bp.com/en/global/corporate/energy-economics/statistical-review-of-world-energy.html.
14 The assumptions behind these government estimates, however, include recovery factors of 20 per cent for fields in the Orinoco Oil Belt, significantly above observed recovery in recent years (8–9 per cent), while other market assumptions may also be in question in the current global context.
15 Rystad Energy (2020), 'Rystad Energy's annual review of world oil resources: Recoverable oil loses 282 billion barrels as Covid-19 hastens peak oil', press release, 17 June 2020, https://www.rystadenergy.com/newsevents/news/press-releases/rystad-energys-annual-review-of-world-oil-resources-recoverable-oil-loses-282-billion-barrels-as-covid-19-hastens-peak-oil.
16 BP (2020), *Statistical Review of World Energy.*
17 For a review of Venezuela's oil and gas industry performance, see Balza, L. and Espinasa, R. (2015), *Oil Sector Performance and Institutions: The Case of Latin America*, Inter-American Development Bank, Infrastructure and Environment Sector, Energy Division, Technical Note No. ID-TN-724, January 2015, https://publications.iadb.org/publications/english/document/Oil-Sector-Performance-and-Institutions-The-Case-of-Latin-America.pdf; Hernandez, I. and Monaldi, F. (2016), *Weathering Collapse: An Assessment of the Financial and Operational Situation of the Venezuelan Oil Industry*, CID Working Paper No. 327, http://www.tinyurl.com/y2d2a89d.
18 Fraser Institute (n.d.), 'Global Petroleum Survey', https://www.fraserinstitute.org/tags/global-petroleum-survey.

sector, with significant barriers to investments from overseas. This paper focuses on three basic areas that contribute to these investment barriers: institutional frameworks, legal and contractual arrangements, and fiscal regimes.

Institutional frameworks

— **Poor sector governance and concentration of decisions in PDVSA:** The 2001 Hydrocarbons Law kept the policymaking and regulation functions under the Ministry of Petroleum. The 1999 Gaseous Hydrocarbons Law created a natural gas regulator, but one with little authority in exploration and production projects. From 2004, the minister of petroleum and the president of PDVSA have often been the same person, and in practice the three governance roles – policymaking, regulation and operation – have been merged. This concentrated most operating decisions across the sector in PDVSA, leading to inefficiency, delays in payments to contractors, overspending, corruption allegations and cash flow management issues as PDVSA handled the sales proceeds for most of the joint ventures in the sector.

— **Loss of PDVSA's autonomy:** PDVSA deviated from its core business operations and focused resources and investments on the political objectives of the government and the ruling party, including national debt commitments and foreign energy agreements. Political influence in PDVSA led to a purge of technical staff that the company needed to manage the complex and mature oil fields. New non-commercial subsidiaries frequently participated in the implementation of government social policies, which stretched resources.[19]

Legal and contractual arrangements

— **Rigid contractual regime:** Investors in oil projects are currently required by law to form joint ventures with PDVSA as the majority shareholder, which increases the state's fiscal burden to fund investments and the risks it assumes. This requirement contrasts with the different types of oil fields in the country.[20] The Gaseous Hydrocarbons Law allows non-associated natural gas projects to use more traditional licences in which private companies can have full ownership and directly manage operations. But only four of the 19 licences awarded since 1999 reached the commercial production stage.

— **Discretionary allocation of production rights:** The government has the legal authority to assign oil and gas fields to investors without any competitive process. Almost all existing oil projects were awarded through

19 PDVSA created multiple subsidiaries with activities that have little connection to its oil and gas business: housing developments, television, industrial services and agricultural activities. For further discussion on these topics, see Corrales and Penfold (2011), *Dragon in the Tropics: Hugo Chávez and the Political Economy of Revolution in Venezuela*; Gallegos (2016), *Crude Nation: How Oil Riches Ruined Venezuela;* Hernández and Monaldi (2016), *Weathering Collapse: An Assessment of the Financial and Operational Situation of the Venezuelan Oil Industry.*
20 Venezuela's oil reserves include mature fields that have been in operation for several decades, new and massive fields with heavy oil that is harder to process, and potential new fields that need further exploration.

direct negotiation between the government and international investors.[21] The government awarded most natural gas licences through competitive bidding, but it has not auctioned new areas since 2005.

- **Lack of investor protection mechanisms during disputes:** The current Hydrocarbons Law forbids international arbitration to resolve investment disputes, which was a key enabler for investors during the 1990s. The government also denounced and left the World Bank International Centre for Settlement of Investment Disputes (ICSID) convention in 2012 and it has removed the investor protection mechanisms from several bilateral investment treaties.[22]

Fiscal regime

- **The substantial increase in government proceeds due to rising taxes:** The fiscal terms for oil include a 30 per cent royalty, an additional 3.33 per cent extraction tax and a 50 per cent corporate tax. Oil producers must also pay a windfall profits tax based on the difference between the budgeted annual oil price and observed market prices, along with additional tax contributions. There is also a further alternative minimum tax (or 'shadow tax') that guarantees that the government will receive at least 50 per cent of the value of the oil extracted – even if investors are losing money. The high amount owed to the government for any project constrains the cash flow available. While non-associated natural gas projects have a much more benign fiscal regime with a lower royalty (20 per cent) and corporate income tax (34 per cent), they have struggled to collect enough revenues due to subsidized gas prices and delays in payments from PDVSA.

- **Fiscal distortions and disincentives to invest and produce:** A recent study found that Venezuela's high royalty rates and taxes generated distortions reducing incentives to invest in upstream activities, raise output and explore for new reserves.[23] As a whole, the oil fiscal regime seriously discourages investments in the country.

Venezuela's policymakers understand that reversing the recent damage to the oil and gas sector requires massive investments and reforms capable of boosting the country's reputation for contractual reliability. The PDVSA's Ad Hoc Board

21 From the 15 oil joint ventures formed since the 2006 migration, only two extra-heavy oil projects went through a bidding process with each area receiving just one bid. For more details on foreign investors' participation in Venezuela's oil industry, see Monaldi, F., Hernandez, I. and La Rosa, J. (2020), *The Collapse of the Venezuelan Oil Industry: The Role of Above-Ground Risks Limiting FDI*, February 2020, Center for Energy Studies, Rice University's Baker Institute for Public Policy, https://www.bakerinstitute.org/media/files/files/9ba44b2d/fdi-monaldi-venezuela_uSQ8FHh.pdf.
22 Gordon, K. and Pohl, J. (2015), *Investment Treaties over Time – Treaty Practice and Interpretation in a Changing World*, OECD Working Papers on International Investment 2015/02, 16 January 2015, https://doi.org/10.1787/18151957.
23 Davis, G. and Smith, J. (2020), *Design and Performance of Mining and Petroleum Fiscal Regimes in Latin America and the Caribbean*, Inter-American Development Bank, August 2020, http://dx.doi.org/10.18235/0002578.

(appointed by the National Assembly in 2019) aims to mobilize between $78 billion and $120 billion in capital investments to increase oil output by 2.2–2.5 million b/d within eight years.[24]

Beyond technical and operational plans, there is significant uncertainty on the path to reform. Venezuela is going through a deep political crisis in which Nicolás Maduro still controls the government even if most countries in the continent do not recognize him as the rightful president. Successful reforms can only succeed with a political consensus that brings credibility and stability. While this is still a major impediment, an oil and gas reform agenda must also address the following factors:

- The massive investments needed contrast with Venezuela's financial difficulties. The country is already in financial default and has few external assets to repay its colossal debts – which last year reached 278 per cent of its GDP.[25] Most available fiscal resources are needed to stem the impact of the severe humanitarian crisis in the country and to support future economic recovery programmes. Further deterioration of fields and physical infrastructure may raise the investments that are required to recover activities across the oil and gas industry.

- Venezuela has an existing base of international investors. Incumbent companies – with a foothold in the country and knowledge of their asset potential and of the current operational risks – focus on reducing costs and optimizing current operations. They may be open to possible expansions under improved fiscal and operational conditions, along with sound economic policies like flexible exchange rates.

- New international investors may require more detailed assessments of risks. New entrants may look for flexible contracts with attractive fiscal terms, the ability to lock in reserves and transparent infrastructure and oil well information. Clear governance rules and provisions for accessing infrastructure would also support the interest of investors. Venezuela's very negative history of expropriation and weak institutions will augment the need for protection of investors' rights, including access to international arbitration, fiscal stability clauses and dispute settlement mechanisms. Overall, the oil and gas sector needs strong independent institutions that can administer different geographical areas and negotiate operating conditions, while being flexible regarding contractual terms for the different types of projects and risk profiles.[26]

- Venezuela competes with other oil and gas producers. This is especially true in an energy sector in transition where reaching peak oil demand is a very real possibility and existing suppliers compete for market share. Countries like

24 Precise estimates of output goals and investment requirements have varied over time. More recently, there have been reports of a PDVSA document identifying projects along the value chain, requiring $77.6 billion, with the majority aimed at increasing oil production to 1998 levels, see Cohen, L. (2021), 'Venezuela needs $58 bln to restore crude output to 1998 levels -document', Reuters, https://www.reuters.com/business/energy/venezuela-needs-58-bln-restore-crude-output-1998-levels-document-2021-05-10. See, for example, Garip, P. (2020), 'Venezuela foes intersect on strategic oil plans', Argus Media, 29 April 2020, https://www.argusmedia.com/en/news/2101066-venezuela-foes-intersect-on-strategic-oil-plans.
25 Rodriguez, F. and Guerrero, G. (2020), *Toward Sustainable Human Development in Venezuela: Diagnosis, Challenges and Economic Strategy*, Revista Tempo Do Mundo, no. 23, December 2020, https://www.ipea.gov.br/revistas/index.php/rtm/article/download/270/239.
26 Viscidi, L. and Graham, N. (2020), *Reviving Venezuela's Oil Sector: The Role of Western Oil Majors*, Inter-American Dialogue, January 2020, https://www.thedialogue.org/analysis/reviving-venezuelas-oil-sector-the-role-of-western-oil-majors.

