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FALL 2015

# ReVista

HARVARD REVIEW OF LATIN AMERICA

## ENERGY

OIL, GAS AND BEYOND

EDITOR'S LETTER BY JUNE CAROLYN ERLICK

# Oil, Gas and Beyond

I was waiting for the ship to come in. In fact, so was everyone else in Nicaragua. Gas lines stretched around the block. The supermarket shelves were nearly bare. Lights went out again and again, plunging the country into frequent darkness. Telex machines couldn't work, and we reporters had to depend on the few places with generators to file our stories (for younger readers, this was pre-computer and smart phones). U.S. President Ronald Reagan had imposed a trade blockade on Nicaragua in May 1985. The Soviets were sending oil, dodging the blockade.

We reporters did what we always do: we reported on the ship's arrival. But we also breathed a collective sigh of relief. The arrival of the Soviet ship meant hot showers and light to read by.

Energy is intensely political. It shapes nations and trade and fuels wars and blockades. Energy, I discovered then, is also intensely personal. It shapes our lives on a daily basis. It's not only a matter of how we get around or whether we have enough food to eat; energy production affects the communities that receive it and those that produce it. It shapes attitudes toward gender and race and nationalism and identity. It pollutes the air and the rivers. It offers immense economic opportunities. Or it does both.

You might not think of Latin America and the Caribbean right away as a big energy producer or consumer. But Venezuela stands ninth in global oil production with gas reserves almost triple those of Canada. Three countries—Venezuela, Brazil, and Mexico—account for about 90 percent of the region's oil production. And Latin America and the Caribbean also have the capability to provide abundant alternative and renewable energy sources: wind, solar, geothermal and biomass, among others.

Perhaps because of my experience in Nicaragua, I started to conceive this issue in terms of meta-politics. And there is certainly a lot of politics related to energy in the region: the political upheaval of Brazil as a result of corruption scandals in the national oil company; the turmoil in oil-rich Venezuela; the impact of the semi-privatization of Mexico's oil industry; the targeting of Colombia's energy installations by guerrilla forces in a show of strength in the context of the ongoing peace process.

But then I thought back on how the arrival of oil had been experienced on a very local and personal level. I began to hear stories about the production of energy: what it felt like to grow up in an oil camp, how energy production affects indigenous women in one particular region, how local communities involve themselves in deciding what is done with oil.

And just recently Alvaro Jiménez, Nieman Affiliate at Harvard '09, happened to mention to me that he was starting a website "Crudo Transparente," a site that monitors the Colombian oil industry. Out of curiosity—and as a quick break from proofreading this issue—I took a peek. The site focuses on five areas: local economy, contracts and royalties, environment, security and human rights and ethnic conflicts. I was pleased to see how much overlap there was with the themes I had chosen for this issue of ReVista.

Although the website deals with only one country—Colombia—it felt like an affirmation of the focus I had chosen for this wide-ranging topic. Energy is political. Energy is personal. Energy matters.

June C. Erlick

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Petrobras Oil Platform
Photo By Ricardo Stuckert/PR
(Agência Brasil [1]) [CC BY 3.0 br (http://creativecommons.org/licenses/by/3.0/br/deed.en)], via Wikimedia Commons

# Latin America's Oil and Gas

## After the Boom, a New Liberalization Cycle? BY FRANCISCO MONALDI

MEXICO HAS RECENTLY OPENED UP ITS OIL industry, which had been under exclusive state control for the past 75 years, to private investment: a move that will very likely reconfigure the Latin American oil industry in the decades to come. Other Latin American governments of all political tendencies are now enthusiastically courting foreign investment in oil. This all would seem to proclaim a new liberalization cycle in the industry. Although this trend started before the oil price collapse, it has been strengthened by plunging prices. However, if history is any guide, resource nationalism is unlikely to go away.

To understand this phenomenon, let's take a look at history. The first decade of this century witnessed one of the largest resource windfalls for commodity exporters. Latin American countries benefited tremendously from the large and persistent increase in commodity prices. The price of oil rose from a low of $10 in 1998 to more than $100 per barrel ten years later, generating a revenue boom for the regions' net exporters of hydrocarbons: Venezuela, Mexico, Ecuador, Colombia, Bolivia, and even Argentina, a declining net exporter on the way to become a net importer. It also significantly benefited Brazil's oil industry, the third largest producer, but still a net importer.

