DECEMBER 2018

75 Years after the 1943 Agreements

Lessons and Proposals for the Reconstruction of the Oil Sector

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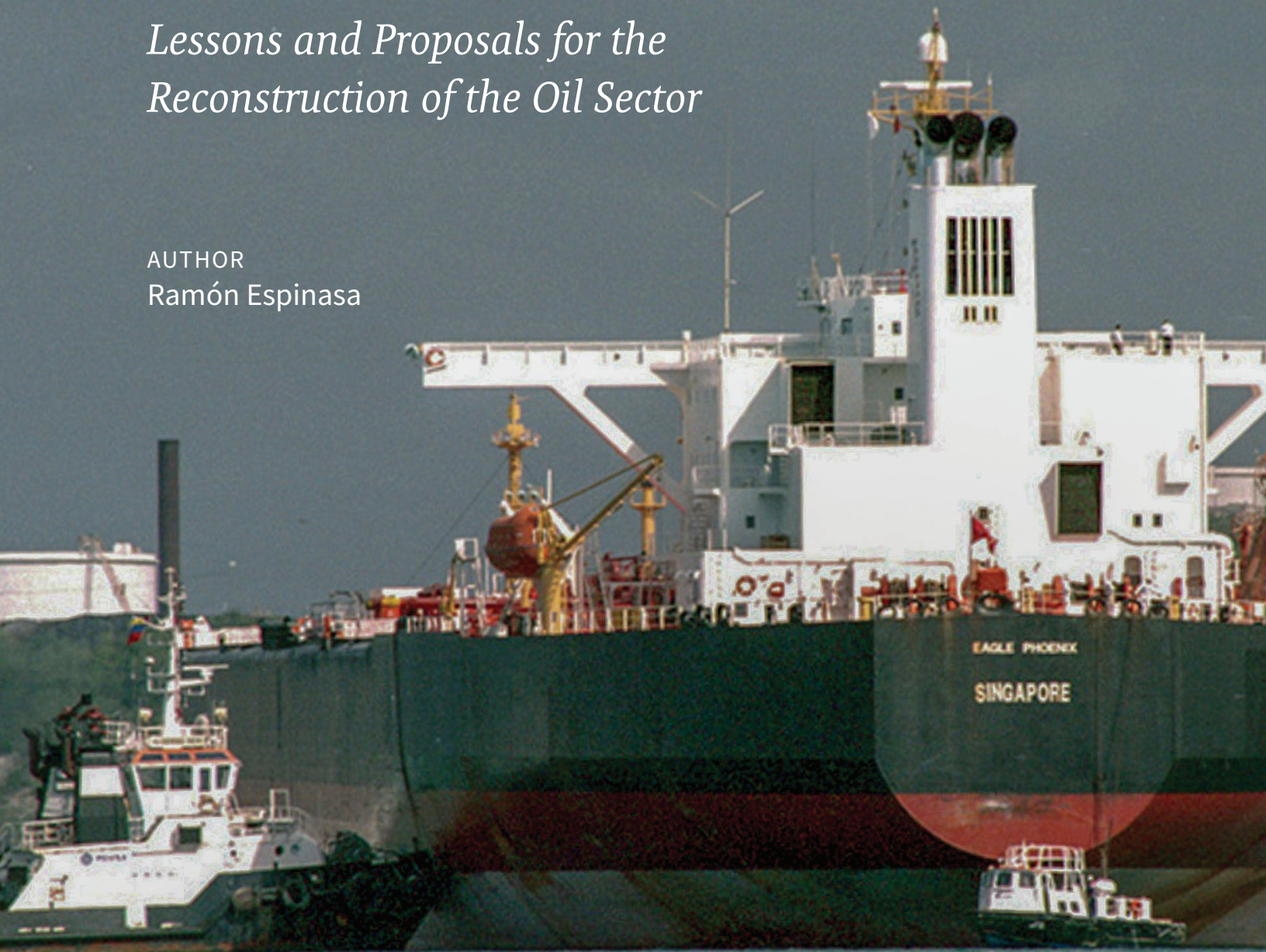

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A Report of the CSIS AMERICAS PROGRAM

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1 | Introduction

March 13 of this year marked the 75th anniversary of the promulgation of the Hydrocarbons Law of 1943. This law, together with the agreements that accompanied it, created the foundations of the longest lasting stage and the most vigorous expansion of the Venezuelan oil Industry.

There are lessons to be learned from the massive expansion of production over the three decades following the promulgation of the law of 1943 and its impact on Venezuela's economy. These lessons should help us design institutional proposals that facilitate the recovery of the hydrocarbon sector. Understanding these lessons properly requires identifying similarities between 2018 and 1943, a full three-quarters of a century ago. The ultimate purpose of this essay is to make basic proposals for the reconstruction of the national oil sector for years to come.

The essay is divided into six parts. First, we describe the magnitude of the expansion of the oil sector between 1943 and 1958, both in terms of production and income. In the second part, we will describe the national and international contexts in which the agreements were reached and the law approved. Third, we describe the pillars of the agreements. In the fourth, we compare the situation of 1943 with 2018, underlining similarities and differences. Fifth, we will highlight lessons that can be learned from that reform. And in the sixth section, we make concrete policy proposals for the recovery of the national oil sector in the eventuality of a change in the national political situation in favor of a regime guaranteeing democratic and economic freedoms.

2 | The Expansion: 1943 – 1958

Production

Oil production increased 5.3 times in the 15 years between 1943 and 1958, going from 491 thousand barrels per day to 2.6 million barrels per day for an average annual growth rate of 12 percent. As part of the agreements, the Cardón and Amuay refineries were built, and for decades these two refineries made up the largest refining complex in the world. While initially producing 22 thousand barrels per day of refined products in 1943, the country went on to produce 268 thousand barrels per day in 1958. Local refining increased more than 10 times in 15 years.