Brazil, Colombia and Mexico – among others in the region – have already built a legal and institutional framework that attracts FDI in oil and gas projects. The economic impact of COVID-19 has increased calls for governments in the region to improve the fiscal and contractual terms for investors in order to boost economic growth.[27]

— The presence of political allies of Nicolás Maduro could affect the scope of reforms needed. Both civilian and military groups supporting the Maduro government have acquired oil and gas assets in the country but do not necessarily have the required technology or resources to develop some of these fields.[28] They may be concerned about potential losses as their participation in the oil and gas industry was not approved by the National Assembly and they cannot compete with technically sound firms in a competitive process. International political allies of the Maduro regime, such as China and Russia, may also act to protect their oil and gas projects in the country, whether legally or illegally acquired.

Overall, policymakers face a significant challenge aligning the interests of all these groups towards a long-term and sustainable reform process – in reality, the need for political compromise may trump the need for major changes.

27 Monge, C. (2020), *Coronavirus, Oil and Latin America: The Urgency of Economic Diversification and Energy Transition*, Natural Resource Governance Institute, 3 August 2020, https://resourcegovernance.org/analysis-tools/publications/coronavirus-oil-latin-america-economic-diversification-energy-transition.
28 For example, the Military Company for Mining, Oil and Gas industries (CAMIMPEG) is a partner in one oil joint venture (Petrourdaneta), and it is involved also in providing services for different extractive industries.

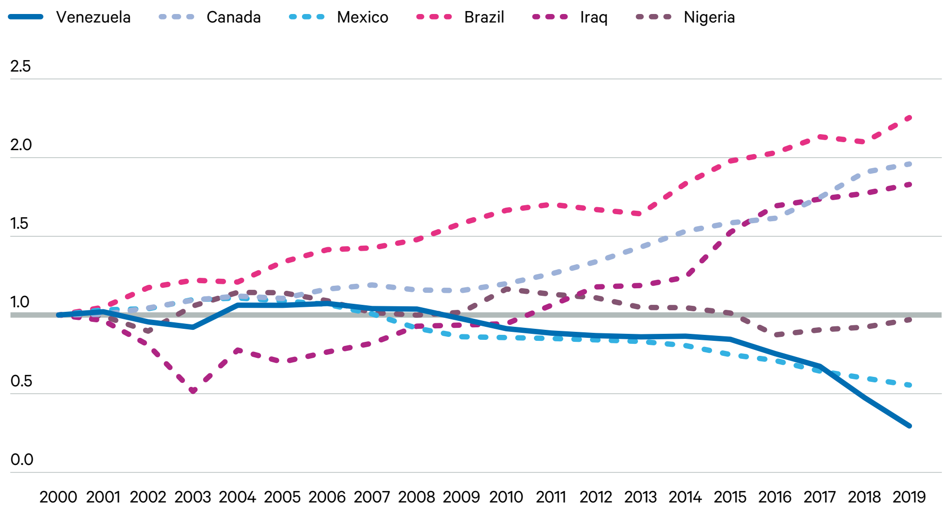
03 The experience in other countries

In several oil-producing countries, recent efforts to reform the sector and attract FDI have concentrated on greater contractual and fiscal flexibility. Increased government intervention, however, can risk the success of such initiatives.

Policymakers working towards reforming Venezuela's hydrocarbons sector can learn from the recent experiences of other oil and gas producing countries. The main institutional, legal and fiscal frameworks for the oil and gas industries in Brazil, Canada (Alberta), Iraq, Mexico and Nigeria – which are presented here – provide useful sources of information. All five have mature oil industries open to FDI with significant oil reserves and, together, they demonstrate real world examples of most of the proposed institutional, legal and fiscal arrangements currently being discussed in Venezuela (see Table 1).

The trajectory of oil production in these five countries has differed dramatically over the last 20 years. As shown in Figure 2, Brazil, Canada and Iraq had the largest oil production growth during this period, with Brazil more than doubling its output. Iraq's early fall in production is due to damaged infrastructure resulting from the war; the country's later recovery also began after the government conducted auctions for large oil fields. Nigeria's production fluctuated but mostly stayed close to the level witnessed in 2000. Mexico and Venezuela's oil sector had the worst performance, although initial results of bidding rounds for projects in Mexico showed considerable investment plans and exploration activity by foreign companies and private local actors.

Figure 2. Oil output growth comparison

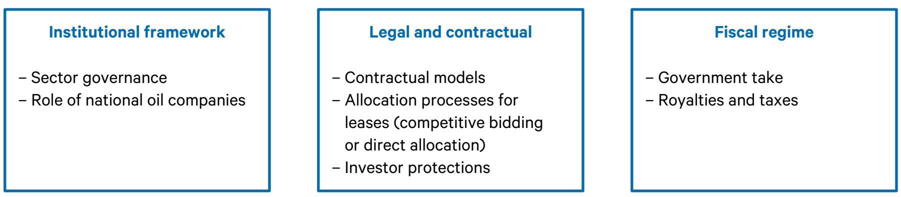


Source: BP (2020), *Statistical Review of World Energy* and authors' own calculations.
Note: Charts display oil production of selected countries relative to the year 2000.

These countries have also had varying levels of success in oil and gas sector reforms: Mexico and Brazil introduced reforms relatively recently, while efforts in Iraq and Nigeria have been stalled by political strife. Oil products from some of these countries directly compete with Venezuela in international markets, such as Iraqi Basrah Heavy in China and Canadian bitumen in the US. Nigeria and Iraq have a high dependence on exports. This chapter addresses the main issues arising from the proposed reforms for Venezuela's oil and gas industry with reference to these five countries.

Figure 3 shows the main aspects used for the international comparison, based on those aspects of the proposed Hydrocarbons Bill that aim to address some of the investment barriers discussed earlier. In this section, we analyse each country using this framework.

Figure 3. Analysis structure



Source: Compiled by the authors.

Table 1. Comparative overview of selected countries (2019)

	Venezuela	Canada (Alberta)	Mexico	Brazil	Nigeria	Iraq
Oil reserves (bn barrels)	303.8	167.8	7.7	12.7	37.5	145.0
Oil output million b/d	0.92	5.65	1.92	2.88	2.11	4.78
Independent regulator	No	AER	CNH	ANP	No	No
National oil company	PDVSA	No	PEMEX	Petrobras	NNPC	No*
Contractual models	Joint ventures, concessions (natural gas)	Concessions	Concessions, production-sharing contracts, service contracts	Concessions, production-sharing contracts, transfer of rights	Joint ventures, concessions, production-sharing contracts, risk-sharing	Service contracts
Fiscal regime	Royalties, taxes	Royalties, taxes	Profit oil, royalties, taxes	Profit oil, royalties, taxes	Profit oil, royalties, taxes	Fees, income tax
Reference oil (API gravity)	Merey (15.9°)	WCS (20.5°)	Maya (20.5°)	22–31 API	Bonny Light (33°)	Basrah Light (30°)

Sources: BP (2020), *Statistical Review of World Energy*; EY (2020), *Oil and Gas Tax Guide 2019*, https://assets.ey.com/content/dam/ey-sites/ey-com/en_gl/topics/tax/hc-alert/ey-global-oil-and-gas-tax-guide-2019.pdf?download; Wiley (2020), 'OPEC and non OPEC oil sales prices', *Oil and Energy Trends Annual Statistical Review*, 21(1): pp. 62–66, https://doi.org/10.1111/oets.12069.
Note: * Iraq does not have a national oil company directly comparable to those in other countries. Instead, there are multiple companies controlled by the Ministry of Oil.

Brazil

Institutional framework

Brazil's government reformed its domestic oil industry in 1997 by eliminating the traditional monopoly that the NOC, Petrobras, had over the entire hydrocarbons industry. This decision was part of a larger macroeconomic reform aiming to attract private investment to new offshore areas. Brazil strengthened its institutions by creating the independent National Agency of Petroleum, Natural Gas and Biofuels (ANP) that took over regulation and administration. Policymaking remains under the Ministry of Mines and Energy with the support of the National Energy Policy Council (CNPE) while Petrobras and private investors operate the wells and production.

Legal and contractual arrangements

Brazil initially used concessions awarded through competitive auctions. In 2010, the government created a framework for new areas in the pre-salt layer, introducing production-sharing contracts (PSCs)[29] and initially mandating that Petrobras should have a minimum share of production and act as operator. In addition, for certain pre-salt blocks the government transferred the rights to Petrobras to produce

29 In a PSC, participating companies are compensated based on a percentage of production, after cost recovery, if the project is deemed profitable enough.