As in the 1970s, the oil boom was accompanied by a wave of resource nationalism—government encroachment on the property rights of foreign investors and an increase in state ownership and control. In the period 2002-2012, taxes were significantly increased, contracts forcefully renegotiated, and foreign investors outright nationalized. Four out of the five hydrocarbon exporters with foreign investment in oil and gas—Venezuela, Bolivia, Ecuador and Argentina—decided to nationalize their resources in this period; Mexico, until recently the largest oil producer in the region, maintained the oil industry as a state monopoly until 2013.

As recently as 2012, the Argentine government re-nationalized YPF, the formerly privatized national oil company, culminating a decade of eroding conditions for oil investors in the region. There were some exceptions. Brazil and Colombia, for instance, did not follow the same expropriation pattern. Still, Latin America was the leading example of a global phenomenon of increased state intervention and nationalization. Outside the region, Russia was the most notable example, but many others could be found throughout the world. The governmental share of profits increased in most oil exporting countries. In fact, even Brazil, a model of long-term energy policy in the region, showed clear symptoms of resource nationalism.

In contrast, during the last few years we have witnessed a strong countercurrent of government efforts to attract foreign oil investment to the region. Venezuela, the leader of the nationalizing movement, announced in 2009 that it would auction new areas for joint ventures with foreign companies in extra-heavy oil projects. This took place only two years after completion of the nationalization process, initiated in 2005. During the last five years, PDVSA, the Venezuelan national oil company, has signed seven major extra-heavy oil joint-ventures projects with foreign partners, including Chevron, CNPC, ENI, Repsol, and Rosneft. These projects would require more than US$100 billion in investment. When completed, they could yield more than 1.5 million barrels a day in production. PDVSA also pursued other smaller partnerships with foreign companies in conventional oil production, and a major offshore natural gas project with Repsol and ENI. In fact, despite the radical leftist discourse of the Venezuelan government, it has been actively courting foreign investors. In the last two years, the trend to liberalize the sector is unmistakable, with the government offering all sorts of sweeteners to make investment more attractive.

Undoubtedly, the most important new development in the region's oil industry is the opening of the Mexican hydrocarbon sector to foreign investment. After more than seven decades of state monopoly, the administration of President Enrique Peña Nieto—leader of the PRI, the party that nationalized the sector in 1938—promoted a path-breaking constitutional reform to make this opening possible. Thus, the last stronghold of state ownership in the region moved to allow the pri-

**Undoubtedly, the most important new development in the region's oil industry is the opening of the Mexican hydrocarbon sector to foreign investment.**



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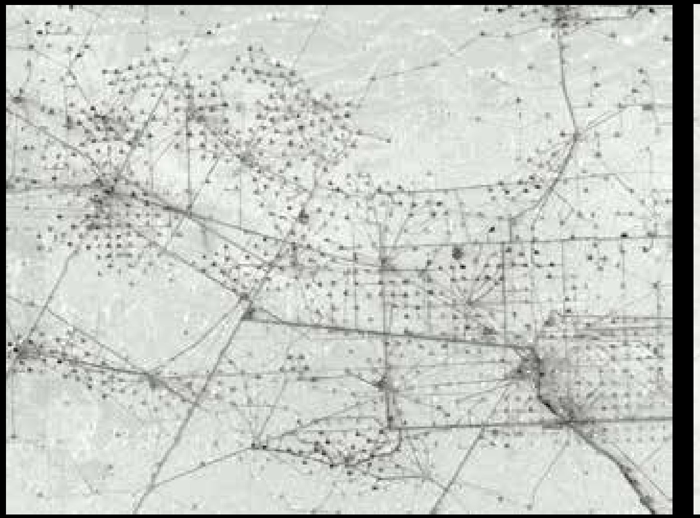

