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.

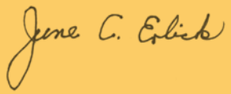
You might not think of Latin America and the Caribbean right away as a big energy producer or consumer. But Venezuela stands ninth in global oil production with gas reserves almost triple those of Canada. Three countries—Venezuela, Brazil, and Mexico—account for about 90 percent of the region's oil production. 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.



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ON THE COVER

Petrobras Oil Platform

Photo By Ricardo Stuckert/PR

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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.

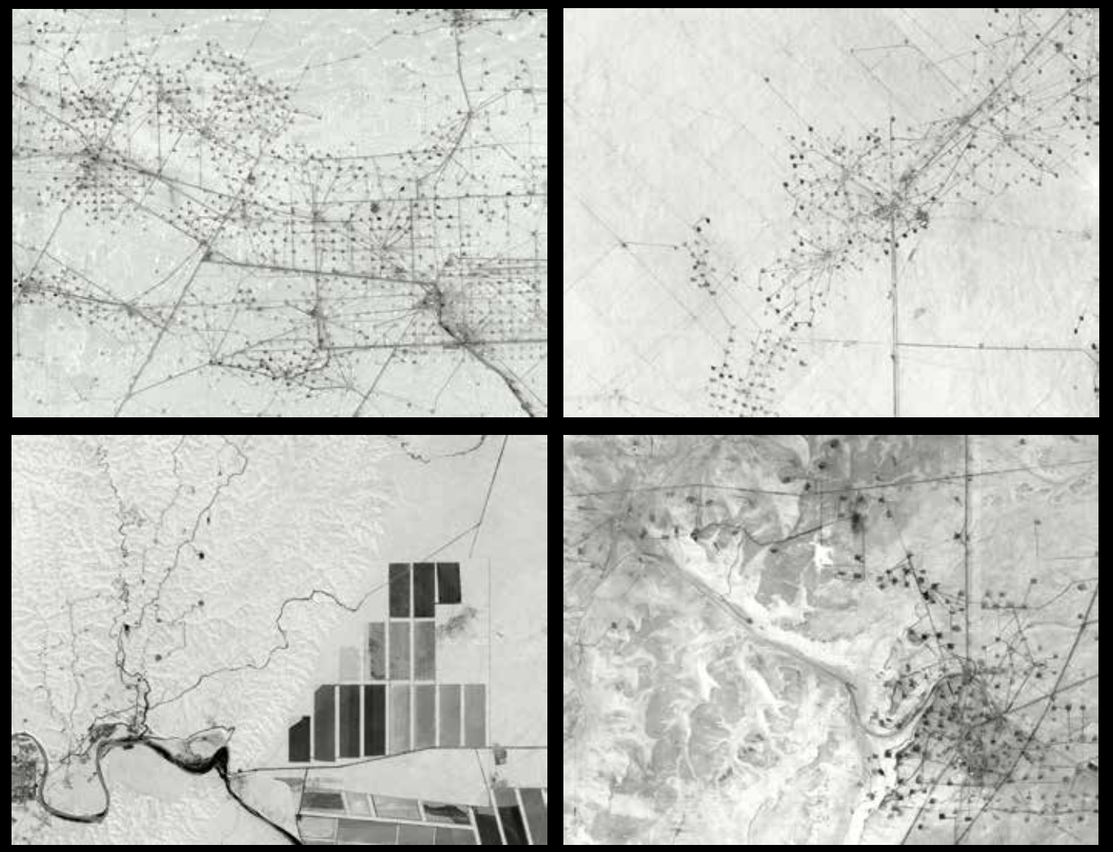
As recently as 2012, the Argentine government re-nationalized YPF, the formerly privatized national oil company, culminating a decade of eroding conditions for oil investors in the region. There were some exceptions. Brazil and Colombia, for instance, did not follow the same expropriation pattern. Still, Latin America was the leading example of a global phenomenon of increased state intervention and nationalization.

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

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-



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 nonconventional 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.

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.*

• ***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

Brazil's Oil Scandal

Public Malaise, Institutional Resilience BY SIMON ROMERO

"BRAZIL HAS CHANGED."

When I moved to Brazil in the giddy days of 2011, many people were voicing that phrase. After all, the economy seemed to be sizzling after posting 7.5 percent growth in 2010. So many professionals were moving to Rio de Janeiro and São Paulo, including highly-skilled Brazilians returning home from abroad and Americans and Europeans fleeing stagnation in their own countries, that finding an apartment in those cities was an ordeal involving visits to dozens of run-down properties, negotiations of astronomic sums and pleas with sadistic landlords. Brazil's currency was so strong that Latin America's largest country was emerging as one of the United States' largest creditors. Brazilian authorities built up massive holdings of U.S. Treasury securities in an attempt to prevent the *real*—the country's currency— from strengthening further and eroding the competitiveness of Brazil's exports.

Change was also palpable on the street level in Rio, where so-called "pacification" security forces were expanding their sway in favelas that had long been under the control of drug gangs. Construction crews were overhauling neighborhood after neighborhood as officials prepared the city to host a series of megaevents, including the United Nations' Rio+20 Conference on Sustainable Development, the 2014 World Cup and the upcoming 2016 Summer Olympics. Meanwhile, the resurgence of entire sectors like shipbuilding and the construction of a colossal refinery complex near the city were winning plaudits for Petrobras, the national petroleum company. The oil giant, based in a brutalist-style headquarters in the old center, was bolstering its role as the linchpin of a development policy aimed at reviving old industries, developing new ones and fomenting a nationalist aura in the process.

In yet another sign that Brazil's moment on the world stage had arrived, just a year earlier, in 2010, a Brazilian oilman named Eike Batista went on the Charlie Rose television show and proclaimed, "We believe that in five years Brazil will be the fifth-largest economy in the world," while citing the crucial importance of Brazil's coveted offshore oil fields in achieving this ambition.