5 billion barrels of oil in exchange for new company stocks.[30] These arrangements were intended to capture a higher share of revenues and strengthen government control. Since 1999, Brazil has conducted 26 bidding rounds[31] for exploration projects, production fields and pre-salt areas. In 2019, the ANP also implemented the open acreage bids process that continuously offers oil and gas fields that have been returned by investors, without requiring a specific bidding round. Despite successive auctions, Petrobras still controls most oil and gas production. Since 2017, it no longer has an obligation to act as the main operator of projects in pre-salt areas, a change intended to improve conditions for international investors.[32] Despite these changes, two pre-salt auctions in 2019 failed to attract any large international company, possibly due to high entry barriers for investors and the focus of major oil companies on controlling capital spending.[33] Brazil has progressively deregulated other segments like downstream operations and natural gas,[34] with the aim of fostering investments in network infrastructure for domestic fuels and gas consumption.

Brazil's government reformed its domestic oil industry in 1997 by eliminating the traditional monopoly that the NOC, Petrobras, had over the entire hydrocarbons industry.

Fiscal regime

Traditional concessions are subject to a signature bonus, a flat 10 per cent royalty rate for the government (which can be reduced to 5 per cent) and a special participation tax on profits that uses progressive rates depending on the field's location, lifetime and production. This scheme is designed to capture additional rents in case of highly profitable findings from large resources and production potential. Pre-salt PSCs are also subject to signature bonuses and a 15 per cent royalty. Investors in PSCs can recover the cost incurred during the development of the project (cost oil), with the remaining profits split between companies and government based on pre-agreed rules (profit oil).

30 In April 2019, the government organized a round of bidding for the 'transfer of rights' of pre-salt fields that, in addition to Petrobras keeping preferential rights on the blocks, considered compensation for Petrobras for previously entered investments in those areas for sale. Winning bidders would enter a PSC, having Petrobras as partner. For further details on the transfer of rights, see Slattery, G. and Nogueira, M. (2019), 'Explainer: Translating TOR – How Brazil's $26 billion oil rights auction works', Reuters, 7 October 2019, https://www.reuters.com/article/us-brazil-oil-auction-explainer-idUSKBN1WV1KY.
31 These bidding rounds include 16 exploration blocks, four mature fields and six pre-salt fields. For further details, see ANP (2017), 'The Bidding Rounds', 8 November 2017, http://rodadas.anp.gov.br/en/about-the-bidding-rounds/the-bidding-rounds.
32 Petrobras retains the right to select in which blocks it is the operator. This is declared prior to the auction announcement.
33 Parraga, M., Slattery, G. and Nogueira, M. (2019), 'Big oil stuns Brazil in back-to-back auction flops', Reuters, 7 November 2019, https://www.reuters.com/article/us-brazil-oil-auction-idUSKBN1XH1X3.
34 In March 2021, the Chamber of Deputies approved a new natural gas law, which, among other things, ends government bidding, allows new pipelines and underground storage to be built through simple authorizations instead of concessions, as well as third-party access to pipelines. This is aimed at preventing companies operating in natural monopolies (transportation and distribution) from operating in competitive links and increasing competition across the natural gas value chain. See Argus Media (2021), 'Brazil's congress approves natural gas legislation', 17 March 2021, https://www.argusmedia.com/en/news/2196838-brazils-congress-approves-natural-gas-legislation.

Mexico

Institutional framework

As part of a comprehensive energy reform process that started in 2013, Mexico opened all oil and gas activities to private competition and separated the industry's governance roles. The National Hydrocarbons Commission (CNH) was restructured to act as an independent oil and gas upstream regulator and to allocate exploration and production contracts. The Secretariat of Energy defines the broad energy policies and Petróleos Mexicanos (PEMEX) remains a state-owned NOC but one operating more autonomously and with more accountability. In addition, the role of the Regulatory Energy Commission (CRE) includes regulating and granting permits for storing, transporting and distributing oil and gas products. The National Centre for Control of Natural Gas (CENAGAS) was created in 2014 to operate the country's natural gas pipelines, while the state utility Federal Electricity Commission (CFE) manages its own pipeline network. However, the experience since President Andrés Manuel López Obrador took office in 2018 suggests that policies are oriented towards greater state involvement in the oil and gas sector and limiting the autonomy of some of its institutions.[35]

Legal and contractual arrangements

The CNH can use several upstream contracts, including licences,[36] profit-sharing contracts,[37] PSCs and service contracts. PEMEX can also subcontract some of its areas to private partners. These contracts are allocated through a competitive process with multiple criteria, which may include royalties, profit shares and investment commitments, depending on the location of the resources. The government negotiated with PEMEX on which areas the company would keep and which would be offered to private investors, a process known as 'Round Zero'. Contracts also include fiscal stabilization clauses to protect investors against arbitrary contractual changes. These clauses allow the state to modify fiscal terms only if they also apply to the overall economy. There has been similar deregulation in the midstream segment with several rounds of auctions for infrastructure projects – noticeably in the retail market for gasoline, which has become more flexible and moved towards market pricing. President López Obrador has tried to reverse elements of some of these reforms by halting auctions and strengthening the dominant position of the CFE (more recently, through a proposed reform of the Electricity Law[38]) and PEMEX.

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35 Villamil, J. and Cattan, N. (2020), 'AMLO Inches Toward Undoing Energy Opening to Keep Pemex Grip', Bloomberg News, 4 August 2020, https://www.bloomberg.com/news/articles/2020-08-04/amlo-lays-out-roadmap-that-weighs-nixing-mexico-s-energy-opening.
36 We follow the Alpizar-Castro and Rodriguez-Monroy definition of licences, as the hydrocarbons law in Mexico and the law on oil revenues from hydrocarbons consider PSCs and licences as different contracts. According to Alpizar-Castro and Rodriguez-Monroy, with a licence 'while reserves in the ground remain state property, licensing will allow companies to acquire possession of hydrocarbons at the wellhead, upon the payment of taxes, if commercial production occurs'. This is different from a concession as it does not create a right in favour of the concessionaire but rather allows the state to maintain the original rights on the hydrocarbons. See, Alpizar-Castro, I. and Rodriguez-Monroy, C. (2016), *Review of Mexico's energy reform in 2013: Background, analysis of the reform and reactions,* Renewable and Sustainable Energy Reviews, 58: pp. 725–736, https://www.sciencedirect.com/science/article/abs/pii/S1364032115016743.
37 According to Alpizar-Castro and Rodriguez-Monroy (2016), 'government payment to oil companies is based on a percentage of the revenue generated after exploration and production costs are recovered. The outside firms do not own any of the oil produced'.
38 Barrera, A. (2021), 'Mexican judge halts electricity law, as president says top court should rule', Reuters, 19 March 2021, https://www.reuters.com/article/us-mexico-energy-electricity-idUSKBN2BB266.

But, despite the policy changes, the legal regime created by the reforms remains and existing contracts have, so far, been respected – though again this may change given recent government signals.[39]

Fiscal regime

Fiscal terms include a combination of income taxes, a variable royalty (as a function of oil and/or gas prices), surface taxes and additional royalties or profit-sharing mechanisms that depend on the type of contract and resource field. They also include adjustment mechanisms to increase government payouts as the project becomes more profitable, either using R factors (based on a ratio of cumulative revenues over cumulative costs) or internal rates of return calculations.[40]

Iraq

Institutional framework

Iraq's government directly manages most operations in the oil and gas industry.[41] The importance of oil in a country with such a large resource endowment and high rent dependence cannot be overstated. Policy, strategic and operating decisions are centralized in the Ministry of Oil. There is no independent regulator or traditional NOC.[42] Instead, the ministry owns several companies controlling different aspects of the oil and gas value chain, including the State Oil Marketing Organization, which controls oil exports.[43] Legal reforms aiming for a new institutional framework and recreating Iraq's NOC, which was eliminated in 1987, have repeatedly failed due to protracted political disputes.

Legal and contractual arrangements

The Ministry of Oil assigns technical service contracts (TSCs) under which companies operate fields in exchange for a fee per barrel capped to a maximum amount agreed during a bidding process.[44] The ministry has conducted five bidding rounds since 2009, with the last one taking place in 2018. In the semi-autonomous Kurdistan Region, the regional government offers PSCs for oilfields with the idea

39 In March 2021, the President of Mexico sent an initiative to reform and add several provisions of the Hydrocarbons Law, suspending permits for processing, transport and sales of hydrocarbons, among other activities, when facing energy or national security risks. See Fernández, C., Anzaldua Medina, L. and Romo Trujano, J. (2021), 'Initiative to amend the Mexican Hydrocarbons Law', March 2021, https://www.nortonrosefulbright.com/en/knowledge/publications/50f7a57b/initiative-to-amend-the-mexican-hydrocarbons-law.
40 Contracts incorporating R factors or internal rates of return try to adjust taxes paid to the government, so the more profitable investment projects pay a proportionally higher share of taxes.
41 Lack of clarity on the administration of the resources comes from the constitution, which states that, 'oil and gas are owned by all the people of Iraq in all the regions and governorates'. The Kurdistan Region built an independent oil and gas framework, which has created clashes with the federal government authority. For a discussion on the problems between the Kurdistan Region and the Baghdad government, see Alkadiri, R. (2020), *Federalism and Iraq's constitutional stalemate*, Chatham House Research Paper, November 2020, https://www.chathamhouse.org/sites/default/files/2020-11/2020-11-27-iraq-federalism-alkadiri.pdf.pdf.
42 The parliament approved the creation of a NOC in 2018 but this was ruled unconstitutional by the Supreme Court.
43 The Ministry of Oil owns the North Oil Company, the Midland Oil Company, the Basra Oil Company and the Missan Oil Company. It also owns two natural gas operators: the North Gas Company and the South Gas Company.
44 Most of the market risk and price volatility, though, is assumed by the state. For an analysis on TSCs in different jurisdictions, including Iraq, see Ghandi, A. and Lin, C. (2013), *Oil and Gas Service Contracts Around the World: A Review*, https://doi.org/10.1016/j.esr.2014.03.001.

of also using these contracts for gas projects. Service contracts allow the state to maintain ownership of the oil or gas extracted (in line with constitutional requirements) from well-known fields with large reserves, little geological risks and very low production costs.