The development of production infrastructure in western and eastern Venezuela and the construction of the refining complex in Paraguaná created more than 55 thousand direct jobs by 1948. If we assume three indirect jobs for each direct, the build-out of the national oil sector generated more than 220 thousand productive jobs in a country with a population of 4.8 million.

The creation of modern and well-remunerated jobs in the east and west caused significant migrations from the more southern Andean states to the East Coast, Maracaibo, and Paraguaná as well as from Sucre, Nueva Esparta, and Monagas states to Anzoátegui state. In addition, given that the production centers were at the eastern and western ends of the national territory, the development of oil activity contributed significantly to the physical integration of the country.

Income

The fiscal oil income increased for two reasons: the exponential increase in exports, which raised the state's share due to an increased royalty rate, and the introduction of the income tax. This took place while prices remained essentially constant throughout the period.

Fiscal and balance of payments data are available since 1947, so for the calculations below we will take 1947 as a reference and not 1943.

Oil production grew 120 percent between 1947 and 1958—from 1.2 to 2.6 million barrels per day, while exports went from 1.16 to 2.44 million barrels per day, showing how small the domestic market was with respect to production. In terms of income, oil exports increased from $1.2 to $2.5 billion, as a result of the increase in export volumes, as prices remained

essentially constant at around $1.7 per barrel ($17.7 per barrel in today's terms). In today's dollars, income from oil exports rose from $17 to $22 billion between 1947 and 1958.

On fiscal terms, oil revenue almost quadrupled between 1947 and 1958 from $250 to $980 million. The state was able to expand spending without increasing domestic tax rates. Oil fiscal income in per capita terms almost tripled from $50 to $140 per inhabitant per year ($700 to $1,260 in today's terms). In the same period, total tax revenue nearly quadrupled, putting weight on the importance of oil revenues, which represented slightly more than 60 percent of total fiscal revenue.

Large infrastructure works were built and social spending grew without increasing taxes on Venezuelans. Real wages multiplied by making rural activities uncompetitive, accelerating migration from the countryside to cities and oil zones. The population of the country increased by 50 percent between 1947 and 1958, from 4.6 to 6.9 million, largely driven by massive immigration, mostly from Europe, which was devastated after World War II.

The first GDP figures are from 1950. In that year, nominal GDP measured in dollars was $3.8 billion, equivalent in today's dollars to $39 billion. By 1958, nominal GDP had more than doubled to $8 billion ($69 billion in 2018 dollars). In today's dollars, GDP per capita rose from $7,700 to $10,000 between 1950 and 1958.

Oil, as an industry and as a source of fiscal income, definitely changed the face of the country after the great reform of 1943.

We will now explore what these 1943 agreements consisted of and the national and international context in which they were reached. Later, we will outline some lessons of this process that will help us overcome the current situation of the national oil sector.

3 | The International and National Contexts

The International Context

With the entry of the United States into World War II after the Japanese bombing of Pearl Harbor in December 1941, Venezuela's oil supply began to play a prime strategic role in the growing demand for fuels in the North Atlantic, particularly given the nationalization by Lazaro Cárdenas in 1938 of the American oil companies that operated in Mexico. By 1943, Venezuela was already the second largest oil producer in the Americas after the United States.

In the period between wars, oil had displaced coal as the fuel for maritime transport and was indispensable for air and land transport. Securing access to oil supplies was a paramount strategic objective for both sides. The United States started with an advantage: it was the largest producer in the world. However, it sought to ensure access to the second largest reserves in the West.

The country's oil potential was not yet developed. The two companies with the largest presence in the country, Creole (Exxon) and Shell, were more than willing to obtain new concessions that would allow them to develop the potential that their geologists envisioned. However, they resisted the increasingly harsh conditions contained in a succession of hydrocarbons laws that began in 1920. By the start of the war, Venezuela was de facto closed to the granting of new areas as it waited for better conditions to negotiate.

The outbreak of war yielded these better conditions as it gave Venezuela a position of strength—it had the supply that the demand looked for—and the sympathy of the U.S. Department of State, which played a fundamental role in bringing the companies and the government of Venezuela to the negotiating table. The U.S. government was more interested in the strategic objective of securing access to reserves and increasing production in Venezuela than in protecting the companies' very comfortable profit margins.

The oil potential of Venezuela was immediately clear. By 1950, the country was the second producer on the planet, lifting more oil than all the countries in the Middle East put together. Venezuela remained the top producer and exporter of the group of countries that would later form OPEC until 1970, when it was surpassed by Iran and Saudi Arabia. Upon the foundations laid in 1943, Venezuela was the most important producer in the world outside the United States until the 1970s.

The National Context

By 1943, Venezuela had been producing oil for 30 years. The country was not a novice in the relationship with transnational oil companies. The national elites had learned the business and importance of oil.

The first concessions to intermediaries of transnational corporations in the twentieth century were granted under the Mining Code of 1904. The concessions covered almost all of the oil lands of the western part of the country and did not differentiate between the royalties to be paid by oil production and those paid by any other mining activity.

In 1920, the first hydrocarbons law was published with two very significant advances that were applied retroactively to the concessions granted under the Mining Code: a specific royalty of 15 percent *ad valorem* was levied on oil production, and companies were forced to give up half of the concession areas they had been granted.

Although concession-holding companies reacted against this law—and managed to convince the government to change some stipulations—the Venezuelan state went on the offensive. Between 1920 and 1938, eight hydrocarbons laws were approved, each advancing the state resource owner's position vis-à-vis the companies.

The advent of World War II coincided with a consensus among Venezuela's elites to increase the national presence in the oil sector, then fully managed by foreign capital. At the same time, it became clear that increasing the country's share of profits would require homogenizing the mosaic of concessions granted under different laws, operating under different royalty rates, and made up of varying sizes. This required a comprehensive reform of the sector.

This particular circumstance was used to renegotiate all concessions granted up to then, increasing the state's share in all production and internalizing the industrializing process of the oil industry (i.e., building refineries in the country).