Epitomizing the sense of confidence that imbued Brazil's business establishment at the time, Batista also had some advice to offer the United States. "You need to be a little bit more Spartan," said the tycoon, who used to keep a Mercedes-Benz SLR McLaren valued at about $500,000 parked in the living room of his mansion in Rio's exclusive Jardim Botânico district. He added, "You have to start thinking out of the box."

Petrobras, the Brazilian national oil giant, was a linchpin of a development policy aimed at reviving old industries and developing new ones.

As if awakening to bad hangover, Brazilians are now finding that the excesses of the country's recent oil boom—the hubris, the spending on grandiose development projects and the massive bribery scheme at Petrobras unearthed over the past year by dogged prosecutors—were in a league of their own, revealing fissures in a model of state capitalism in which vast powers are granted to bureaucrats placed at the top of a maze of state-controlled banks and energy companies. As Brazil struggles with a multiyear slowdown—the economy is expected to contract almost a quarter this year in dollar terms, making the goal of ascending into the elite club of the world's five largest economies more elusive—some are seeking explanations for the malaise gripping the country.

A research survey released in May by Ibope, the prominent Brazilian polling company, found that the number of Brazilians expressing optimism about Brazil's future had fallen to 21 percent, the lowest level in 22 years and a stunning turnaround for a country which, anecdotally at least, has consistently ranked among the most optimistic I have covered. Since the end of the authoritarian rule in the 1980s, Brazil boasts achievements such as the lifting of millions out of extreme poverty; the democratic election of presidents like Fernando Henrique Cardoso, Luiz Inácio Lula da Silva and Dilma Rousseff, all of whom suffered under the dictatorship; and the robust expansion of its tropical agricultural prowess, a development helping to feed the world. But despite such feats, Brazilians feel less confident now about the future than in the years before Petrobras began making its major offshore oil discoveries about a decade ago.

Petrobras facilities: the oil boom led to the resurgence of entire sectors like shipbuilding and the construction of a colossal refinery complex.

Of course, Brazil is much more than a developing-world oil producer, boasting a diversified industrial base, including world-class manufacturers like the aviation giant Embraer, and exploiting many other coveted resources including soybeans, iron ore, rare earths, sugar, huge cattle herds and orange juice. While exploring the underpinnings of Brazil's latest boom, both in oil and other coveted resources, and the challenges it produced, I rediscovered a gem of an article describing an earlier time of exuberance in Brazil. It began prophetically with a quote from a Brazilian business leader: "In 10 years, Brazil will be one of the great powers of the world."

In an eerie way, those words echoed the bullishness of Eike Batista and other establishment figures when Brazil's economy appeared to be soaring in this century's first decade. But the phrase was not uttered in 2010; it was actually from the opening of a front page article in the *Wall Street Journal* on April 14, 1972. Coming after four years in which Brazil's economy had expanded on average almost 10 percent a year, a time of exceptional growth that came to be known as the "Brazilian miracle," this was the assessment of a Brazilian banker interviewed by Everett G. Martin, an award-winning correspondent for the *Journal*. I had dug up the piece years ago while I was based in Caracas for *The New York Times* and researching the origins of another oil boom, in Venezuela under the late President Hugo Chávez (more on that below.)

Even now, 43 years after it first appeared, the article offers insight into Brazil's emergence as a major industrial power—although one that operates in an environment of acute social inequality. In the 1960s, just one commodity, coffee, had accounted for about 70 percent of exports; by 1972 coffee accounted for less than a third. The giddiness that I encountered upon moving to Brazil in 2011 also seemed to be the prevailing mood in the business establishment back in 1972, reflected in spirited statements by automotive and paper executives. While the article acknowledged

PHOTOS, ABOVE AND OPPOSITE PAGE: COLLABORATIVE HARVARD-BRAZIL ENGINEERING FIELD COURSE PARTICIPANT, 2011. COURTESY OF JASON DYETT.

Above: Harvard and Brazilian students tour Petrobras facilities; opposite page: oil rigs against a Brazilian sky.

that Brazil's military dictatorship since 1964 "hadn't created the ideal society," citing as obvious problems the torture of political prisoners and the millions who still lived in poverty, broad credit was bestowed on Antonio Delfim Neto, the powerful finance minister during the dictatorship who helped orchestrate the economic "miracle" with policies such as price controls, tax incentives to boost export-oriented industries, the establishment of factories in the poor Northeast and the regular adjustment of wages, pensions and rents to accompany relatively high inflation.

This development model came under stress during the oil price shocks of the 1970s, exposing Brazil's reliance on imported oil and ushering in attempts to ease this dependence, including the development of the country's ethanol industry. By the 1980s, Brazil was grappling with stagnation, hyperinflation and a simmering debt crisis. The radical restructuring of the economy in the 1990s, which included the introduction of a new currency (the real) and the privatization of an array of public companies, lured greater foreign investment. Petrobras, the oil giant founded in the 1950s during a time of growing resource nationalism, was a cornerstone of this shift. Authorities thoroughly exposed Petrobras to market forces, putting an end to the company's monopoly on oil exploration in Brazil while maintaining state control of the oil giant. Within a few years, this strategy seemed to pay off as Petrobras competed nimbly with oil companies around the world, stunning the global energy industry with its technical capabilities and its success in finding oil in deep-sea fields. The rise in Petrobras's fortunes marked a turning point for the company, which in the 1950s had hired a U.S. oilman, Walter Link, the former chief geologist for Standard Oil Company of New Jersey (now Exxon Mobil), to lead a quest to discover Brazil's oil reserves. The tepid results in those first years after Petrobras's creation forecast a drawn-out dependence on foreign oil, a problem with which Brazil had grappled for decades. But the stars finally seemed to be aligning in Brazil's favor when Petrobras began racking up one oil discovery after another.