Fiscal regime

Under the TSCs, contractors are reimbursed for capital investments and operation costs, plus a rate of return, and the remuneration fee changes according to incremental production (that is, production above pre-contract levels), in which case the price risk is assumed mostly by the government. It has been estimated that the TSCs become too expensive for the government when oil prices fall below $40–$45 per barrel as lower profits limit the ability to reimburse costs.[45] Some of these contracts have been re-negotiated in previous oil crises, introducing an element of uncertainty for development plans. Despite these problems, Iraq was able to build capacity after the 2003 US invasion and, more recently, deal with the threats coming from Islamic State (ISIS).

Nigeria

Institutional framework

The Department of Petroleum Resources is the formal oil and gas regulator, but the Nigerian National Petroleum Corporation (NNPC) acts as a quasi-regulator as it is the primary actor dealing with investors and the main source of revenues for the government.[46] With most of the sector's decisions motivated by politics and with little independent oversight, there is ample room for opacity, inefficiency and corruption.[47] Institutional reforms to modernize the sector have been proposed for several years but have failed to win political support. Currently, a Petroleum Industry Bill is being discussed in parliament. It proposes the creation of separate regulators for upstream and downstream activities.[48]

Legal and contractual arrangements

International investors have traditionally acted as minority partners in joint ventures with the NNPC, although with effective control over operations and budgets. Most recent activity has focused on offshore fields in response to political violence, sabotage and militant groups in the Niger Delta. These projects use PSCs that forego cash calls to the NNPC (as in traditional joint ventures), reducing financial pressure

45 Monge, C. (2020), 'Compounding crises: Iraq's oil and energy economy', Oxford Institute for Energy Studies, July 2020, https://www.oxfordenergy.org/wpcms/wp-content/uploads/2020/07/Compounding-crises-Iraqs-oil-and-energy-economy.pdf.
46 Toledano, P., Brauch, M., Mebratu- Tsegaye, T. and Parinas, J. (2020), *Equipping the Nigerian National Petroleum Corporation for the Low-Carbon Transition: How are Other National Oil Companies Adapting?,* Columbia Center on Sustainable Investment, http://ccsi.columbia.edu/work/projects/equipping-the-nigerian-national-petroleum-corporation-for-the-low-carbon-transition-how-are-other-national-oil-companies-adapting.
47 Gboyega, A., Soreide, T., Minh Le, T. and Shukla, G. (2011), *Political Economy of the Petroleum Sector in Nigeria*, World Bank Policy Research Working Paper 5779, August 2011, https://doi.org/10.1596/1813-9450-5779.
48 The Petroleum Industry Bill was first proposed in 2008 and was meant to improve governance of the oil and gas industry, to restructure the NNPC, to deregulate the downstream sector, to renegotiate contracts, and to change the royalty and taxes structure.

on the government and risks to investors. The government has ample authority to assign blocks and projects to investors, and there has not been an open bidding round since 2003.[49] Private investors can also participate in refining and downstream products but there are few signs of interest on their part so far.

Fiscal regime

Nigeria uses a combination of royalties, petroleum profit taxes (income tax) and production splits for the PSCs. Royalty rates are indexed to the price of oil and vary according to the type of oil field, with lower rates for deep-water projects. The rate of the petroleum profit tax depends on the type of contract used (production sharing or joint venture). The Petroleum Industry Bill proposes to replace the petroleum profit tax with a lower-rate Nigerian hydrocarbons tax, with corporate income tax collected separately. Analysts view these changes as leading to aggressive reductions in government take, although the final impact is still unclear as companies have expressed concerns about fewer tax-deductible costs.[50]

Alberta, Canada

Institutional framework

Canada has not had a NOC since the privatization of PetroCanada in the early 1990s.[51] Most of the country's resources and production are concentrated in the province of Alberta, and its heavy crude competes with the most abundant grades in Venezuela. Alberta's Ministry of Energy defines the province's oil and gas policies, and it grants the rights to exploit fields. The Alberta Energy Regulator (AER) is under the provincial government's control. It has broad oversight over oil and gas operations to ensure their compliance with laws, as well as the capacity to review and decide on proposed energy developments.

Legal and contractual arrangements

Alberta provincial government owns over 80 per cent of the province's mineral rights, which can be transferred through lease contracts in transparent and public auctions. Initial project time frames are limited, but they can be extended indefinitely if projects are profitable.

Fiscal regime

Oil and gas projects are subject to royalties (collected by the provincial government) and income tax (collected by the federal government at the same rate as for non-oil activities). Alberta distinguishes oil sand projects from other oil and gas projects. Oil sands are subject to variable royalties over gross revenues during the pre-payout

49 A planned bidding round for 2020 was delayed due to the oil price crash, and a marginal fields round is still planned for 2021. George, L. (2020), 'Nigerian oil bid rounds, upstream projects delayed due to price crash – officials', Reuters, 5 May 2020, https://www.reuters.com/article/us-health-coronavirus-nigeria-oil-idUSKBN22H1XB.
50 Dewast, L. (2021), 'Nigeria's oil reform bill: What's at stake', Yahoo News, 22 March 2021, https://news.yahoo.com/nigerias-oil-reform-bill-whats-140114453.html.
51 Need for new capital and higher autonomy, and budget constraints, among other reasons, led to the privatization of this company.

period, ranging between 1 per cent and 9 per cent based on oil prices. After payout, royalties are charged over net revenues with rates between 25 per cent and 40 per cent, also based on oil prices.

Institutional framework considerations

Governments in Brazil and Mexico were able to introduce reforms and build legal stability from political consensus that required constitutional amendments.[52] In both countries, the need for massive investments to develop the sector, and the interests of other sectors in the economy, led to overarching energy reforms in the hydrocarbons and electricity sectors. These reforms also aimed to develop markets that could provide affordable energy for the entire economy. Brazil and Mexico also separated the operational roles from the administration and regulation of the sector by creating agencies with autonomy from the government.[53] Independent regulators do not supplant the government's role in policymaking; the case of Mexico shows how policies can change the trajectory of, or even reverse, institutional reforms.

In Brazil and Mexico, the need for massive investments to develop the sector, and the interests of other sectors in the economy, led to overarching energy reforms in the hydrocarbons and electricity sectors.

Nigeria had the opposite experience: stalled reform attempts that lack political consensus, which led to uncertainty and delayed investments. The 2008 Petroleum Investment Bill attempted to overhaul an industry dominated by the NNPC, which effectively serves to distribute rents among multiple stakeholders.[54] However, the bill has suffered several setbacks, and a new version is yet to be approved. While Iraq has managed to increase production after the establishment of the post-2003 state, it still struggles with conflicts around the distribution of resources among

52 The 2012 Pacto por Mexico (Pact for Mexico), signed between the main political parties at the start of Enrique Peña Nieto's presidency, was fundamental in garnering political support for an ambitious economic and social reform agenda. See Viktor, R. and Sheldahl-Thomason, H. (2017), 'Mexico's Energy Reform', Harvard Business School, 23 January 2017, https://hepg.hks.harvard.edu/files/hepg/files/mexican_energy_reform_draft_1.23.pdf; Mathias, M. and Szklo, A. (2007), 'Lessons learned from Brazilian natural gas industry reform', *Energy Policy*, 35(12): pp. 6478–6490, https://doi.org/10.1016/j.enpol.2007.08.013.
53 In this sense, autonomy not only refers to avoiding political interference, but also the sector's financial sustainability and strong technical capacity. It also requires clear regulatory objectives and rules to avoid conflicts of interest, but without acting completely separate from public administration. For further discussion of independent regulatory agencies in the hydrocarbons sector, see Lares, M., Pacheco, L. and Sucre, C. (2019), 'Un Modelo de Agencia Reguladora Independiente de Hidrocarburos [A model for an Independent Regulatory Agency of Hydrocarbons]', Inter-American Development Bank, Technical Note IDB-TN-01747, September 2019, http://dx.doi.org/10.18235/0001916; Inocencio, F. (2018), 'Independent Regulatory Agencies in the Oil and Gas Industry', *International Energy Law Review*, June 2018, https://ssrn.com/abstract=3198160.
54 Thurber, M., Emelife, I. and Heller, P. (2011), 'NNPC and Nigeria's Oil Patronage Ecosystem', in Victor, D., Hults, D. and Thurber, M. (eds) (2011), *Oil and Governance: State-Owned Enterprise and the World Energy Supply*, Cambridge University Press.

regions, institutional competences and authority.[55] The oil and gas industry still relies on an ad hoc structure that, even if it successfully raised output, could create additional risks to investors.