For their part, the international companies were also interested in negotiating and reaching an agreement to homogenize the contractual conditions with several goals: to try to contain the growing pressure from the Venezuelan government from one law to another, to reduce uncertainty regarding changes in the contractual framework, and to develop the country's massive oil potential.

The war strengthened Venezuela's position, and there was pressure on the companies from their national governments to raise production. As previously mentioned, negotiations on Venezuelan soil were catalyzed by the U.S. Department of State.

Due to the urgency of the moment, the parties quickly reached the agreements that we will detail below, changing the country forever. The oil industry became increasingly domestic, and in 1951, the Ministry of Mines and Hydrocarbons was created. Oil activity, which until then had depended on the Ministry of Development, would have its own ministry—evidence of the sector's importance to the country.

In 1952, the School of Petroleum Engineering at the University of Zulia in Maracaibo was founded, followed a few years later by one at the Central University of Venezuela in Caracas. Here a second generation of Venezuelans would be trained to become first-class

professionals and build careers in transnational companies. By the time of nationalization in 1975, the industry was totally run by Venezuelans trained at the best international companies. The industry was, as a matter of fact, domestic.

4 | The Bases for the Agreements

The agreements around the Hydrocarbons Law of 1943 can be summarized in three topics: access to the resource, the tax framework, and the industrialization of oil.

Access to the Resource

All the concessions granted up to 1943 were renewed for 40 years, with the possibility of extending them in the middle of the period for 40 more years. The renewal was made under a homogeneous legal and fiscal framework stipulated in the law. This resolved the problem of the concession mosaic with different concession periods, royalties, and other taxes, which were granted under a mining code and eight different laws.

The first benefit for the government was to standardize the conditions of all concessions, which made administration, supervision, and rent collection much easier. The second—and more important—benefit was that the increase in the government's share—due to the increase in royalties and other taxes contemplated in the 1943 law and the Income Tax Law of 1942—would apply to all the concessions and thus to all oil production in the country.

The companies also benefited from this reform. It established a long-term time horizon for the investments—which are large, upfront, and have long recovery periods—that would be made in the country, and duration is a key parameter for the success of concessions. Finally, the inclusion of a possibility to renew them at 20 years—up to a total of 60 years—was an additional incentive for companies to accept the reform.

The Tax Framework

The royalty, a specific tax on oil production, was increased to 1/6 (16.7 percent) of the production volume, which was similar to the highest levels paid to the private owners of oil-bearing lands in the United States, the top producer and the only reference for that time.

Perhaps more important than the increase in the royalty rate was that the companies were subject to an income tax with a law that was first approved in 1942 and came into force in 1943. Although the initial rate was a relatively low 12 percent, it was not fixed and was changed in each modification in the law.

The oil companies in Venezuela were thus subjected to Venezuela's tax sovereignty. In later years, different governments would use unilateral and sovereign increases in the income tax rate to raise their share in oil revenues without needing to modify the hydrocarbons law.

The reform brought about by the hydrocarbons law and the approval of the first income tax law resulted in doubling the government share of profits from 25 percent to 50 percent. This is because the sum of collected income by applying the royalty rate of 1/6 plus the income tax rate of 12 percent translates into a 50 percent share for the government of the operational surplus (gross profits) of the operating companies. On the other hand, the royalty of 1/8—established in the previous model—represented a government share of around 25 percent.

There are a couple of aspects that reduced the impact the greater fiscal take by the Venezuelan government had on companies. First, quantitatively, international companies were able to pay less tax in their countries of origin (the United States and others) by deducting the income tax they paid in Venezuela from their tax liabilities. Taking this into account, the effective increase in the state's share of profits was the increase in the royalty rate from 1/8 to 1/6 as the income tax previously paid by companies in their countries of origin was now paid in Venezuela.

The second aspect is qualitative. As the government's take fluctuated around 50 percent (when adding the royalty and income tax), the companies and the government agreed in 1948 to set participation exactly to this amount by adding two very different components in their conceptual origin. The famous 50:50 (called *fifty-fifty* in Venezuelan common parlance) gave an idea of distributive equity and for three decades froze the government's pressure for greater participation. The 50:50 model gave the companies a certainty of fiscal stability that favored the exponential growth of investments in the country.

In fact, it was the companies that were dedicated to publicizing this arrangement around the world—particularly in the new developments of the Middle East—with the hope that the simplicity, sense of fair distribution, and universalization of the agreement would limit the resource-owning countries' pressure for greater participation in the rent.

Industrialization

This was perhaps the most novel and modernizing aspect of the 1943 agreements. Due to the government's demand, the companies committed to building refineries in the country to process Venezuelan crude oil.

Until 1943, the two large transnational concessionaire companies refined part of the crude they produced in Venezuela in the Netherlands Antilles: Shell in Curaçao and Creole in Aruba. Shell built the Cardón refinery—operational by 1949—with a refining capacity of 30 thousand barrels per day. Creole built the Amuay refinery—operational by 1950—with a capacity of 60 thousand barrels per day. In 1997, then under Petróleos de Venezuela (PDVSA)'s control, these two refineries were integrated into the Paraguaná Refining Complex, with a joint refining capacity of 940 thousand barrels per day, making it the largest refining complex in the world at the time.

It is worth noting that in 1943 the government of Venezuela included industrialization of the oil industry as part of the agreements. It shows how much the national governing elites valued productive oil activity beyond it becoming a large source of fiscal revenue.

The magnitude and quality of the jobs required by the oil industry for exploration, production, transport, processing, and commercialization of hydrocarbons led to a growing demand for national universities to train not only geologists and petroleum engineers, but also chemical, mechanical, electrical, and industrial engineers. In addition, technical schools were created in the country to train technologists in these areas, and equally important, artisanal schools were founded to train welders, electricians, and instrumentalists, among others. Obviously, this would be accompanied by the training of professionals in the most diverse branches of knowledge. The oil industry was the gateway to modernity for the country.