Brazilian authorities emphasized their belief that the country was prepared to harness the coming oil bonanza. They were convinced they could avoid the usual pitfalls, from mismanagement to corruption and political infighting, that often plague other oil-rich countries in the developing world. Seeking to bolster the economy through job creation and assert greater sway over Petrobras and other areas of Brazil's oil industry, Rousseff, then the chairwoman of Petrobras's board and the chief of staff to President Lula, supported legislation which enhanced Petrobras's control over new oil fields and required the company to buy ships and drilling rigs from Brazilian suppliers. Drawing inspiration from oil-rich countries like Norway which squirrel away oil revenues for future generations, Brazil's government also created a sovereign wealth fund in 2008 to prepare for lean times. Ebullient predictions about Brazil's rise as a developing-world powerhouse soon became fashionable. "We used to say that Brazil was the country of the future, and I think the future has arrived," a former high-ranking executive at Petrobras told Forbes in 2010. "Our country is in a unique moment," he added. "We would have to make many mistakes to not get it right."

Fast forward to Brazil in 2015. Prosecutors now say that executives of the oil giant were putting into motion a far-reaching and labyrinthine graft and kickback scheme, one of the largest scandals in the history of Brazil: at the same time political leaders were proclaiming that Petrobras's oil discoveries were the equivalent to a "winning lottery ticket." Critics of the government's handling of Petrobras argue that the legislation requiring the company to buy its equipment domestically had the effect of turbocharging corruption. At the same time, Petrobras faces a daunting test of its capacity to oversee an array of devilishly complex exploration projects as a result of the measures expanding its power in Brazil's energy industry. In June, Petrobras cut its global production target for 2020 to 3.7 million barrels a day of oil and natural gas equivalent from 5.3 million. Brazil's political and business establishments are still absorbing the shocks emanating from the Petrobras scandal as individuals who have made plea bargain deals describe a scheme in which executives at some of Brazil's most prominent construction and engineering firms paid bribes to Petrobras officials, who then enriched themselves while channeling a portion of the funds to Rousseff's own Workers' Party and other political figures in her coalition. (Curiously, this was happening while another major scandal was coming under intense public scrutiny, the so-called *mensalão* vote-buying scheme involving top figures in the Workers Party. The trial of these politicians was considered a rare breakthrough in political accountability in Brazil's political system.) The revelations of corruption within Petrobras have coincided with an economic slump eroding Rousseff's popularity. In one sign of shifting fortunes, California, with a population about five times smaller than Brazil's, recently surpassed the Latin American country as the world's seventh-largest economy. Even the sovereign wealth fund, conceived as an underpinning of an effort to plan wisely during the boom, has fallen victim to the grimmer reality now prevailing in Brazil. In an effort to meet budget targets in 2012, officials raided the fund, leaving it with just a fraction of its holdings.

Prosecutors now say that executives of the oil giant were putting into motion a far-reaching and labyrinthine graft and kickback scheme, one of the largest scandals in the history of Brazil: at the same time political leaders were proclaiming that Petrobras's oil discoveries were the equivalent to a "winning lottery ticket."

Of course, Brazil has gone through boom-and-bust cycles before. Historians point out that the country is arguably on stronger financial footing now than in the past. The central bank holds $367 billion of foreign currency reserves, dwarfing the assets at its disposal in earlier periods of distress. Far from large cities like São Paulo and Rio, agricultural pioneers continue to thrive even as the prices of some commodities have softened. Still, as Petrobras's travails ricochet in the national economy, the mood swings in Brazil remind me of the prophetic assessments about handling oil bounties by Juan Pablo Pérez Alfonso, a once-towering figure in Latin American and global oil politics who regrettably remains less remembered than he should be. A Venezuelan lawyer and cabinet minister educated partly in the United States, Pérez Alfonso helped create OPEC in 1960, contending that oil-producing nations needed a cartel to exert greater control over their oil resources. But over the years he grew increasingly disillusioned with OPEC and with Venezuela's own triumphalism over its oil bounty. He retreated into his walled hacienda in the district of Los Chorros in Caracas, which he maintained as a kind of oasis in the frenetic capital of a country whose prospects in the 1960s and 1970s seemed just as promising as Brazil's did just a few years ago. Blasting authorities who prioritized pharaonic megaprojects made possible by petroleum wealth while neglecting essentials like education, he bluntly called oil "the excrement of the devil." "A wave of money

PHOTOS, ABOVE AND OPPOSITE PAGE: COLLABORATIVE HARVARD-BRAZIL ENGINEERING FIELD COURSE PARTICIPANT, 2011. COURTESY OF JASON DYETT.

can destroy as well as create," he warned before his death in 1979 at age 75.

To be sure, Venezuela, a smaller country which emerged as the world's largest oil exporter in the 1920s, has a much longer history of dealing with the blessings and curses of being an energy power than Brazil, which has developed a far more diversified economy in recent decades and now wields considerable economic clout in Venezuela. But in a sign, perhaps, of rising political polarization in Brazil, some Brazilians are drawing comparisons between the challenges faced by residents of both countries as disenchantment with Rousseff's handling of the economy escalates. Petrobras remains under the cloud of scandal and the country follows the cautionary tale of Eike Batista, the oil tycoon whose vast empire has crumbled. Nevertheless, the nurturing of independent institutions in Brazil suggests that the country's problems occur in a different realm than those in Venezuela, where dilemmas include soaring inflation, acute shortages of basic products and a crackdown on the government's political opponents. In Brazil, a crucial streak of judicial independence has allowed officials from the Federal Police, a respected institution comparable to the F.B.I. in the United States, and counterparts in the Public Ministry, a body of independent prosecutors, to dig deeply into the graft scheme at Petrobras. Going further, Brazil's highest court has authorized investigations of some of the country's most powerful political figures, including the leaders of both houses of Congress, over claims that they benefited from the kickbacks. At the same time, even as Rousseff faces calls that she should be impeached over scandal, she has adopted a largely non-confrontational approach to those calling for her ouster, avoiding the poisonous tenor of some political leaders in neighboring countries. Strikingly, Petrobras, while dealing with an array of challenges stemming from the scandal producing upheaval in its executive suites, remains innovating on the cutting edge of deep-sea exploration technology. In a milestone largely ignored as graft revelations swirl around the oil giant, Petrobras disclosed that its petroleum output (excluding natural gas) recently surpassed that of Exxon Mobil.