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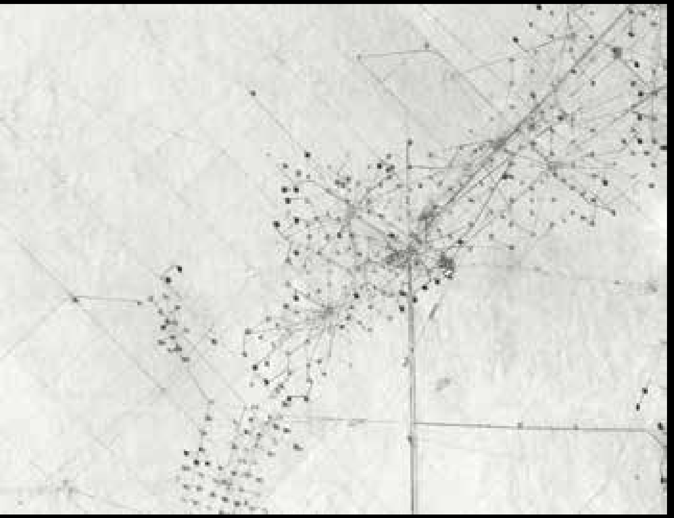

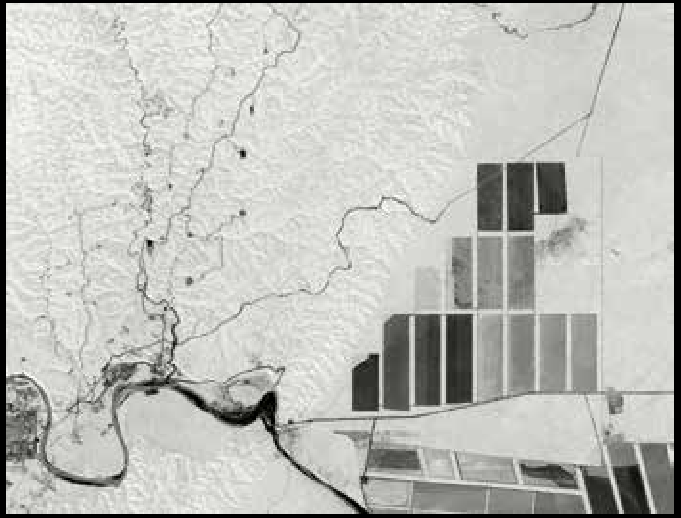

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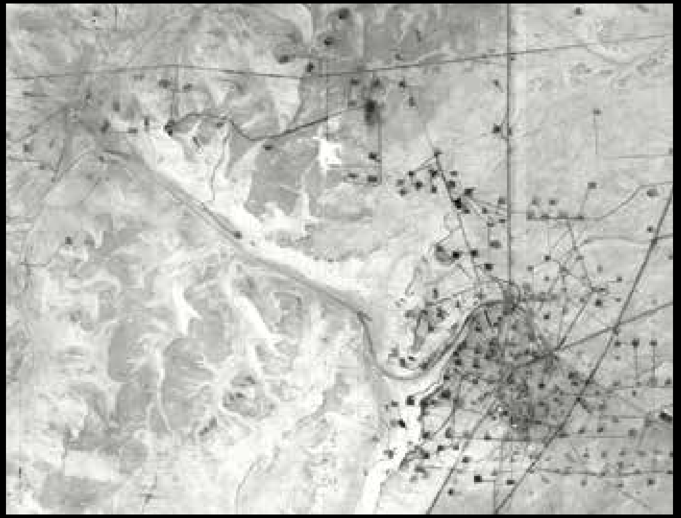

4

1
46°37'38.01"S | 67°55'35.03"O | 9 Mar 2009 | Printed on Cason Baryta | Print max size: 270 by 250 cm.

2
38°10'9.89"S | 68°7'40.52"O | 28 Sep 2006 | Printed on Canson Baryta | Print max size: 170 by 195 cm.

3
22° 9'54.06"S | 63°36'29.45"O | 1 Sep 2011 | Printed on Canson Baryta | Print max size: 225 by 154 cm.