It is not the purpose of this essay to enter into a detailed analysis of the Hydrocarbons Law of 1943. Instead, it is to show that it was a robust law, well conceptualized and drafted, as demonstrated by its duration and versatility. It was in place until 2002, when the government— elected in 1998—decided that the executive would take direct control of oil policy thus ending all previous institutionality.

5 | The Comparison: 1943 and 2018

To derive lessons that allow us to make a set of proposals for the reconstruction of the Venezuelan oil sector, it is necessary to build a detailed comparison between the current situation and 1943.

1 | Oil Industry Comparison

INDUSTRY

- As it did 75 years ago, Venezuela produces well below the potential that its reserves allow. In 1943, this was due to a lack of production infrastructure. Today, it is due to a total deterioration of existing infrastructure.
- In 1943 there were no important national capital companies. Today, PDVSA holds monopoly control of production either directly or in partnerships (through mixed companies) with private foreign companies. PDVSA is an empty shell without capital, knowledge, or specialized personnel. Those that keep up production are foreign companies.
- At the time of the 1943 reform, Venezuela had no specialized technical personnel in any segment of the oil business. Those who built up the domestic industry had to come from abroad or, eventually, be trained domestically. Today, the country has lost almost all of its specialized oil professionals and technicians. For the reconstruction, that specialized labor force must come from abroad and a new generation must be trained domestically.
- The development of the productive infrastructure in 1943 was carried out by foreign companies that brought in capital, knowledge, skilled labor, and engineering capacity, which were all nonexistent in Venezuela. The reconstruction of the oil sector will have to be done by private companies that can provide the capital, knowledge, skilled labor, and engineering capacity that PDVSA lacks.

INVESTMENT 1947 – 1958

- The investment in the 15 years between 1943 and 1958 was massive. It was necessary to increase production by five times where there was practically no infrastructure of any kind. Not only was the investment necessary to develop the oil infrastructure itself—production, transportation, refining, and shipping facilities—but also all the

peripheral infrastructure, land and lake transportation, electric power, and water services. Furthermore, at that time oil production areas were remote, sparsely populated, and lacked modern infrastructure.

- Investment to develop production infrastructure rose from $1.2 billion (equivalent to $13.1 billion in 2018 dollars) to $4 billion ($34.8 billion in 2018 dollars) between 1947 and 1958, averaging $2.3 billion per year over the period, equivalent to $22 billion per year in 2018 dollars. As mentioned before, this allowed for the increase in production from 1.2 to 2.6 million barrels per day for an average annual growth of 130 thousand barrels per day.

CURRENT INVESTMENT REQUIRED: ELEVEN YEAR PERIOD

- Although the investment required to recover from current production levels is going to be done upon existing infrastructure, the necessary investment will also be considerable for different reasons. In the first place because of the evident and significant deterioration of the production infrastructure, both core and peripheral. Much of the infrastructure is going to have to be rebuilt. In addition, there is a set of geological reasons why more investment per barrel capacity will be required today than 75 years ago:

    - First, loss of productivity of deposits in traditional areas after almost a century of output. Depletion of deposits in the traditional areas of the west and east results in a higher rate of decline in production. The current decline rate is around 15 percent. That is, if it is not reversed, production falls by 15 percent per year (which is what has been happening in recent years). 75 years ago, with much younger deposits, the decline rate was close to zero. Assuming declining production and similar technologies, today an operator must invest 15 percent of the original investment just to maintain the level of production from year to year.

    - Second, today's technologies to produce in traditional areas are more complex and expensive than those required for the same, more productive, deposits in the 1940s. It is not only that production declines due to energy loss in deposits, but also that the necessary investment per unit of volume produced is much greater.

    - Third, the Orinoco Oil Belt is the oil province where production can grow steadily over the next few decades, and the required investment is much greater. The oil from the belt is extra heavy, more difficult to extract and transport, and contains impurities such as sulfur and metals (and thus is more expensive to upgrade before exporting).

      The investment in the belt must be considered integrally, from the wells to the upgraders. Production in the belt is a discrete function with quantum leaps to the extent that upgrade modules associated with additional production are installed. Investment per unit in the belt—including upgrading—is thus much higher than what is needed to lift similar crudes in new areas of light and medium crudes.

- Next, we build an estimate of the investment required to grow by 130 thousand barrels per day per year during a period of 11 years following the institutional reforms

necessary to open the oil sector to direct private investment. The amount of annual growth and the time period are similar to the amount and time of the 1947 and 1958 period to make them comparable. In volumetric terms, this would take production from around 2 million barrels per day in year one to 3.4 million barrels per day in year 11. Coincidentally, this would take Venezuelan oil production to an amount similar to that reached in 1998, just before the start of the destruction of the national oil sector.

- As we argued above, the investment required to grow the sector has two important components with similar amounts: investment to compensate the natural decline of the deposits (and thus consolidate a base on which to grow), and investment to grow 130 thousand barrels per day every year. As we said, the decline rate is about 15 percent per year, so to maintain a production of 2 million barrels per day, every year we have to compensate for 300 thousand barrels per day of natural decline.

  We will assume that to consolidate the production base the first year it will be necessary to invest around $9 billion. We will suppose further that production will grow modularly and that the necessary investment to increase production capacity by 130 thousand barrels per day each year will be around $10 billion. This means that to reach 2.13 million barrels per day, it will be necessary to invest $19 billion in the first year. Then every year after that, it will be necessary to invest to offset the 15 percent decline, from a growing base and also to invest $10 billion to grow by 130 thousand barrels per day per year.

  In the 11th year, the investment necessary to reach the goal of 3.4 million barrels per day will be approximately $22.4 billion—broken down as $12.4 billion to consolidate the base and $10 billion to grow the last 130 thousand barrels per day. Coincidentally, the average annual investment of this 11 year expansion plan is $22.2 billion, the same average, in today's dollars, that was required for the expansion of production between 1947 and 1958.