Brazil still faces huge challenges as it deals with the excesses which accompany oil wealth. Political figures under the oil scandal's cloud are reportedly maneuvering in an attempt to prevent the prosecutor general overseeing the inquiry into the graft scheme from securing a new term, and Rouseff has voiced doubts over the testimony of executives who reached plea bargain deals with investigators.

If history offers any lessons and Brazil booms yet again a decade or two from now, business leaders might still be prone to making wildly exuberant statements. Oil, or other coveted natural resources, might play an even larger role in the next boom than in the last one. But has Brazil really changed? Undeniably yes, but perhaps not in the way its enthusiasts proclaimed back in the go-go days of 2010. The vital test which Brazil now faces suggests that some of the demons from its past may have been less tamed than once thought. But the quiet transformation of Brazil's institutions offers a glimpse into the resilience that may allow the country to pick up the pieces and bolster its democratic experiment.

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Construction of Petrobras oil exploration equipment in Angra dos Reis, Rio de Janeiro.

PHOTOS, ABOVE AND OPPOSITE PAGE: COLLABORATIVE HARVARD-BRAZIL ENGINEERING FIELD COURSE PARTICIPANT, 2011. COURTESY OF JASON DYETT.

Energy and Politics in Brazil

A Retreat from Oil Nationalism BY LISA VISCIDI

WITH BRAZIL'S STATE OIL COMPANY PETROBRAS engulfed in a massive corruption scandal, the government looks poised to introduce an energy sector overhaul that would reverse a trend of using state-run companies to drive economic development. While most of the details of the scheme have only recently come to light—creating a political crisis for the president just as the economy is faltering—the corruption scandal follows years of political interference in the management of Petrobras and in energy policy more broadly.

The bribery scandal first came to light in March 2014, when a senior executive, Paulo Roberto Costa, was arrested on charges of money-laundering. In a plea bargain, he revealed a vast kickback scheme that involved inflating Petrobras contracts and pocketing 3% of the value. Many of the company's top executives and senior government officials, including some from the ruling Workers Party, have been implicated.

The scandal has reached the highest levels at the company. Jose Sergio Gabrielli, Petrobras' chief executive from 2005 to 2012, had his assets frozen by a court order in January. Although Gabrielli's successor appears to have had no involvement in or prior knowledge of the scheme, the appointee Maria das Graças Silva Foster—a close friend of President Rouseff—resigned under pressure on February 4, along with five other Petrobras executives. Several top executives have since received fines and prison terms.

The scandal's financial repercussions are particularly painful for the world's most indebted company, with some of the largest annual corporate investment plans globally. For several months, Petrobras was unable to calculate its losses from the bribery scheme, preventing its auditor Price Waterhouse Cooper from approving its financial statements, originally due in November. In late April, Petrobras finally released its audited financials, dodging a technical default that could have blocked it from international capital markets. The company reported a $16.8 billion write down, or reduction in the value of its assets, including more than $2 billion from corruption. Not surprisingly, Petrobras stock has taken a hit, falling from $72 per share at its height in 2008 to around $5 per share in March, recovering slightly after its financial statements were released.

In a significant reversal of past policies, Petrobras is now taking steps to

Petrobras facilities contrast with a spectacular natural setting.

The company has banned 23 of Brazil's largest engineering and construction firms from future oil and gas exploration auctions because they were allegedly involved in the scandal, leaving few qualified suppliers in a country with particularly strict local content rules.

Petrobras headquarters: if the company's weak cash position forces it to sell larger core assets in the future, its long-term growth will be compromised.

improve its balance sheet and restore investor confidence. It announced it will not issue any new foreign debt this year, and its latest 2015-2019 business plan, published in June, includes an aggressive 37% reduction in capital spending compared to the previous plan. Petrobras also plans to divest some $15.1 billion worth of assets. The decline in global oil prices unexpectedly has a silver lining for Petrobras. While Brazil's government-controlled fuel prices generated losses for Petrobras in past years when international oil prices were high, retail prices in Brazil are now above international import prices, yielding a profit for the company.

Belt-tightening at Petrobras, while necessary under the current circumstances, could hurt the company in the long run. Its oil production has been flat over the past five years despite the discovery of some of the largest oil reserves in the world off Brazil's shores, known as the "pre-salt." It has repeatedly missed production targets over the years and in June announced a steep reduction in its 2020 oil output target from 4.2 million to 2.8 million barrels per day. The company has banned 23 of Brazil's largest engineering and construction firms from future oil and gas exploration auctions because they were allegedly involved in the scandal, leaving few qualified suppliers in a country with particularly strict local content rules. For now, its divestment plan is targeting less important assets in refining and distribution, international holdings and marginal oil fields, but if the company's weak cash position forces it to sell larger core assets in the future, its long-term growth will be compromised.

TROUBLES AT PETROBRAS

While the corruption scandal has revealed a new depth to the troubles at Petrobras, it comes on top of years of problems tied to political interference in strategic decision-making. Following Petrobras' discovery in 2007 of the pre-salt reserves, then-President Luiz Inacio Lula da Silva, also of the Workers Party, presented a bill to Congress that increased government control over Petrobras. The state oil company remained partially privatized, a legacy of reforms under his more market-oriented predecessor in the late 1990s, but the government increased its stake in the company and made Petrobras the exclusive operator with a minimum 30% stake in all pre-salt fields.

The new regulations put a tremendous financial and operational burden on Petrobras and restricted international oil companies' participation in exploration and production in Brazil. Other politically motivated decisions, such as the fuel price caps, strict requirements for using Brazilian equipment and services, and the building of expensive refineries in the poor, less populated Northeast for economic development purposes, further undermined Petrobras' finances and ability to manage its complex projects.

Similarly, in the power sector, unsustainable price controls were implemented in the name of economic development. In 2012, the government forced power generation plants to cut their prices in order to aid large industrial electricity consumers, weakening the finances of power companies. Last year, Brazil faced a major drought that reduced supplies of cheap hydroelectric power, forcing utilities to use more expensive natural gas. However, the government did not allow companies to raise their rates but loaned them money instead. Now, to shore up its finances, the government will have to cut subsidies and raise rates.