4
45°47'13.47"S | 68° 3'45.55"O | 30 dic 2005 | Printed on Canson Baryta | Print max size: 105 by 135 cm

Land is a photographic project that aims to show maps of oil and its waste, revealing the historical evolution of the landscape, the political division of territory and our geopolitical identity. The images that make up the project were put together with maps taken from Google Earth and printed in large scale and high definition. They are satellite maps that reveal the topography of Argentine oil fields.
I am interested in seeing how utopias of modernity convert into a dystopian outcome. These maps seem to confront us with this otherness: social and economic distortion, environmental disaster, misplaced territorial boundaries and the uncertain future of our continent.

—Marcela Magno

ARTWORK BY MARCELA MAGNO

Above: the community around the Zumaque oil well in Venezuela; opposite page: Harvard and Brazilian students tour a Petrobras facility.

vate sector to play a significant role in the exploitation of oil and gas resources. In the summer of 2015, the first exploration and production blocks were awarded to private operators.

Even Argentina, after it renationalized in 2012, quickly announced that it wanted to attract foreign investors to develop its recently discovered non-conventional shale resources in the Vaca Muerta basin. The country signed a joint-venture agreement with Chevron to develop these sites and reached a settlement with Repsol, the expropriated shareholder of YPF. Argentina also passed a new, much more liberal oil and gas law in 2014. Similarly, after the expropriation of oil contracts, Ecuador has signed important new deals with CNPC, the Chinese national oil company, now a key player in the production and especially the marketing of Ecuadoran oil. Bolivia has also announced new initiatives in the last few years to attract foreign partners in natural gas exploitation. Meanwhile, Brazil, Colombia, Peru and Guatemala keep regularly auctioning oil blocks for exploration. In fact, this is arguably one of the most liberal periods in the history of the oil industry in the region, particularly measured by the amount of reserves accessible to foreign operators. So, is resource nationalism fading? It is important to understand the structural causes of the phenomenon to properly answer this question.

## THE ORIGINS OF THE INVESTMENT, EXPROPRIATION AND REOPENING CYCLES

One might be tempted to attribute the previous wave of resource nationalism largely to the more general phenomenon of the resurgence of left in Latin America. After all, the nationalizers—Hugo Chávez of Venezuela, Evo Morales of Bolivia, Rafael Correa of Ecuador and Cristina Fernández de Kirchner of Argentina—were leaders of the more radical variety of the leftwing movement in the region. In contrast, countries that did not expropriate or moved in the opposite direction—such as Brazil, Colombia, and Peru, or more recently Mexico—have had either moderate left or center-right governments in power. However, to understand the dynamic of resource nationalism it is important to focus on the deeper determinants of the historical cycles of private opening and expropriation. These are the incentives faced by political leaders under different scenarios of international prices, stages of the investment cycle, production and reserve tendencies, and size of net exports (imports).

Expropriation in its different forms tends to occur when prices rise substantially, that is, when its benefits increase significantly for the government. This has been the tendency throughout the developing world. Expropriation is also more likely to occur in an environment of high and increasing reserves and production, and when the country becomes a large net exporter. Thus, after a cycle of significant and successful private investment, the probability of expropriation paradoxically increases. Given the amounts of the oil rents, which can be as high as 90% of revenues, the calculation of the fiscal benefits can be politically irresistible. Most relevant petroleum exporters are fiscally reliant on oil: oil revenues represent more than 30% of total government revenue. Generally in oil projects, companies have to invest a lot of money in exploratory wells and field development infrastructure, and it takes a long time to recuperate these costs, while the costs of operation are a minor part of the investment. Thus, in this so-called high-sunk-cost sector, the effects of a decline in investment can take years to lead to the consequent decline in production. Therefore government leaders with a short-term horizon may be tempted to obtain high current benefits while deferring costs, leaving future leaders to bear the political consequences of declining production and revenues. To illustrate the dynamic of incentives, we focus on the three leading producers and reserve holders in the region: Venezuela, Mexico and Brazil.