Economic Impact of the Investment of the Oil Sector

THE SIZE OF THE ECONOMY: 1950 VS. 2018

- To evaluate the impact of an oil sector expansion on today's Venezuelan economy in relation to the impact a similar expansion had on the economy 75 years ago, first, we must compare the relative size of the economy in 2018 with that of the economy in 1950, the first year for which figures are available.

- In the last 20 years, the economy has contracted to less than a third of its size at the end of the 1990s. Unofficial estimates say GDP stands at $94 billion and the population is 29 million, yielding a GDP per capita figure of $3,200. As we saw above, in today's dollars the 1950 GDP was $39 billion and the country's population was 5.2 million. In today's dollars, GDP per capita in 1950 then was $7,700—a figure 2.4 times greater than that for 2018.

- The current GDP is 2.4 times that of 1950, but as the population today is 5.6 times higher, current per capita income normalized by population is 40 percent that

of 1950. This means that a Venezuelan in 1950 made 140 percent more than a Venezuelan in 2018.

THE IMPACT OF 1950

- The investment in oil production in 1950 was $17.3 billion measured in today's dollars. As we saw above, the 1950 GDP in 2018 dollars was $39 billion, and thus, investment in oil production alone represented 49 percent of GDP. This is a massive impact which explains the transformation of the country. On average between 1950 and 1958, investment in oil production as a fraction of GDP was 47 percent.

THE IMPACT OF 2018

- As we saw above, investment needed to consolidate oil production by 2 million barrels per day and grow by 130 thousand barrels per day is estimated at $19 billion. This amount is 20 percent of the current GDP of $94 billion, which is a very large share and one upon which we will elaborate. However, it is 40 percent of the relative impact of the investment in the expansion between 1943-58.

QUALITATIVE COMPARISON

- As in 1943, to the extent that favorable conditions exist, the oil sector is the only one able to attract significant foreign direct investment.

- In 1943, Venezuela had almost no domestic capacity to respond to the demands for goods, services and specialized labor required for the expansion of the oil industry. Today, the economy is a third of what it once was, a good share of the domestic productive apparatus has been dismantled, and almost all of the specialized workforce required for the reconstruction of the oil sector has emigrated.

- However, demands arising from oil investment may have a relatively rapid response in domestic production—much higher and faster than in the 1940s. The productive domestic apparatus has a large idle capacity, the private sector can obtain external financing to adapt its production infrastructure, and the *emigré* professionals and technicians, given attractive salaries and political and economic stability, can return to reactivate the national economy.

- The multiplier effects of the large oil investment required may be much larger than those seen since the expansion of 1943 due to the precariousness of the economy and the magnitude of the investment.

- Finally, because of the oil sector's magnitude and international linkage, it is the only one able to respond strongly to external stimuli due to the global demand for oil.

Mechanisms of Tax Collection and Access to the Territory

TAX COLLECTION

- The mechanisms of tax revenue collection are today exactly the same as those contained in the law of '43: a fixed *ad valorem* royalty on production and a specific rate of income tax on company profits after the payment of the royalty. However, both parameters have changed over time.

- The minimum royalty rate contained in the law of '43 was 1/6. With the caveat that the rate could be lowered due to economic reasons with the previous approval of the Congress to lengthen the useful life of a deposit or to make profitable the development of new areas. The Hydrocarbons Law of 2002 increased the royalty rate to 30 percent.

- As we said, the income tax rate of the law that came into force in 1942 was 12 percent, which—for the prices and costs of the time—combined with the royalty rate of 1/6 led to the famous 50:50 agreement. This distribution lasted until 1958 when, with the application of the so-called Sanabria decree, the government mandated that the royalty and the income tax should not be added up to a 50 percent calculation because they were conceptually different.

- Instead, operators had to first pay the royalty—considered the cost of the resource—and then they would pay an income tax rate so that that the state's share in profits was 50 percent (to be clear, this is 50 percent on profits after costs and royalty payments). With this change the distribution of operational surplus became 60:40 in favor of the state.

- Upon breaking the 50:50 paradigm, the state increased the income tax rate repeatedly throughout the 1960s until reaching a rate of 67.7 percent in 1970, which, for the prices and costs of the time, represented a distribution of 90:10 in its favor. Along with the approval of the Hydrocarbons Law of 2002, the Income Tax Law was modified to lower the rate for oil activities to 50 percent.

- In summary, today the royalty rate is 30 percent and the income tax rate is 50 percent, while in 1943 the royalty rate was 16.7 percent and the income tax rate was 12 percent.

- Analytically, the royalty is the most primitive collection mechanism that exists, and the only data needed to calculate its amount are the volume produced by concessions and the price at the wellhead. The simplicity of the mechanism has a counterpart that introduces a number of distortions in the economy of oil production:

    - As the royalty rate increases costs, the higher the rate and earlier the abandonment of wells with useful lifespans, given the price and operational costs.

    - In the same way, the higher the royalty rate, the greater the number of deposits that will not be economic to develop, given the price and operational costs.

    - Finally, and very important, as the royalty is fixed, the state's share in the operational surplus decreases as prices increase or the productivity of the deposits increases, and on the contrary, the government's share increases when prices fall or the productivity of the deposits decreases.

    - The economic logic should be the opposite: the state, as the resource owner, should increase its share in profits as prices rise, reflecting the relative scarcity of its resource, or as the productivity of its deposits increase. On the contrary, its share should decrease as prices fall, reflecting the relative abundance of the

resource, or when the productivity of their deposits falls to maintain economic activity given the price and operational costs.