At Petrobras, politically driven decisions had frustrated the rank and file long before the corruption scandal was made public. One Petrobras project manager told me last year that Lula had "destroyed the company" and that most of his colleagues were unhappy with the top management. While they respected Foster, an engineer and industry veteran, they had been skeptical of her predecessor Gabrielli, a political appointee and co-founder of the Workers Party with little experience in the oil industry.

Many of the company's employees may also have known about the corruption for years although they were not involved. When I was a journalist covering Brazil's oil industry, a senior Petrobras manager told me in 2013—before the scandal was revealed—that inflated contracts were behind the ballooning budget for Petrobras' Abreu e Lima refinery in northeastern Brazil. The refinery project ultimately cost $18 billion compared to an initial estimate of $2.5 billion. Costa has since admitted to inflating the contracts for Abreu e Lima as part of the kickback scheme.

It is unclear whether Petrobras will gain more independence from the government in strategic decision-making under its new CEO. Petrobras' new leader, Aldemir Bendine, who was head of Banco do Brasil, the largest public bank in the country, has close personal ties to the president. The fact that he is an outsider to the oil industry and thus safe from any allegation of involvement in the bribery scheme is certainly reassuring. But it remains unclear whether he and his new team will have sufficient freedom to manage the company.

ECONOMIC AND POLITICAL FALLOUT

The state-led approach undertaken by both the Lula and Rousseff administrations is not confined to the energy sector. Over the last decade, Brazil's economy has been weighed down by increasing public spending, rising debt and protectionist trade policies, while needed investments in its failing infrastructure and weak educational system have not materialized.

Now, these policies have become unsustainable as the global economic environment has turned hostile for Brazil. Economic growth in China, Brazil's largest trading partner, has slowed, and prices for Brazilian oil, minerals and agricultural products have declined. Monetary tightening in the United States is expected to restrict the flow of dollars to emerging markets. Brazil's economy grew only 0.1% in 2014 and is expected to contract this year. Its new finance minister, Joaquim Levy, is charged with imposing unpopular austerity measures to balance the budget and safeguard Brazil's investment grade status, such as cutting public spending, reducing pension and unemployment benefits and raising taxes. The reduction in spending by Brazil's largest company will only further undermine economic growth. However, the corruption scandal's effects on the construction industry could be even more far-reaching for the economy. Many major Brazilian construction firms that were expected to execute the country's ambitious infrastructure plans have been shut out of capital markets because of alleged corruption, or face potential bankruptcy as a result of reduced demand from the oil industry.

Public anger over the scandal has severely weakened the administration of President Dilma Rousseff, who kicked off her second term in January. Although the president herself was apparently not aware of the scheme, it coincided with her tenure as president of Petrobras' board of directors. Already some opposition figures are calling for her impeachment and her approval ratings have dropped to around 10%. Hundreds of thousands of protesters have taken to the streets across Brazil in various demonstrations over the last few months to voice their anger at the president.

But the political fallout from the scandal could drag on. As more people are brought up for charges of corruption and offered plea bargains in exchange for information, the list of alleged offenders will likely grow. What's worse, another corruption scheme that may be even larger in scale is emerging. In March, police and finance ministry officials revealed that over the past decade the government had been robbed of between $1.8 billion and $6 billion in back taxes and fines from various firms.

REFORMS AHEAD?

As these problems come to a head, Brazil is moving toward implementing reforms to root out corruption, stabilize the economy and revise its energy policies. The president has given investigators unprecedented freedom to prosecute criminals on corruption charges, proposed anti-corruption legislation to Congress and reshuffled her cabinet to realign her political ties and distance herself from alleged offenders.

In the oil and gas sector, an opposition congressman has already introduced a bill to reverse Petrobras' obligations as sole operator with a minimum 30% in the pre-salt. Local content requirements, which the government has already loosened, will likely be further retracted. In both the hydrocarbons and electricity sectors, the government says it will raise prices in order to cut subsidies, and some government officials are calling for allowing Petrobras to set its own pricing policy.

Amid all the turbulence, the future may still be bright for Brazil's energy giant. Petrobras maintains access to gigantic reserves and will eventually reach its production targets, even if not as quickly as originally planned. The company remains a leader in deepwater drilling capabilities, meaning it has the technological ability to develop these complex projects. There have been delays in starting production from new offshore fields, but tremendous progress has been made on the operational side since the first major pre-salt discovery was made eight years ago. Pre-salt production has now surpassed 800,000 barrels per day, and Petrobras' total oil production in Brazil rose 5% to just over 2 million barrels per day in 2014.

However, beyond the drilling successes and the pending legislative reforms, the most important outcome of the scandal will hopefully be a new culture of corporate governance and transparency that has clearly been lacking at Petrobras.

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PHOTO: COLLABORATIVE HARVARD-BRAZIL ENGINEERING FIELD COURSE PARTICIPANT, 2011. COURTESY OF JASON DYETT.

Mexico's Energy Reform

National Coffers, Local Consequences BY MYRNA SANTIAGO

THE SMALL, WHITE-WASHED CLASSROOM AT the University in Minatitlán, Veracruz, was packed with a couple dozen people who, although neighbors, had never met. Several members of a fishing cooperative, a pediatrician, a toxicologist from Petróleos Mexicanos (Pemex), a biologist turned environmental activist, a couple of retired oil workers, a Pemex engineer, two medical students, neighbors of the local refinery, and community activists all turned out to discuss relations between Pemex and surrounding communities.

Invited by my colleague, the historian Christopher Sellers from Stony Brook University, to this unusual witness seminar, participants squeezed around tables set up with tiny voice recorders. I had a supporting role, helping to manage the meeting and translate if necessary. I was also thrilled to visit for the first time Minatitlán and its twin down the road, the port of Coatzacoalcos, the hubs of the oil and petrochemical industry in southern Veracruz and two of the most polluted cities in Mexico.