The cases of these five countries demonstrate different NOC models, although there is no clear trend in how these differences impact investor decisions. Mexico and Nigeria have more traditional state-owned NOCs and the government has a greater role in shaping their finances – in Mexico, most recently, with a clear intention of increasing its involvement in oil and gas operations.[56] Brazil seems to have the most autonomous and technically sound NOC in Petrobras, due in part to its partial share listing in Brazil and in the US. The company, however, has still had notorious incidents of corruption.[57] Iraq lacks a traditional NOC and its operating companies act as extensions of the Ministry of Oil. It remains to be seen whether the creation of a NOC could meet the constitutional stipulations enforced by the legal system.

Legal and contractual arrangements

The experiences of the five countries clearly show a trend of granting further flexibility on the type of contracts used for upstream oil and gas activities. Mexico, Nigeria and Brazil allow for different contract models for different types of fields. Following its energy reform, Mexico has used licences mostly for legacy onshore fields and complex deep-water fields, while PSCs are more common in shallow-water fields. Nigeria has traditionally relied on joint ventures with the NNPC, but the financial pressure these placed on the government pushed the country to adopt PSCs for new offshore fields. Conversely, Iraq has mostly relied on TSCs with aggressive fiscal terms and more price risk exposure as its very productive oil fields have resulted in very low costs and high economic rents. Venezuela does not have the same type of fields or resources as Iraq, so this type of contract may not be suitable.[58] Furthermore, Iraq has failed to sign new large oil contracts since 2009, highlighting the need for further reforms in order to continue to attract investors.

The majority of the five countries use open and competitive auctions – the most efficient and transparent mechanism – to allocate oil and gas production rights. Brazil and Alberta have consistently allocated fields to the winners of auctions. Mexico has conducted nine bidding rounds since its 2013 energy reform, although the López Obrador administration halted them soon after taking office in 2018.

55 International Energy Agency (2012), *Iraq Energy Outlook 2012: World Energy Outlook Special Report*, Paris, https://www.iea.org/reports/iraq-energy-outlook-2012.
56 Stillman, A. and De Haldevang, M. (2021), 'Energy Protectionism in Mexico Has Made Climate the Victim', Bloomberg, 9 January 2021, https://www.bloomberg.com/news/articles/2021-01-09/energy-protectionism-in-mexico-has-made-climate-the-victim.
57 Lagunes, P. (2018), *Backgrounder on Lava Jato, Policy Briefs on Lava Jato: Understanding Latin America's Largest Corruption Scandal in History*, Center on Global Economic Governance at the School of International and Public Affairs, Columbia University, https://www.bakerinstitute.org/media/files/files/b49a8c69/lagunes-lavajato-backgrounder.pdf.
58 Service contracts also have a different risk exposure for operators and the government than PSCs or concessions. In service contracts, the government normally assumes the price risk with the operator receiving a fixed price. In the case of PSCs, the government and the operator share the risk through the profit oil, once the operator discovers the resource. In the concession case, the risk sharing depends on the type of taxation involved (whether it is mostly on revenues or profits). See Ghandi, A. and Lin, C. (2014), *Oil and Gas Service Contracts Around the World: A Review*; Johnston, D. (2003), *International Exploration Economics, Risk, and Contracts*, PennWell.

Iraq has also used competitive bidding to allocate service contracts, with five rounds since 2009. Nigeria is an outlier with most areas directly allocated by the government and no competitive bidding rounds since 2003.

Regarding investor protections, the five countries have used different approaches. Alberta has a strong judicial system and domestic investor protections, and Canada ratified the ICSID convention in 2013. Mexico offers investors a limited international arbitrage option only after the domestic legal system has been exhausted. Brazil has not been a member of the ICSID convention, nor has it ratified bilateral investor treaties incorporating international arbitration.[59] Beyond international arbitration, Mexico offers a fiscal stabilization clause protecting investors from fiscal changes targeted at the oil and gas industry. Some investors in Mexico and Canada's energy industry could potentially settle investment disputes through mechanisms included in the recent US–Canada–Mexico Agreement, although these have a more limited scope than those in the previous North American Free Trade Agreement.[60] In Iraq, TSCs provide for disputes under the rules of arbitration of the International Chamber of Commerce.

Fiscal regimes

Each country examined has introduced variable fiscal regimes allowing the state to receive a proportionally larger share of profits as they grow.[61] Such progressive tax regimes can, in theory, reduce the risks of future renegotiations – an area in which Venezuela has a poor track record. Progressive taxes can take the form of variable royalty rates as a function of oil and gas prices, as in Mexico, Brazil, Alberta or Nigeria. They also relate to special taxes after extraction reaches specific thresholds indicating highly productive and profitable fields. Fiscal stability clauses, such as those introduced in Mexico that restrict the state's ability to impose new taxes targeting oil and gas production, and investor protections in the form of international arbitration can also lower investors' risks.

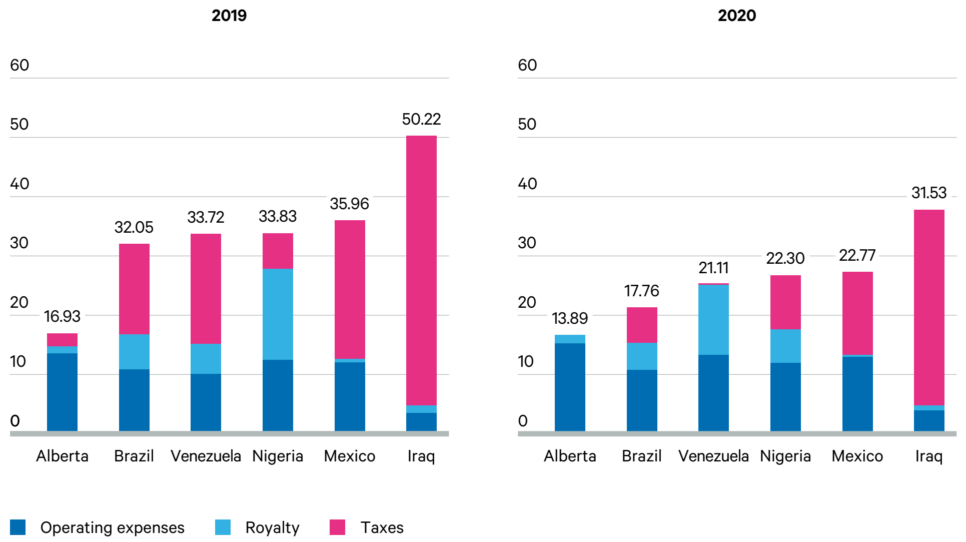
Extraction and transportation costs in Alberta are significantly higher than in the other cases, which explains why contractual and fiscal terms are relatively more flexible there too. Iraq has the lowest oil-production costs, which, along with the fee structure in its service contracts, allows the government to capture a majority of the industry's profits – although the state also absorbs all the price volatility risk. Without mechanisms such as an oil revenue stabilization fund, this leaves government finances highly exposed to oil price volatility.

Compared to the five countries examined, Venezuela is more reliant on oil royalties. These discourage investments and production, but they can also be more stable and easier to collect than profit-based taxes that can be more volatile to changes

59 Polanco Lazo, R. (2016), 'Systems of Legal Defence Used by Latin American Countries in Investment Disputes', *Journal of World Investment & Trade,* 17(4): pp. 562–593, https://doi.org/10.1163/22119000-12340004.
60 Valasesk, M., Fitzgerald, A. and de Jong, J. (2018), 'Major Changes for Investor-State Settlement in New United States-Mexico-Canada Agreement', Norton Rose Fulbright, October 2018, https://www.nortonrosefulbright.com/en/knowledge/publications/91d41adf/major-changes-for-investor-state-dispute-settlement-in-new-united-states-mexico-canada-agreement.
61 For Latin America, introducing progressive fiscal instruments like variable royalty rates or R factors may not be enough to create a progressive fiscal regime. See, Davis and Smith (2020), *Design and Performance of Mining and Petroleum Fiscal Regimes in Latin America and the Caribbean*.

in prices.[62] The 2020 fall in oil prices depressed fiscal revenues in all five countries, but profit-based taxes were more sensitive to lower oil prices than royalties. Collectively, their average royalty per oil barrel fell by 29 per cent, while profit-based taxes fell by 69 per cent (Figure 4).[63]

Figure 3. Oil and gas cost allocation 2019–20 ($ per barrel)



Source: Rystad Energy's UCube database (accessed 26 Sep. 2020).
Note: Numbers represent the sum of operating expenses, royalty payments and taxes expressed on a per barrel basis (includes oil production, condensates and natural gas liquids).

62 Several oil-exporting countries have created sovereign wealth funds with rules to stabilize the state's fiscal balance: automatic savings when prices are high or disbursements when prices are low.
63 Calculations based on Rystad Energy's UCube Database.

04 A comparative assessment of Venezuela's reforms

Focusing on the proposed Hydrocarbons Bill and the framework analysis described earlier, the reforms are a positive development, but further details are required to understand how they will be implemented.

This chapter takes a closer look at a revised December 2020 version of a proposal for a new Hydrocarbons Bill – originally submitted to Venezuela's National Assembly in October 2020 – analysing its main institutional, legal and fiscal reforms.[64] While most policymakers agree that the current framework has severely hindered activity in the oil and gas sector for many years, there is not necessarily an agreement on the extent of the required reforms. Throughout 2019, the National Assembly debated two options: a short-term amendment of existing laws to improve conditions and fiscal terms for investors but to retain the underlying institutional and legal framework; the second option was a long-term institutional, legal and fiscal overhaul that would rebuild the sector's governance and improve competitiveness. The current version of the Hydrocarbons Bill could signal a political compromise by introducing deep institutional and legal reforms but incorporating

64 Officially, the project for a new Organic Hydrocarbons Law.

several short-term amendments under a transitory regime.[65] Enaction of this bill would require a political transition as the National Assembly elected in December 2020 has already signalled its intention to discard this bill and work on drafting different reform legislation.[66] Regardless of the political changes, lessons that can be taken from the analysis in this paper are also relevant for future reform efforts.