ACCESS TO TERRITORY

- 75 years ago, first through the Ministry of Development and then through the Ministry of Mines and Hydrocarbons, concessions were granted through direct negotiations with private companies, and these concessions were for a 40-year term renewable at the 20-year mark. Today, PDVSA, the state-owned company, has a concession that covers the entire country and creates a de facto monopoly on access to the territory. Private companies gain access through mixed companies created via direct negotiation with PDVSA. These mixed companies sign contracts with PDVSA for 25-year terms, during which they have access to a fraction of the crude production equivalent to their shares in the mixed company. The selection mechanism of private companies that have access to the resource is as discretionary today as it was in 1943.

National and International Environments

THE NATIONAL ENVIRONMENT

- With the exception of a democratic interregnum (1945-48), the regimes of 1943-58 were all autocratic. The different governments throughout the period maintained a consistent expansion of the oil sector, all respecting and enforcing the agreements of 1943, and the democratic 1945-48 government did not attempt to alter the agreements either. This would happen in 1958, with the collapse of autocracy and the establishment of democratic governments.

- The present regime—now in its 20th year in power—is autocratic and in total control of the state. Unlike the governments of the 1943-58 period, however, this government has shown from the beginning an antagonistic position to the development of the oil sector.

- First, it challenged the PDVSA workforce in 2002-3, dismissing half of its employees and two-thirds of its professional and technical workforce. The company never recovered from this massive loss of personnel. The professionals who remained have been leaving the company since then, with an accelerated exodus over the last five years.

- The company's own production now does not reach 400 thousand barrels per day, compared to 3.6 million barrels twenty years ago. In addition, the government ended up turning PDVSA into an arm of the executive branch. Certainly, the company is now an empty shell. Lastly, in 2007, the government expropriated a good number of private companies, national and foreign, that operated in the oil sector.

- Although similar in their autocratic nature, the visions for the oil sector of the 1943 to 1958 governments and the current government are diametrically opposed because the current one ended up destroying the industry that grew on the foundations of 1943. In fact, the robustness of the 1943 law is evident in that it remained in force—with modifications—until 2002.

- The reconstruction of the oil sector in a regime of democratic and economic freedoms will require a very broad political consensus to sustain the necessary reforms and

create confidence among investors. The consensus should also include the economic elites of the country. Given the long recovery period of large investments, investors punish the instability of a country when it comes to prioritizing their global investment portfolios. The perception of stability is fundamental to attract investors.

THE INTERNATIONAL ENVIRONMENT

- The expansion of the oil sector from 1943 had international support. Although the agreements were driven by the urgency of the war, the increase in domestic oil production was to supply Venezuela's so-called "natural markets," the expanding markets closer to the national ports of embarkation. The expansion of production went thus to supply the North Atlantic markets—Europe, Canada, and the United States—and the Caribbean basin.

- Until World War II, the United States was the world's leading oil exporter. In fact, until the late 1950s, the price of oil in the United States set the global price through the "Gulf Plus" formula as the marginal cost of production in the United States set the world price. This made production in Venezuela very profitable. As the United States ceased to be an exporter to become a net importer, Venezuela naturally took the markets left by the United States and replaced the growing supply gap in that country. Oil production in Venezuela continued to grow until 1970, essentially oriented to the markets of the Western Hemisphere.

- In addition, with the construction of the Cardón and Amuay refineries at the end of the 1940s, Venezuela became a major exporter of oil products to the Western Hemisphere after the United States. Venezuela developed important oil product markets in the Atlantic coast of Canada, the Caribbean, and Central and South America.

- The contraction of oil production since 1999 has been accompanied by an abandonment of these natural markets in Europe and the Western Hemisphere, particularly those of the United States and South America. Instead, Venezuela has favored Asian markets—China and India—with lower yields than natural markets and the expansion of exports to Cuba and the other member countries of PETROCARIBE, to which Venezuela sold at a discount or even at losses.

- The reconstruction of the Venezuelan oil sector should be supported by broad international support, particularly from the democratic countries of the Western Hemisphere. In the hemisphere itself, there is more than enough market to take incremental production from Venezuela in the decade following a reconstruction process. Support can be concentrated in the realm of the political.

- The comparative and competitive advantages of the Venezuelan oil sector will allow it to recover the natural markets it supplied in the past in an eventual reconstruction of the sector. This can eventually be framed within energy security agreements with the countries that Venezuela had political and economic cooperation agreements for decades.

- More importantly, not one barrel of additional refining capacity has been built in the last two decades in Latin America and the Caribbean. Imports of refined products in the rest of the hemisphere, with the exception of the United States, have grown. This

opens up a unique market opportunity to the very underutilized and deteriorated Venezuelan refining plant, as was also the case 75 years ago. The reconstruction of the refinery system back to its operational capacity of 20 years ago will have assured markets in nearby countries with competitive prices.

- Along the same lines, in the United States—apart from the CITGO system—there is refining capacity for extra-heavy crude (like Venezuela's) in refineries that were adapted to take Mexican and Venezuelan crudes, which 20 years ago combined to produce almost 7 million barrels per day. Production in Mexico and Venezuela has fallen by almost 3 million barrels per day, creating idle refining capacity in the United States that would be able to take Venezuela's growing production and process it with optimal yields. However, for this to happen long-term contracts must be made upon credible bases with the owners of these refineries.

6 | Lessons

Now we are able to point out the main lessons that the reforms of 1943 give us in the economic, institutional, and political spheres that can be applied in the current situation as an instrument to leverage the economic recovery of the country.

Economic scope

- The expansion of the oil sector between 1943 and 1958 had a massive impact on Venezuela's economic development, particularly because of the size of the investments in the production infrastructure relative to the Venezuelan economy. In addition, the construction of the refining complex in the Paraguaná peninsula added to the impact of the development of this production infrastructure.

- Although lower in relative terms, oil investment to rebuild Venezuela's oil and gas production, transport, and manufacturing infrastructure can also have a strong impact on the recovery of the broader national economy. In any case, it would be much greater than that of any other economic sector. Additionally, the idle infrastructure of national engineering and manufacturing capacity would allow these sectors to respond more quickly than 70 years ago when there simply was not that capacity in the country. Finally, the creation of well-paid, high-quality jobs will create space and stimulate the return of specialized professionals and technicians to Venezuela.