The reason for my excitement had its own history. Two decades earlier, as a fresh-faced graduate student in the history department at the University of California, Berkeley, I had decided to write a dissertation about the history of the oil workers of Minatitlán, the most important refinery in southern Mexico before President Lázaro Cárdenas nationalized the industry in 1938. However, my project was soon derailed. Every *jarocho* (the endearing term for Veracruz natives) I spoke to told me that staying in Minatitlán or Coatzacoalcos for any extended period of time was a terrible idea, even more so as I had planned to bring my four-year old for the six-month research trip. I was skeptical of this advice until I met the friend of a professor with young children. She was from Minatitlán originally but left it for Xalapa not only seeking better employment opportunities but also running away from the pollution that gave her children asthma and made their skin break out in hives with every bath. I then switched the focus of my investigation to the history of labor, environment and oil in northern Veracruz. I had never visited Minatitlán until now.

The Gulf of Mexico and the deserts of northern Mexico are sensitive ecosystems. The Gulf is an important fishing ground for both the United States and Mexico.

Knowing the history of the place, I expected no surprises from the accounts of the seminar participants. The first round of anecdotes was formal and guarded, as one could anticipate. But as soon as the men and women felt comfortable and before the temperature in the classroom reached sauna stage, the tone changed. The mood became somber. Everyone in the room was sick, had been sick, or knew someone in their families who was sick. Their ailments, as the mother of my son's playmates had told me two decades before in Xalapa, ranged from recurring skin rashes, to constant allergies, to asthma, to digestive system discomfort, to leukemia. The pediatrician himself had had leukemia and when he realized that too many of his patients also had the disease, he began asking questions. He wanted to know how many leukemia cases existed in Coatzacoalcos-Minatitlán or whether there were other cancers in the region. It turned out that no such records existed: no numbers, no statistics, no cancer registry of any sort. No one kept track and no one encouraged him to do so either.

I have been thinking about those stories in light of the energy reforms enacted by President Enrique Peña Nieto and implemented by the Mexican Congress in August 2014. The reforms amended the Mexican Constitution in two ways. First, they broke the monopoly that Pemex had on hydrocarbons (oil, natural gas, and petrochemicals). Second, they allowed private investment, both foreign and domestic, to return to the industry.

While there is no denying that Pemex generated great wealth for Mexico as a whole, the gains are not unequivocal for Pemex's workers and neighbors. As Minatitlán-Coazacoalcos demonstrate, ecological degradation followed the oil industry, eroding the local community's health in the process. As the Pemex toxicologist explained in the seminar, the company, cognizant of the fact that the petroleum industry ranked among the most dangerous in the country, has made quantifiable strides in monitoring the health of its permanent workers and created a robust health system for union members. It never occurred to him personally, however, that neighbors of the refineries and the petrochemical plants deserved similar attention since they were exposed to the same toxins the workers confronted on the job on a daily basis.

Will the oil sector reforms bring change for the better? The shift in ideological and economic policy direction was jarring for Mexicans, controversial and contentious. Weeks of demonstra-

OPPOSITE PAGE: PHOTO BY MYRNA SANTIAGO

Jesús Álvarez Amaya and his "People's Graphic Workshop"made prints to support the expropriation of Mexican oil decreed in the 1930s.

The oil industry poses challenges to the environment.

An iguana enjoys its natural habitat, part of the sensitive ecosytem threatened by the oil industry.

tions, marches and protests framed the congressional debates and with good reason. Mexico had decreed the first major nationalization of petroleum in history, coming after three decades of conflict among the workers, the state and the foreign oil companies, following the first social revolution of the 20th century (1910-1920). The decision to nationalize the oil industry in 1938 catapulted President Cárdenas to the pinnacle of the pantheon of revolutionary heroes among Mexicans. He remains there to date despite more critical reviews by historians and sundry academics. The public's attachment to the principle of national ownership of the oil industry, therefore, cannot be underestimated, no matter how critical ordinary Mexicans are of Pemex, the oil workers' union and the government.

Peña Nieto knew that a strong nationalist flame burns within every Mexican, so he promulgated the reforms in such a way that he could truthfully claim that he was not privatizing Pemex and that he was not denationalizing oil. The language of the constitutional amendments was careful and specific yet flexible. Arguing that he acted in Cárdenas' spirit, Peña Nieto drafted an amendment that reaffirmed the late president's stipulation that no concessions would be granted to private parties, but he added that the nation could assign contracts to private companies directly or through Pemex. In all cases, the contracts would declare that the hydrocarbons in the subsoil belong to the nation.

Thus Peña Nieto assured the Mexican people that Pemex was not privatized. It continues to exist as a state-owned company, but it will collaborate and compete with private firms, both foreign and domestic. Investors drilling on land and offshore will not own the crude oil or natural gas they find. Those products will be owned by the nation, so Mexico's oil riches continue to be nationalized. However, private interests will gain access to hydrocarbons through contracts signed with the government or Pemex. The language of each contract therefore will determine if a private company keeps a percentage of production, pays a set price per barrel of crude or cubic meter of natural gas, pays extraction or export taxes, etc. As critical journals like the weekly *Proceso* and the daily *La Jornada* have noted, the contract is the undefined and crucial concept in the reforms—the artifact that will contain the details that could undo Pemex if it can't compete against transnational oil companies.

One goal of the reforms is to obtain new technologies. Observers believe that the government specifically wants two technologies: "ultra deep" offshore drilling and hydraulic fracturing. Although Pemex has been drilling off the coast of Tabasco and Campeche since the 1970s, the crude that the companies are seeking now lies at 2,900 meters (9,500 feet) below the surface (by comparison, the British Petroleum-Deepwater Horizon well that exploded in 2010 and dumped some nine million barrels of oil in the Gulf of Mexico was at 1,500 meters, or 5,000 feet). Mexico estimates that 50 billion barrels of oil are buried in Gulf waters ready for retrieval with cutting-edge technology.