The first reform outlined in the Hydrocarbons Bill is to consolidate the oil and non-associated gas sectors under a single regulatory regime. As the bill aims to create a general framework, further regulations can be expected to address more specific technical and contractual issues.

Institutional reforms

In terms of sector governance, the Hydrocarbons Bill proposes to separate the policymaking role under the Ministry of Petroleum from the regulatory role of a new independent agency, the Agencia Venezolana de Hidrocarburos (AVH). This reform seems to follow the models in Brazil, Alberta and Mexico where a technical agency oversees the sector and administers the contracts to extract hydrocarbons. The AVH could also strengthen Venezuela's weak institutions for the oil and gas sector, a concern expressed by potential new investors.[67]

The AVH could also strengthen Venezuela's weak institutions for the oil and gas sector, a concern expressed by potential new investors.

The proposed specific functions of the AVH have evolved during discussions within the National Assembly. Early versions envisioned a very independent and ambitious agency that would regulate all activities of the oil and gas industry as well as control all the allocation processes of oil and gas fields – isolated from the political control of the government. Successive versions of the Hydrocarbons Bill have still granted operational autonomy to the AVH but progressively reduced

65 There have been questions on whether some of the proposed articles in the Hydrocarbons Bill would require a change in the constitution; for example, those related to the state property of hydrocarbons and of PDVSA (Articles 302 and 303). See Rojas, A. (2019), 'Elías Matta: El consenso debe predominar en la AN para recuperar la industria petrolera de Venezuela' [Elias Matta: Consensus must prevail in the National Assembly to recover Venezuela's oil industry], *Petroguía*, 19 March 2019, http://www.petroguia.com/pet/noticias/petr%C3%B3leo/el%C3%ADas-matta-%E2%80%9Cel-consenso-debe-predominar-en-la-para-recuperar-la-industria. In the interpretation of legislators and some analysts, as drafted, the reforms would not contravene those dispositions. See, Hernandez, J. (2018), 'Hacia un nuevo marco contractual para promover la inversión privada en el sector de los hidrocarburos' [Towards a new contractual framework to promote private investment in the hydrocarbons sector], Régimen Legal de los Hidrocarburos, Abediciones, http://elucabista.com/wp-content/uploads/2018/07/LIbro-R%C3%A9gimen-legal-de-los-hidrocarburos-VIII-Jornadas-Anibal-Dominici.pdf.
66 See *Petroguía* (2021), 'Jorge Rodríguez reactiva reforma legal de hidrocarburos pero descarta trabajo hecho por equipo de Guaidó' [Jorge Rodriguez reactivates legal hydrocarbons reform but discards work done by Guaidó's team], 4 March 2021, http://www.petroguia.com/pet/noticias/petr%C3%B3leo-gas/jorge-rodr%C3%ADguez-reactiva-reforma-legal-de-hidrocarburos-pero-descarta-trabajo.
67 A summary of investor concerns is included in Viscidi, L. and Graham, N. (2020), *Reviving Venezuela's Oil Sector: The Role of Western Oil Majors*, Inter-American Dialogue, January 2020, https://www.thedialogue.org/analysis/reviving-venezuelas-oil-sector-the-role-of-western-oil-majors. See also Fraser Institute, (2018) 'Global Petroleum Survey 2018', November 2018, https://www.fraserinstitute.org/sites/default/files/global-petroleum-survey-2018.pdf.

its scope, assigning further functions to the Ministry of Petroleum and the National Assembly. For example, the Ministry of Petroleum would be responsible for selecting the areas to be offered in any future bidding round as well as for regulating all downstream activities and the domestic market. A new government agency controlled by the Ministry of Petroleum would enforce competition and regulate trade practices for downstream natural gas activities.

This evolution could be the result of a more realistic assessment of the actual capabilities of a new state agency, which may not have all the technical or financial resources needed. Other countries' independent regulators also share some roles with different state agencies.[68] On the other hand, the recent changes also indicate that the proposed AVH's role will hinge on the balance struck between the different interests and stakeholders, furthering the risks that political compromises may hurt the effectiveness of future reforms.

The Hydrocarbons Bill proposes to maintain PDVSA as a state-owned NOC, although it would no longer be the main actor in the sector. This signals that private companies will play a central role in operating all activities throughout the oil and gas value chains. This is to be expected after PDVSA's poor performance and consistent with the goal of maximizing FDI. The Hydrocarbons Bill, however, gives little indication of how the state would address the company's ongoing financial and operational crisis, or how its assets would be transferred to private companies. Prior versions called for a 'Round Zero', as seen in Mexico and Brazil,[69] but that language has been dropped from the current iteration of the bill.

As noted, the required institutional reforms go beyond the oil and gas sector and, as a precondition, would require the re-establishment of the rule of law in the country and limits put on the discretionary power of government in policymaking, which has had disastrous consequences for the country.

Legal and contractual reforms

The Hydrocarbons Bill proposes to allow the AVH to use any type of contractual model for upstream oil or gas activities, such as service contracts, licences or PSCs. The terms of these contracts would include fiscal and other obligations for companies, lease duration, rights allocations and applicable investor protections. Most other jurisdictions analysed here have some degree of contractual flexibility, but Venezuela's proposal seems to approach the Mexican policy of allowing the regulator to choose the best contractual option for each type of field. This policy would allow future governments to pursue different objectives without the need to go through new legal reforms, as occurred in the late 1990s or early 2000s.

68 Mexico's CNH only regulates upstream activity, while downstream activity is regulated by CRE, and environmental oversight falls on the National Agency of Industrial Safety and Environmental Protection (ASEA). Brazil's ANP oversees the oil, gas and biofuel industries but focuses on upstream and midstream activities, with downstream activities regulated by state agencies.
69 This refers to an initial allocation of fields by the corresponding government agency to the NOC, as their sole upstream operator. This step is taken before opening other fields to private investment in bidding rounds.

While the AVH would have the authority to design the contracts, the National Assembly would need to approve the general terms before each bidding round, as well as any subsequent modifications. The bill also requires a vaguely defined verification process from the National Assembly once the AVH assigns contracts. These requirements significantly differ from the experiences of the five other countries analysed in this paper, where the legislative body of government has no specific role in this phase. The process to select a company as operator or investor usually falls within the ministry or the agency that governs the oil and gas sector, while designing the bidding terms (including which areas to offer) is in some cases a task of the government, whether through the Ministry of Finance or another entity, like Brazil's CNPE.

Some policymakers may believe that having legislative approval on the contracts can grant further legal certainty, especially in light of the opaque contracts and deals the Maduro administration has awarded and the recent Anti-blockade Law.

The National Assembly's role could be a disadvantage for Venezuela as it creates additional political risks for investors. Some policymakers may believe that having legislative approval on the contracts can grant further legal certainty, especially in light of the opaque contracts and deals the Maduro administration has awarded[70] and the recent Anti-blockade Law.[71] This law, while legally dubious under Venezuela's constitutional law, has the potential to expand government powers to sign new oil deals and limit requirements for disclosure or accountability. But additional parliamentary oversight could also allow political actors to interfere with the technical work of the AVH, undermining the agency's original purpose. Investors would also face relatively higher costs and longer lead times to finalize deals compared to more streamlined processes in other countries in the region that are also competing for FDI, such as Brazil and Mexico.[72]

70 Since 2016, the government has attempted to sign new oil deals without following the legal requirements and opaquely selecting the companies that would carry out operations. For further details, see Monaldi, Hernandez and La Rosa (2020*), The Collapse of the Venezuelan Oil Industry: The Role of Above-Ground Risks Limiting FDI*, pp. 40–41.
71 In October 2020, the Constituent National Assembly enacted the Constitutional Anti-Blockade Law for the National Development and Human Rights Guarantee, also known as 'Anti-blockade Law', to circumvent sanctions. The law gives the government powers to change the structure of joint ventures to increase private participation and grant confidentiality to any document or information when the president deems it convenient. The law has been widely criticized and it is also unlikely that it will remedy any of the current concerns of companies about investing in the country; it provides ample discretionary powers for the government to change regulation when convenient and further reduce transparency in any deals with companies. See BBC (2020), 'Aprueban en Venezuela la "Ley Antibloqueo" con la que Maduro tendrá plenos poderes para firmar nuevos negocios petroleros' [Approval in Venezuela of Anti-blockade Law with which Maduro will have special powers to sign new oil businesses], 9 October 2020, https://www.bbc.com/mundo/noticias-america-latina-54478149.
72 Lares, Pacheco and Sucre (2019) argue that contractual dynamics and business conditions imposed expedite administrative procedures incompatible with the deliberation times and processes of a parliament. They highlight the experience of Brazil, Colombia and Mexico where there was limited interference from the legislature in the activities of administering the resource.