## VENEZUELA

In Venezuela, a successful operation of private companies in the oil industry led to nationalization, while the stagnation of that industry in turn led to pragmatism in dealing with the problem. In the 1990s, facing low oil prices, fiscal crises, and significant investment needs, Venezuela opened the oil sector to private investment in the more risky and less profitable projects. This was a major departure from the nationalization in 1975, which had made state-owned PDVSA the monopoly producer. The opening attracted significant investments by major international players, including Exxon, Shell, BP, Chevron and Total, leading to a substantial increase in production of more than one million barrels per day (equivalent to more than a third of current production levels).

When Chávez was elected in 1998, oil prices bottomed out, but he did not change the existing oil deals until 2005, after all major investments had been made and prices had swung up significantly. The protracted and confrontational expropriation process that ensued significantly increased the government share of revenues. It also affected Venezuela's reputation, delaying all major new investments and creating very high opportunity costs in terms of foregone future production. Lately, as production faltered and the high-spending regime became desperate for more revenues, realism led the government to offer investors better terms and guarantees. Although investors have continued to be cautious, the change in the Venezuelan government's attitude is palpable. This pragmatism—or desperation—has become more obvious after the price collapse because of the urgent need to increase investment and production.

Thus foreign investors were victims of the price boom and their own success in increasing production and reserves. The cycle of investment and expropriation in Venezuela is similar to what happened in Argentina, Bolivia, and Ecuador. In all four countries, an oil opening produced a large increase in privately operated production and reserves, followed by expropriation when conditions were ripe.

## MEXICO: THE COLLAPSE OF A GIANT AND ITS CONSEQUENCES

Mexico was an exception to the liberalizing trend in the 1990s. Historical and ideological reasons can help explain this exceptionalism, but the major factor behind the lack of reform is that Mexico's production kept increasing without significant new investments. The giant oil field of Cantarell, which produced more than two million barrels a day at its peak (or close to two thirds of the country's production), allowed the government to over-tax and conceal the significant inefficiencies of the national oil monopoly, Pemex. The future costs of the lack of investment were not perceived by the political leadership and even less by the general public, so there was no rush for reform.

Once Cantarell's production started to collapse in 2005, the need for reform became clearer, but high oil prices made it initially less urgent. However, as Pemex capital expenditures dramatically increased but only barely slowed declining output, the case for reform became much stronger. Cantarell's production has declined more than 80% from its peak. With Peña Nieto's election, institutional gridlock eased and reform was finally passed. Mexico, like Venezuela in the past, is opening the riskier, less profitable projects that require large investments and complex technology. In contrast to Venezuela, it is building a much more robust institutional framework to support reform. This might provide a longer life to the investment cycle. However, if the incentives for expropriation appear in the future, one cannot dis-

ABOVE: PHOTO BY MEREDITH KOHUT

ABOVE: COLLABORATIVE HARVARD-BRAZIL ENGINEERING FIELD COURSE PARTICIPANT, 2011, COURTESY OF JASON DYETT card the possibility of a partial reversion of reform, especially given the enduring strength of nationalistic ideology in Mexico.

**BRAZIL: PETROESTADO NOVO?**

Even though Brazil is still a net importer of oil, it has increased its production more than fourfold over the last two decades, catching up to the production levels of Mexico and Venezuela. That success is in large part the result of the liberalization of the oil industry in the 1990s, when Petrobras, the national oil company, was partially privatized and the petroleum sector opened to foreign investment. As a net importer, the country was eager to maximize its production and, until recently, did not focus on extracting fiscal rents. However, the discovery of massive deep offshore reserves began to change governmental incentives. In contrast to its South American counterparts, Brazil did not nationalize or force contract renegotiations. However, it did increase the government take for future offshore projects. It required Petrobras to be the operator, established an ambitious policy of increasing the local content of investments, and increasingly subsidized the domestic gasoline market. Moreover, the participation of private shareholders of Petrobras was diluted when the government exchanged oil reserves for equity in the company, in a move that many analysts considered a form of expropriation.

Thus, even though Brazil had been considered a model of oil regulatory policy, the effects of its success and the prospect of becoming a net oil exporter also induced a milder version of resource nationalism. This has already had negative implications on investment and production, which have not reached their targets during the last few years. The recent corruption scandal involving Petrobras dealings with its contractors has been a big blow for the company. There are some signs that the government is moving back to a more pragmatic stance, particularly after the lack of investors' interest in the last offshore auction and given the recent oil price collapse.