- Additionally, and very important, the great investment in the expansion of the oil sector required for its recovery today will have a radical change in expectations and confidence in the development of the Venezuelan economy just like it did in 1943. This would generate a virtuous effect of stimulating broader investment in the economy as a whole.

Institutional and Political Framework

- Stability—or at least the feeling of legal and fiscal stability—is essential for the realization of any investment, but it is particularly so in the oil industry, both for its magnitude and its front-loaded, long-term nature. The investment is a sunk cost in an asset that does not have an alternative use. The development of an oil field or a refinery depreciates over decades, and once the investment is done it is irreversible.

- The 1943 agreements had three bases that gave it plenty of institutional stability: (i) fiscally the 50:50 model, with its sense of distributive equity, was very easy to calculate, and as production volumes grew by quantum leaps so did the collected royalty, even at constant prices; (ii) concessions were granted for 40 years with extension provisions; and (iii) the basic agreements were endorsed by a solid, clear, and well-written law that was in force for 60 years.
- Finally, although under autocratic regimes between 1943 and 1958 (with a short democratic triennium between 1945 and 1948), the country enjoyed institutional and political stability, which created an environment to multiply investments and oil production.
- As we have reiterated, the international context was most favorable for the development of production to supply natural markets because of the country's geographical location.
- The access to territory, the taxation framework, the industrialization policy, and the institutional and political stability are precisely the factors we will consider to build basic proposals that encourage the necessary investment for the reconstruction of the national oil sector.

7 | Proposals

Taking the transformational impact that the 1943 reform had on the national reality and analyzing the similarities and differences with the current situation, we are in a position to make the minimum set of proposals necessary for the recovery of the national oil sector on the basis of a massive foreign direct investment program.

Access to the resource

REGULATORY AGENCY

Today PDVSA monopolizes direct access to reserves. As stated above, private investors have access to the resource only through joint ventures or service contracts with the state company. This is not minor. Two-thirds of domestic production is carried out by private companies through existing joint ventures. In practice, the national oil sector is privatized under a framework that reserves the monopoly of production to the state company. PDVSA today lacks proper technical or managerial conditions to be the national counterpart for national companies, and it is inconvenient from an operational point of view that it has that role.

If Venezuela is looking to expand investment and production by important margins, it must consider that large, medium, and small private companies will demand security conditions on their investments that are at least similar to those of other Latin American oil producing countries. The major hydrocarbon producers of the region—Brazil, Colombia, Mexico and Peru—have all created independent, non-producing regulatory agencies to be the national counterpart of private oil producing companies.

Next, we will describe the purpose and basic characteristics of this regulatory agency and outline the minimum requirements for the recovery of PDVSA as an oil company, if such a step is considered necessary and beneficial for the country.

The government has the duty and right to administer its natural resources for the benefit of the state. The creation of a regulatory agency that administers the state's natural resource reaffirms its ownership of the reserves. The state, as the resource owner, manages the reserves' exploitation by private or public companies, both national and foreign. The state tenders land with potential for hydrocarbon development through bidding processes, which follow a set of parameters, including an entry bonus with royalty payments to minimum operational programs or local content and employment regulations.

The basic roles of the regulatory agency are:

- Create an inventory of potential of hydrocarbon reserves with varying degrees of certainty. Characterize these reserves according to estimated production costs and monetary value under different price scenarios. Gather all the geological information of these hydrocarbon-holding lands.
- Implement the executive power's policies for the opening of territories—new or in production, which may be subject to investment and additional production—with bidding processes that attract investment to develop possible reserves that may be held in those territories.
- Prepare the bidding process under the executive's guidelines. Carry out the bidding process and select the winners. Prepare the contracts to be signed between the executive on behalf of the state as the resource owner and the companies that will develop them.
- Supervise the faithful fulfillment of the contracts on behalf of the state. Audit the production and all the parameters contained in the contracts. Ensure, together with the other responsible agencies, compliance with social and environmental licenses.

The creation of a world-class, special purpose regulatory agency requires at least two special conditions.

First, the agency will require highly specialized personnel such as geologists, petroleum and reservoir engineers, financial specialists in the oil business, and lawyers who specialize in the drafting of petroleum contracts.

Second, the quality of personnel is fundamental for the management of long-term contracts and should not be allowed to change with political cycles. In fact, the agency's board of directors should be elected on the basis of professional merits in a staggered fashion that does not coincide with political cycles. The agency should be managed with the same degree of independence that a central bank has in most countries. Both entities handle the nation's fundamental assets: the monetary base and international reserves for the central bank and the hydrocarbon reserves for the regulatory agency.

Obviously, the creation of an independent regulator would take away PDVSA's power as administrator of the resource. However, this is a role that does not belong to the company. In fact, removing PDVSA's role of resource administrator allows it to focus on operating more efficiently as an oil company, which is its fundamental objective.

Norway was the pioneer in this kind of reform by creating Norwegian Petroleum Directorate (NPD), a non-operating and independent regulatory agency, on July 14, 1972. The Norwegian model has been replicated by four large producers in Latin America and is the logical path for Venezuela. These are the regulatory agencies by country, their date of creation, and the state companies that have benefited from its creation: Peru's Perupetro on August 20, 1993 (Petropero); Brazil's National Petroleum Agency on August 7, 1997 (Petrobras); Colombia's National Hydrocarbons Agency on June 26, 2003 (Ecopetrol); and Mexico's National Hydrocarbons Commission (CNH) on November 28, 2008 (PEMEX).

Mexico's CNH was essentially reformulated after the 2013 energy reform. This resulted in the opening of areas previously under the monopolistic control of PEMEX to direct private investment. The CNH has carried out the various bidding rounds for these newly opened areas. The Mexican reform is still very recent, and it is too early to determine its impact on the performance of the hydrocarbons sector in general and of PEMEX in particular. In the cases of Peru, Brazil, and Colombia, the reform has translated into greatly improved performance by the sector as a whole and by the respective state companies, especially in relation to countries that retain closed, monopolistic models like Venezuela.