The Hydrocarbons Bill also proposes to introduce competitive processes, such as public auctions to assign oil and gas fields. This follows recent experiences in almost all the five countries examined in the previous chapter and can significantly improve transparency in the selection of partners and operators. The AVH would be charged with designing the bidding conditions, which would be a positive development and in line with the examples of Alberta, Brazil and Mexico. More generally, the five other countries have shown that open bidding rounds, with clear conditions and transparent criteria, can efficiently allocate fields to investors and reduce corruption opportunities, while also mitigating future legal and political risks. However, building a successful bidding programme takes time – potentially years – and policymakers should set their expectations accordingly.

The Hydrocarbons Bill allows the AVH to include international arbitration clauses to protect international investors' rights. This is a common request from potential investors in Venezuela, especially new entrants, given the country's institutional weakness and expropriations track record. Prior proposals, however, had much stronger language favouring international arbitration – even requiring Venezuela to re-join the ICSID after its exit in 2012. This change could signal the lack of a political consensus on offering international arbitration by instead allowing the AVH and National Assembly to rely on individual bilateral investment treaties.

Finally, the Hydrocarbons Bill proposes to open midstream and downstream activities to private competition. Investors would need to apply for special authorizations from the Ministry of Petroleum. Private investments can help develop the natural gas industry, which will mostly depend on the domestic market structure. Liberalized gas transport and distribution activities would allow investors to build the infrastructure needed to expand consumption. The Hydrocarbons Bill includes general principles for regulating the domestic gas market, such as open access for infrastructure, regulated prices and tariffs, and the unbundling of production, transport and distribution activities. These principles could be expected to receive further treatment in future regulations.

Fiscal reforms

The Hydrocarbons Bill retains the basic royalty and tax system traditionally used in Venezuela but would allow the AVH to make the necessary adjustments in contracts for each project to be competitive. This reflects the experience in Brazil and Mexico where the law provides a general framework, but the final terms depend on the bidding process. The bill sets a base royalty of 16.67 per cent for oil and gas production – below the current 30 per cent and 20 per cent applicable for oil and gas projects, respectively. The AVH could also temporarily reduce these royalties to a minimum of 1 per cent to secure the viability of projects. Besides the base royalty, the effective royalty rate would also depend on the selection or bidding process organized by the AVH, under which the contracts must incorporate adjustment mechanisms.

The language in the bill indicates the goal of creating a flexible fiscal regime for oil and natural gas production. The base oil royalty, however, has no connection to international prices, raising the risk that the country retains a regressive tax system that would result in the state receiving a small share of profits under higher oil prices. Even if this mechanism simplifies collecting taxes, the result would be politically unviable, especially considering the country's large financial needs. Venezuela, instead, would benefit from a progressive fiscal regime generating higher state revenues from the more profitable investment projects. Progressive taxes can also reduce the incentives for future governments to expropriate projects, mitigating political risks. The experience with Brazil's Special Participation Tax or the flexible royalties used in Alberta and Mexico may provide examples of how to mitigate these risks.

Venezuela's fiscal framework for oil and gas activities would ultimately depend on the AVH's decisions on the type of contract used and the combination of taxes. For example, licences that rely more on income taxes and less on royalties or production-sharing agreements, where the profit split has more weight, would probably be more progressive. The contract used would also depend on the type of field and how risks are allocated between the state and oil companies. The case of Iraq illustrates how the use of TSCs can impose significant fiscal pressure in a downturn, a situation for which Venezuela will not be prepared in the foreseeable future. In this sense, the discussion of the fiscal framework should enter a larger debate on the management of hydrocarbons revenues.

05 The case for a comprehensive energy policy

Further legal and institutional reforms are required to support the Hydrocarbons Bill, particularly in regard to the rest of the energy system and its role in boosting development.

Venezuela's Hydrocarbons Bill is heavily geared towards expanding oil production, which is likely due to the latter's capacity to generate fiscal revenues. But the country has significant opportunities in other energy sectors and needs a comprehensive energy policy to take advantage of them. Further clarity on long-term energy policies will ultimately support plans to attract FDI into the oil and gas industry. Brazil and Mexico demonstrate examples of broad energy reforms, focusing not only on increasing energy production but also on liberalizing domestic markets for fuels and electricity, expanding energy access and mitigating environmental impacts from oil and gas operations. Successful reform in Venezuela should address the following issues.

— **Expanding the role of natural gas:** Natural gas has traditionally played a limited role in Venezuela's energy matrix. It has generally been used within the oil industry and as a fuel to generate power. Most discussions on the future role of natural gas focus narrowly on generating export revenues, either directly through exports or indirectly by reducing domestic consumption of liquid fuel that can be exported. Venezuela can leverage its large natural gas resources by expanding its underdeveloped domestic market, with a particular focus on building infrastructure to deliver gas to households and industrial users. Further natural gas supplies can also support the recovery in the country's electricity industry that will be required to address critical humanitarian issues such as water supply. Potentially, as global energy markets shift towards decarbonization, natural gas could still meet part of the energy demand, given its multiple uses (heating, industry and electricity), but also as a source of hydrogen in the long run.

- **Reforming domestic energy markets:** Rigid and low energy prices in Venezuela have removed incentives to develop infrastructure for the domestic market, leading to waste, increased flaring of natural gas and fuel scarcity. A clear mandate to reform domestic energy prices and phase out subsidies would support investments in transmission and distribution infrastructure as well as foster competitive markets, raise additional fiscal revenues and reduce greenhouse gas emissions. To be politically sustainable subsidy reforms should protect the poorest in society.

- **Clarifying rules for midstream and downstream operations and competition:** The oil and gas industry needs more specific rules governing existing, and potentially new, midstream and downstream oil and gas assets. Addressing issues like third-party access, unbundling rules, anti-competitive regulation, tariffs and even PDVSA's participation can generate confidence in potential investors about the viability of projects relying on such infrastructure.

- **Strengthening environmental, social and governance policies:** The investors that Venezuela will need to attract pay a lot of attention to environmental, social and governance practices. These go beyond best practices to mitigate the environmental impacts of oil and gas operations, which are frequently referred to in the Hydrocarbons Bill. Venezuela will need to harmonize its current pledges to reduce greenhouse gas emissions under the Paris Agreement with its oil and gas production plans. There is one clear area for improvement: minimizing natural gas flaring and venting. Strong and independent oversight, combined with operational rules on flaring and venting, can mitigate this problem. But the industry will also need economic opportunities to use the additional gas volumes, for which new infrastructure and market-based prices will be critical.

  Beyond environmental protection, Venezuela needs to improve transparency and accountability in the oil and gas industry, with a special focus on combatting corruption. The Hydrocarbons Bill indicates that all acts regarding the oil and gas industry would follow the principle of maximum transparency, but there are few specifics on what this would mean in practice. Trust in the system could be enhanced through additional clarity in terms of what type of information would be publicly disclosed or kept classified, in which format, on what time frames, and which organization or persons are responsible for it. The Hydrocarbons Bill could also expand on the role of independent audits, especially for PDVSA or any other state company. Finally, transparency by itself is not enough to improve governance, the country will need to reinforce its accountability and enforcement mechanisms to mitigate the risk of corruption.

- **Improving management of oil revenues:** The Hydrocarbons Bill largely retains the system in which oil revenues and PDVSA's dividends are managed at the discretion of the government. Venezuela will need institutionalized mechanisms like a sovereign wealth fund or a stabilization fund to generate long-term savings and reduce vulnerability. These mechanisms require strong enforcement and institutional independence, none of which are present at the moment, and will require political compromises over time. Better revenue management systems can be key elements in approaches to handling volatility in government revenues and to support an economic diversification strategy. They also have implications for exchange rate and fiscal policies affecting the oil and gas sector, as distortions in the exchange rate has affected the cost structure of companies for years.[73]

A comprehensive strategy including these components can support Venezuela's efforts to attract FDI to its oil and gas industry. As the Hydrocarbons Bill is proposed as a framework law, the elements discussed in this chapter could be addressed by additional legislation. For comparison, Mexico's energy reform included a constitutional reform, nine new laws and amendments to 12 existing laws that took eight months to be finalized.

Venezuela's policymakers should keep in mind that successful reform needs to go beyond the proposals included in the Hydrocarbons Bill. On the one hand, the National Assembly has also discussed further electricity,[74] petrochemicals[75] and climate change bills.[76] These legal instruments also have implications for the management of oil and gas operations and deserve discussion within a more general framework for energy policy. The proposed reforms to the electricity sector are the subject of a forthcoming Chatham House paper. On the other hand, even a perfect legal and regulatory framework may not be enough to create trust among investors that may be wary of future political instability.

73 For further discussion on the effect of exchange rate policies on the sector, see Monaldi, Hernández and La Rosa (2020), *The Collapse of the Venezuelan Oil Industry: The Role of Above-Ground Risks Limiting FDI*.
74 National Assembly of Venezuela (2020), 'AN ya tiene listas las leyes de Hidrocarburos y el informe de la 2da discusión del Sector Eléctrico' [National Assembly already has the Hydrocarbons Law and the 2nd discussion report on the Electric Sector Law], 17 April 2020, https://www.asambleanacionalvenezuela.org/noticias/an-ya-tiene-listas-las-leyes-de-hidrocarburos-y-el-informe-de-la-2da-discusion-del-sector-electrico.
75 Two bills, one related to the domestic fuel market, and another to the petrochemical sector were presented in October 2020. National Assembly of Venezuela (2020), 'Presentan a la AN dos anteproyectos de ley una de mercado de derivados de hidrocarburos y otra para fortalecer el sector petroquímico' [Two Bill drafts have been presented to the National Assembly, one for domestic fuel markets and another to strengthen the petrochemical sector], 22 October 2020, https://www.asambleanacionalvenezuela.org/noticias/presentan-a-la-an-dos-anteproyectos-de-ley-una-de-mercado-de-derivados-de-hidrocarburos-y-otra-para-fortalecer-el-sector-petroquimico.
76 A report from the Environment, Natural Resources and Climate Change Commission at the National Assembly shows a Climate Change Law approved in 2020. See National Assembly (2020), 'Informe de Gestion Parlamentaria' [Parliamentary Management Report], https://asambleanacional-media.s3.amazonaws.com/documentos/documentos/informe-de-la-comision-de-ambiente-20210107190452.pdf.