"Unconventional" oil, specifically shale oil extracted by using the method known as hydraulic fracturing, is another priority for Mexico. The process involves injecting water, sand and chemicals one mile into the earth to crack the shale and release oil and gas. The technology is water-intensive, using two barrels of water per barrel of oil captured. It also creates toxic waste that can contaminate the water table when it is re-injected into the bedrock to protect the environment aboveground. And it provokes earthquakes. For example, on April 4, 2015, the *New York Times* reported that Oklahoma had surpassed California as the shakiest state, experiencing 5,417 quakes in 2014, a remarkable increase from 29 tremors in 2000. The difference in that decade was 3,200 wastewater wells dug to bury the poisons brewed through "fracking." Industry analysts estimate a potential 150 million barrels of shale oil in northern Mexico, but Pemex has been able to bring only one well into production. If the company acquires advanced technologies through joint ventures or contracting, what will happen to local communities?

The Gulf of Mexico and the deserts of northern Mexico are sensitive ecosystems. The Gulf is an important fishing ground for both the United States and Mexico. As the 2010 British Petroleum spill demonstrated, accidents in the Gulf are deadly for workers (eleven workers died in the BP blast) and harmful for coastal communities dependent on clean beaches and water for their livelihoods. In Tabasco and Veracruz, fishermen affected by the 1979 Ixtoc 1 underwater fracture that blew out the well saw stocks recover after three years, although the fish they caught were not the same species as those previous to the spill, according to biologists from Mexico's national university. The effects of the BP spill on the Louisiana fishing fleet are still being fought over in court, five years after the accident.

In northern Mexico, water is already at a premium. Industry analysts, in fact, declared to the online trade journal "DrillingInfo" in December 2014 that the lack of water is an issue for the Sabinas and Burro-Picachos shale fields of Coahuila. That area is rural, forcing ranchers and farmers to compete with oil companies for water. Moreover, as the *New York Times* reported on April 11, 2015, the Rio Grande is already strained by the drought affecting the U.S. Southwest. By the time the river reaches the Gulf, it is but a trickle. Research about the *maquiladoras* (textile assembly plants) on the border also show that the Rio Grande is severely polluted by industrial waste, compromising the health of communities on both sides. Adding the burden of fracking to the Rio Grande and local aquifers will mean that those localities will have even less potable water and more toxic waste. Under any standard, such conditions spell hardship for local populations.

Lastly, there is violence to consider. The use of new technologies will open new areas for extraction, expanding the geographical potential for bloodshed. By most accounts, the Mexican drug cartels that traffic along the Tamaulipas-Coahuila-U.S. border have diversified their criminal activities to include fuel theft. As the *Financial Times of London* pointed out in a November 12, 2014 article, the shale fields "encroach on cartel turf" and could be dangerous for workers. One anonymous executive confessed that in the undisclosed area where his company provided services to Pemex, workers arrived by helicopter, escorted by the Mexican military. But despite the risk to workers' lives, consultant Emil de Carvalho told the *Financial Times* that no company would shy away. The firms would simply adjust their budgets to include security personnel. There is simply too much money to be made to be derailed by the prospect of violence against workers. If Nigeria is an example, Mexican and foreign oil workers' safety will be secondary to extraction.

The reforms might achieve the ultimate goal of filling the coffers of the Mexican treasury with oil profits, but as the Minatitlán witnesses revealed, the local costs might be very high.

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ABOVE LEFT: TALLER DE GRAFICA POPULAR; ABOVE RIGHT AND OPPOSITE PAGE, PHOTOS BY MYRNA SANTIAGO

China in Latin America

Seeking a Path Toward Sustainable Development

BY REBECCA RAY

ALL EYES WILL BE ON CHINA IN 2016, AS IT PRE-pares to host its first-ever G-20 summit. While the rest of the world discusses this symbolic act of new global prominence, Latin America knows that China's prominence is nothing new nor merely symbolic.

In fact, for much of the last decade China has driven Latin America's trade and investment. Unfortunately, during this China-led commodity boom, policy makers overlooked the intrinsic dangers of commodity-led growth. Now that the boom is ebbing, those weaknesses have become glaring. They are particularly visible in energy sectors such as oil and coal, where issues of land tenure and water and air contamination have united environmentalist and indigenous resistance. These are the findings developed in the recent report by my colleagues and me at Boston University, Universidad del Pacífico (Lima) and Centro de Investigaciones para la Transformación (Buenos Aires): *China in Latin America: Lessons for South-South Cooperation and Sustainable Development*, which explores the role of Chinese trade and investment in Argentina, Bolivia, Brazil, Chile, Colombia, Ecuador, Mexico and Peru. China is now the top export destination for South American goods—mostly petroleum, copper, iron and soy—and second only to the United States for exports from the entire Latin America and Caribbean (LAC) region. The China and Community of Latin American and Caribbean States (CELAC) summit in December 2014 generated projections of $250 billion in new Chinese investments within the next decade, including two new oil concessions in Ecuador, shale oil and gas concessions in Argentina, and a transcontinental railway that Premier Li Keqiang discussed on his trip through the region in May.

Chinese demand for raw commodities has been an independent driver of social and economic change in Latin America, putting pressure on waterways, forests, and traditional livelihoods. LAC exports to China have larger environmental impacts, and support fewer jobs, than other regional exports. But our research also finds that Chinese investors are capable of living up to local standards where Latin American governments enforce them consistently. Taken together, these results mean that policy makers have the chance to set the terms of their relationships with China, but if they neglect this opportunity and fail to set and enforce high standards, they will have to reckon with serious social and environmental consequences.

CHINESE INVESTOR PERFORMANCE

As the region boomed over the last decade, companies from China and across the world arrived to get in on the opportunities. Chinese firms, with less experience abroad than their Western counterparts, found themselves particularly challenged by unions, local communities, indigenous groups, and global civil society networks. However, our case studies show that Chinese investors are flexible and able to adapt, often outperforming their domestic and Western counterparts.

Perhaps most tellingly, Sinopec (a large Chinese petroleum state-owned enterprise), which appears in three of our eight case studies, shows different levels of social and environmental performance depending on different local standards. Overall, these case studies show that Latin American governments have the opportunity—and the responsibility—to set and enforce high standards.