The case of Colombia has some similarities. When facing a collapse in production, Colombia copied the Brazilian liberalization model and achieved high production growth, but not as yet geological luck in finding new reserves. In contrast to Brazil, this situation provided strong incentives for the government to keep providing attractive conditions for investment. In fact, to offset the continued depletion of reserves in the low price environment, the Colombian government recently announced that terms would be further improved.

**IMPLICATIONS FOR THE FUTURE OF THE LATIN AMERICAN OIL INDUSTRY**

The incentives provided by price cycles, investment cycles, endowments and institutions, are key to understanding the waves of resource nationalism and liberalization. The region has been more prone to this type of policy volatility than other regions in the world, possibly due to the combination of factional democracies, weak rule of law and rampant high inequality.

Given propitious circumstances, resource nationalistic ideologies could flourish again. After a cycle of significant investment that adds substantial production and reserves, changing the rules may becoming tempting again. Institutions that encourage governments to take longer-term approaches that limit their ability to opportunistically renege on deals could moderate the effects of such volatile incentives. Independent regulatory agencies, as well as progressive and effective fiscal and contractual regimes that properly tax the windfall profits, would be helpful.

Conversely, changing incentives, like those prompted by a prolonged period of low oil prices, could induce further pragmatism and liberalization. Net importers or countries that have both declining production or reserves and a portfolio of high-risk projects would be pressed to be more open.

From the countries' perspective, resource nationalism is a problem only if it hinders the development of the oil sector and has negative long-term welfare implications. A pragmatic version of nationalism, one that maximizes enduring benefits for the nation without volatile policy cycles, is highly desirable, if all too rare in Latin America. Understanding the challenges explored here and creating institutions to mitigate them should be one of the main long-term goals of policy reform in the region.

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*Francisco Monaldi is Baker Institute Fellow in Latin American Energy and Adjunct Professor at Rice University. He is the Founding Director of the Center on Energy and the Environment at IESA in Venezuela and a Faculty Associate at ITESM in Mexico. He was Visiting Professor of Energy Policy at the Harvard Kennedy School in 2012-2015.*

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• ***Marcela Magno**, an Argentine artist, photographer and freelance graphic designer, has exhibited her photographs in Argentina, Chile, Brazil, the United States and Italy. In 2014, she received an honorable mention for her series "Land" in the Salón Nacional de Artes Visuales, in Buenos Aires, as well as a prize in the IV Argentine Contemporary Photography Award, Caraffa Museum, Córdoba, Argentina. The Government of the Province of Santa Cruz, Patagonia, Argentina, awarded her first prize in Santa Cruz province's Cultural Heritage Contest in 2007.*

• ***Ronald Morán**, a Salvadoran artist, created this image of "Crudo Blanco," shown on the opposite page. Through his works, Morán performs critical interpretations of relationships and everyday environments, using a fine sense of irony and highly intuitive, metaphorical use of images. He is particularly interested in exploring political and economic violence and its influence on the family and within the society as a whole.*



OPPOSITE PAGE: ART BY RONALD MORÁN



# THE POLITICS OF OIL

SIMON ROMERO 8
**Brazil's Oil Scandal**
Simon Romero is the Brazil bureau chief for *The New York Times* and a 2015 Maria Moors Cabot Prize winner. He was the *Times* Andean bureau chief from 2006 to 2011, based in Caracas, Venezuela.

LISA VISCIDI 13
**Energy and Politics in Brazil**
Lisa Viscidi is director of the Energy, Climate Change and Extractive Industries Program at the Inter-American Dialogue.

MYRNA SANTIAGO 16
**Mexico's Energy Reform**
Myrna Santiago is professor of history at Saint Mary's College of California. Her book, *The Ecology of Oil: Environment, Labor and the Mexican Revolution, 1900-1938*, won two prizes.

REBECCA RAY 20
**China in Latin America**
Rebecca Ray is a pre-doctoral research fellow at Boston University's Global Economic Governance Initiative and a Ph.D. student in economics at the University of Massachusetts-Amherst.