Tax Framework

Venezuela's hydrocarbon reserves base is very diverse: from heavy crude reserves in the west to light crude reserves in the east, and from extra-heavy oil reserves in the Orinoco Belt to reserves of light crudes developed offshore. The same applies to natural gas reserves: from developed reserves of gas onshore in the east to undeveloped reserves in the Gulf of Venezuela, in the north of Paria, and in the Plataforma Deltana. This diversity of reserves and development technologies have very different production costs just as their prices have a wide spectrum in the market.

This translates into different income levels to the state in the development stage of each of these reserves, which means there will be very different operational surplus, understood as the difference between price and operational costs for the development of each. These rents must be distributed between the state and the companies that develop and market them.

This means that the same tax scheme—a fixed royalty for example—for all oil and gas production can yield important distortions. These can cause the state to stop receiving revenues to which it is entitled in favor of extraordinary profits for the companies. On the other hand, it can also discourage private investment or lead to early abandonment due to a disproportionate take by the state.

This is why variable royalty schemes have been developed. In this model, the state's share increases as rents increase, either due to the productivity of deposits, to hydrocarbon quality, or to price increases. In the same way, the state's share of rents decreases due to low productivity of the deposits, lower quality, or lower prices.

A fundamental task for the regulatory agency would be to design variable royalty systems for the different hydrocarbon areas that guarantee that the state benefits more than proportionally from rent increases caused by price increases, higher hydrocarbon quality, or higher productivity. Inversely, it should make sure that its share falls more than proportionally upon drops in rent in order to guarantee the profitability of the companies and the operational continuity of the sector.

Industrialization

PDVSA

As in the 1943 reform, a fundamental objective for rebuilding the oil sector is maximizing the industrializing effect of investment. A basic difference between 1943 and today, however, is the existence of PDVSA, which—although producing 15 percent of what it was 20 years ago—owns the bulk of the country's oil production infrastructure (though

currently inoperative) and all the transportation and refining infrastructure. Therefore, the first question to answer when discussing the reconstruction of the national oil sector is what to do with PDVSA? We will answer this question in parts:

- First, it is necessary to separate proper oil activities from PDVSA's non-oil activities, which range from food distribution to housing construction. At the very least, it is imperative to separate accounting and operations of oil activities from those that are not. In essence, the purpose is to unearth the oil company from beneath the non-oil activities that have buried it.

- Once the oil company is identified—in its production, transportation, manufacturing, and marketing segments—financial and operational audits must be carried out to know for sure the amount of oil that is produced and refined, the costs of production and refining, and the prices in which these resources are commercialized. It is particularly necessary to determine the financial situation of the company, especially regarding its obligations and financial burdens arising from the external debt that it has been forced to assume.

- If the executive decides to fully or partially keep PDVSA in the state's hands and gradually rebuild it in competition with private companies, it must be taken into account that PDVSA lacks human resources, engineering capacity, and savings to currently carry out the reconstruction of its infrastructure.

- The ability of PDVSA to go to the markets to finance itself will be null for several years, given what little remains for the company to be associated with private companies that provide capital and human resources.

- Surely this will be easier if PDVSA is segmented into at least three companies (production, transport, and refining) and specific associations are created in each segment. Without a doubt, this will require that crude and products transfers between segments are made at international prices.

INTERNATIONAL COMPANIES

It is important that private, investing companies maximize their local purchases of goods and services along with hiring Venezuelan employees, professionals, and technicians. An important incentive to this end is that the hiring of Venezuelan nationals and national purchases are among the selection parameters of the bidding process for the development of resources. The association with local companies will also be considered as part of the contract documents.

Additionally, contracts for transferring technology to national companies can be included in contracts with investment companies and—as we discuss next—to national research and development funds in the production, transportation, and manufacturing of hydrocarbons.

RESEARCH AND DEVELOPMENT

A very significant—and not sufficiently recognized—loss in the destruction of PDVSA has been the decline of the Venezuelan Petroleum Technology Institute (INTEVEP), which was at its height the leading center for research and development in production, transport, and transformation technologies in Latin America and among the most important in the world.

Recreating a research and development center for hydrocarbon issues should be one of the cornerstones to ensure industrialization and the maximizing value added in the national hydrocarbon chain.

Political and Institutional Stability

This is perhaps the most important among the lessons and recommendations that can be learned and applied to replicate the success of the 1943 reform. Between 1943 and 1958, there was an environment of faithful compliance by both parties to the agreements. The country did not change the tax or concessionary framework, and the companies fulfilled their commitment to multiply production and build refineries in the country.

It is true that political stability was achieved under autocratic, anti-democratic regimes, with the exception of the 1945-48 interregnum. But whatever the case, the institutional and political climate was appropriate for transnational oil companies to invest the large amounts outlined at the beginning of this essay, with recovery periods that lasted for several decades.

The great political challenge of the country, far beyond the oil sector, is to create sufficient unity—in a democratic and free regime—around a long-term oil and economic policy of openness and integration into international markets. Over this long-term, the sanctity of the contracts must be fully respected, and guarantees of property protection must be given to the investing companies. Let us not forget that we are talking about investments of tens of billions of dollars per year. This will be achieved only if there is a deep mutual trust between the parties, and thus the facts that sustain the policies will be more important than the policy announcement itself.

If this climate of political and institutional stability cannot be created and transmitted to investors, everything that has been stated in this essay—about replicating the situation generated by the 1943 agreements between the Venezuelan government and foreign investment companies—will not have any sense. The challenge facing Venezuelan democracy goes far beyond having a roadmap for the reconstruction of the oil sector: it is creating the conditions for it to materialize.

About the Author

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