06 Challenges for implementing reforms

Legal and institutional reforms alone are not sufficient to attract investors to Venezuela. An array of political, economic and security risks need to be addressed, while also navigating the energy transition.

Formal changes to the institutional and legal framework in Venezuela do not guarantee success in attracting investments and oil and gas sector recovery. Beyond the ever-present political risks, the country will face several challenges in advancing any reform agenda.

First, there is uncertainty about the type of political resolution that will arise from the current political crisis, or how stable a future government will be. The reform proposed in the Hydrocarbons Bill relies on the assumption of a transition to a democratic government. But Nicolás Maduro remains in control of the country and it is unclear how (or if) a political transition will occur.[77] Foreign companies have expressed concern that a military regime would increase political risk and create further uncertainty.[78]

In the short term, economic sanctions will continue to put pressure on PDVSA. Sanctions imposed by Washington have progressively cut PDVSA's access to US financial markets, suppliers, contractors and export markets. Large companies

77 Long, G. and Stott, M. (2021), 'Venezuela: Maduro strengthens his grip on power', *Financial Times*, 3 January 2021, https://on.ft.com/2X4q2Gl.
78 Viscidi, L. and Graham, N. (2020), *Reviving Venezuela's Oil Sector: The Role of Western Oil Majors*, Inter-American Dialogue, https://www.thedialogue.org/analysis/reviving-venezuelas-oil-sector-the-role-of-western-oil-majors.

will require a lifting of, or changes to, sanctions to invest in the country. Lingering sanctions, even after a transition occurs, as well as potential reputational or compliance risks can keep potential investors away from the country.

Rebuilding Venezuela's economy will place tremendous fiscal demands on the country. Combined with underlying energy nationalism, this can lead to political pressure on future policymakers to extract more revenues from the oil and gas sector, which would affect the success of reforms. Additionally, wary investors may delay their operating or investment decisions until conditions for future contracts and provisions are fully specified.

Operational limitations can also hinder the success of any legal reforms. The degraded state of oilfields, equipment and basic services like power, water and transportation will create bottlenecks to increasing oil production, lengthening the amount of time needed to recover output. Additionally, some fields may have suffered damage due to production shutdowns, which will either require additional investments or affect the availability of extractable resources. Service providers and contractors may not be willing to engage with Venezuela while the country and PDVSA owes billions of dollars to creditors. Emigration waves have also reduced the availability of skilled local human capital that investors and the government will need. International investors may rely on expatriates to fill technical gaps, but the government may struggle to develop the skills that policymaking and regulating agencies will need to implement the reforms.

Even if the government creates a more investor-friendly environment, many IOCs may not be willing to invest in Venezuela's oil and gas industry. In the short term, the impact of COVID-19 cannot be overstated. According to the US Energy Information Administration, most oil and gas companies, facing cash shortages and demand uncertainty, slashed capital investments in 2020.[79] As IOCs adjust their investment portfolios across the globe, Venezuela may struggle to generate significant interest.

In the long term, the energy transition and further uncertainty about oil demand may affect investments in the global oil and gas industry. IOCs have increasingly pledged to minimize their greenhouse gas emissions, which may imply lower appetite for new oil and gas projects, and signalled a new focus on cleaner energy projects.[80] Several studies suggest that companies are demanding higher hurdle rates – i.e. the minimum rates of return on investments – to participate in long-cycle oil projects.[81] A recent study estimates that between 66 per cent and 81 per cent of oil reserves across Latin America and the Caribbean will remain unused by 2035, threatening countries like Venezuela that rely heavily on oil and gas revenues.[82] Another study

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79 Energy Information Administration (2020), 'Financial Review of the Global Oil and Natural Gas Industry: Third-Quarter 2020', 17 December 2020, https://www.eia.gov/finance/review.
80 McCormick, M. (2020), 'US oil producers begin to follow Europe with emissions pledges', *Financial Times*, 6 December 2020, https://on.ft.com/33Qiue5.
81 Fattouh, B., Poudineh, R. and West, R. (2019), *Energy Transition, Uncertainty, and the Implications of Change in the Risk Preferences of Fossil Fuels Investors,* The Oxford Institute for Energy Studies, Oxford Energy Insight: 45, University of Oxford, https://www.oxfordenergy.org/wpcms/wp-content/uploads/2019/01/Energy-Transition-Uncertainty-and-the-Implications-of-Change-in-the-Risk-Preferences-of-Fossil-Fuel-Investors-Insight-45.pdf.
82 Solano-Rodriguez, B., Pye, S., Li, P., Ekins, P., Manzano, O. and Vogt-Schilb, A. (2019), *Implications of Climate Targets on Oil Production and Fiscal Revenues in Latin America and the Caribbean*, Inter-American Development Bank Discussion Paper N⁰ IDB-DP-00701, August 2019, http://dx.doi.org/10.18235/0001802.

estimates that PDVSA has the fourth-largest average post-tax break-even level – close to $40 per barrel – out of 49 NOCs.[83] Companies increasingly focusing on low cost and short-cycle projects will demand flexible contractual and fiscal systems.

A global transition to a carbon-neutral economy may raise two risks for Venezuela: lower fiscal revenues from oil and gas exports and fewer FDI flows for the hydrocarbons sector. While oil and gas demand are not expected to vanish overnight, a long-term decline will reduce the economic rents that have underpinned the economy for decades. Additionally, as producer countries move to exploit their oil and gas resources, there is a risk of a global 'race to the bottom' by cutting taxes and obligations for oil and gas projects as they compete to attract a shrinking number of investors.[84] Venezuelan policymakers must keep in mind that these issues can affect the success of energy reforms in the country.

83 Manley, D. and Heller, P. (2021), *Risky Bet: National Oil Companies in the Energy Transition*, National Resource Governance Institute, https://resourcegovernance.org/sites/default/files/documents/risky-bet-national-oil-companies-in-the-energy-transition.pdf.
84 See Manley, D. Mihalyi, D. and Fleming, A. (2020), *A Race to the Bottom and Back to the Top: Taxing Oil and Gas During and After the Pandemic*, Natural Resources Governance Institute, https://resourcegovernance.org/analysis-tools/publications/race-bottom-taxing-oil-gas-coronavirus-pandemic.

07 Conclusion

Reforms are just one part of rebuilding the hydrocarbons sector and Venezuela itself. While initial efforts have concentrated on private investment, much remains to be seen regarding the scope of wider reforms.

Reforming the oil and gas sector in Venezuela is a contentious issue, given the country's fiscal dependence on hydrocarbon revenues. Policymakers will not only have to balance the long-term competitiveness of the sector with short-term financing needs, but the framework must be stable enough to reduce the risks for investors and overcome the country's very poor reputation as a destination for FDI.

The proposed reforms in the oil and gas sector have the potential to improve Venezuela's competitiveness against other large oil-producing countries. The focus on a stronger institutional framework with an independent sector regulator, flexible legal and fiscal regimes, and opening the entire hydrocarbons value chain to private companies could attract investors. These proposals address some of the root causes that led to the oil and gas industry's collapse over the last decade. Additionally, giving current investors the option – rather than forcing them – to adapt their existing contracts to the future framework may mitigate some of the concerns around new and evolving legal changes.

Despite these advances, a comprehensive sector overhaul will require wider reaching changes beyond those included in the proposed reforms. Investors may want to see further signals of a strong political consensus that minimizes risks as well as future opportunistic behaviour by the government. So far, key issues like the respective governance roles of the Ministry of Petroleum, the proposed AVH, the National Assembly and PDVSA have shifted with each iteration of the Hydrocarbons Bill, indicating a lack of agreement among the proponents of the bill. Additionally, investors will need further clarity on issues like energy pricing reforms, sustainability policies and PDVSA's future role before committing to large investment projects in the country. Not all of these issues must be detailed in a specific law, but they must be considered within a comprehensive energy policy.

Finally, the implementation process will be key for the success of the proposed reforms. This may be the most difficult issue for potential investors due to the uncertainty around Venezuela's political crisis. Legal reforms may help shape policy outcomes depending on how or when a political transition occurs. It is reasonable to expect that comprehensive sectoral reforms will only occur in the case of such a political transition, as the burden of current sanctions prevents any meaningful outreach for FDI. Open competitive bidding processes are a way to test the appetite of different investors, and they are less prone to potential corruption than deals negotiated in private. Policymakers and members of the National Assembly can reduce uncertainty by openly exchanging information about their policies and goals, making it easier and less risky for potential investors to enter Venezuela again. However, ultimately the questions surrounding any reform effort will depend on whether the country can move from a situation typical of a failed state, without rule of law, strong institutions or political stability towards a comprehensive recovery effort.

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Cover image: A pump jack stands at a Petroleos de Venezuela SA Petropiar facility in El Tigre, Venezuela on 14 October 2018.
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