Sinopec arrived in Colombia in 2010, through its subsidiary New Grenada Energy Colombia (NGEC). It has struggled to meet national standards, but the government is at least partly responsible for these lapses. NGEC initially committed to a half-million dollar land conservation project to safeguard local communities' water source. Three years later, NGEC had not yet complied, resulting in a formal complaint by the local environmental group Mastranto. The Attorney General's office ruled against NGEC, but also cited the National Environmental Licensing Authority (ANLA) for a lack of oversight.

Sinopec has also faced criticism of its hiring practices, but this is due mostly to the national government's inability to overcome local power structures. Sinopec, like many other firms, hires through local Community Action Boards (CABs). CABs—and by association, Sinopec—have come under fire for bargaining with job positions, offering them to well-connected families far away instead of local applicants. The national government has proposed a new hiring structure, but unsurprisingly this has been met with fierce resistance from the CABs themselves.

In Argentina, Sinopec's environmental record has been better than in Colombia, but belatedly so and only after coming under heavy public scrutiny. Sinopec arrived in 2010, purchasing Occidental Petroleum's holdings and inheriting its commitments to build aqueducts to alleviate competition for water with local communities. Sinopec eventually completed them in 2014—after a major drought struck the area, creating pressure from the local press and community groups.

Sinopec's record in Argentina also has a better employment record than in Colombia. Most of Sinopec's Argentina operations are in the province of Santa Cruz, far away from the oversight of Buenos Aires. However, oil contracts are negotiated at the provincial level, giving Santa Cruz a better vantage point for enforcement. In terms of labor, Santa Cruz requires oil companies to hire Santa Cruz residents, and Sinopec has complied. This stands in contrast with Colombia, where Sinopec has been denounced for hiring workers from other areas of the country.

In Ecuador, Chinese oil state-owned enterprises Sinopec and China National Petroleum Company (CNPC) formed two joint ventures (Andes Petroleum and PetroOriental) to purchase Occidental's Ecuadoran holdings in 2006. In doing so, they inherited a history of water and soil contamination dating back to the infamous days of Chevron. Since arriving, though, they have lived up to modern Ecuadoran standards, and faced less environmental and social conflict than any other major oil companies in the country.

Despite its good track record to date, Andes Petroleum has begun to face heavy resistance in Ecuador due to two new concessions they have recently won in the Amazon. Protests have sprung up in Ecuador and internationally, and Pope Francis mentioned the situation in his recent visit to the region, calling for protection of the Amazon and its inhabitants. These are the first new concessions in Ecuador under a new citizen participation law, but our fieldwork shows that the government has fallen short in implementing this new law and failed to adequately consult affected indigenous populations before granting the concession. While Chinese investors are the face of the new development, it is the Ecuadoran government that has set the stage for this conflict.

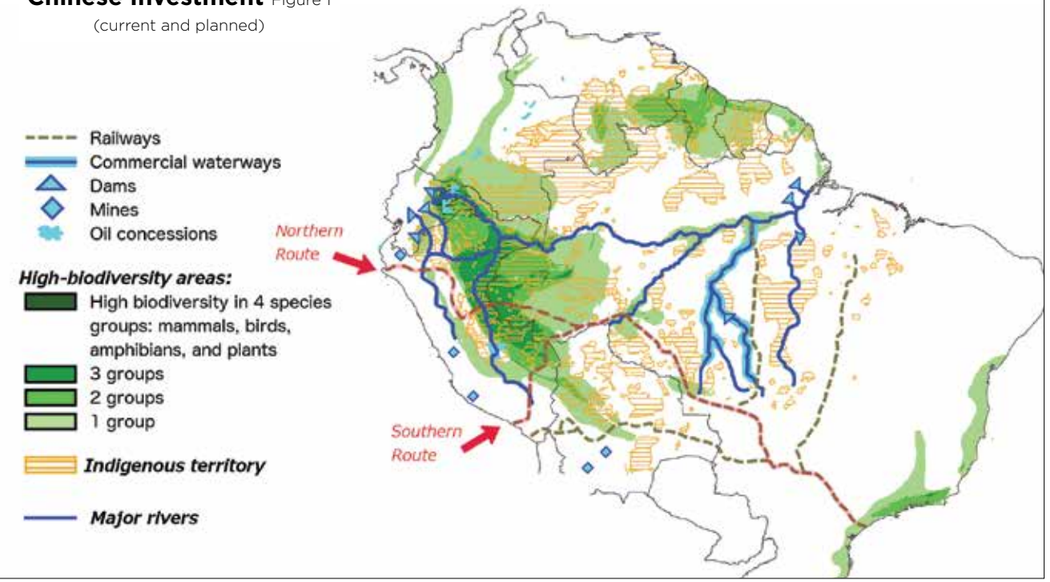
Taken as a whole, our case studies show that local governments and civil society have a crucial role in ensuring that foreign investors live up to local standards. Nonetheless, when social and environmental standards are consistently enforced, Chinese investors in particular have shown themselves capable of rising to the challenge.

COMMODITIES, THE ENVIRONMENT AND EMPLOYMENT

China's demand for commodities is often linked to environmental degradation and conflict. In five of our eight case studies—in Argentina, Bolivia, Colombia, Ecuador and Peru—we examine conflicts that have arisen between Chinese investors and local communities. In each case, the same two triggers consistently explain most causes of conflicts: scarce job creation and competition for natural resources (water use, land tenure, and contamination of water and soil).

These same trends emerge in our statistical analysis. We find that LAC exports to China have heavier environmental impacts, and support fewer jobs

Chinese Investment Figure 1
(current and planned)



Chinese investment, biodiversity and indigenous territories

MAP BY REBECCA RAY

than other LAC exports. These two factors combine to create a perfect storm for conflict, as oil wells, plantations and mines for export to China outcompete communities for natural resources, but do not replace those livelihoods with new jobs.

From 2009 to 2013 (the last five years of available data), we find that LAC exports to China support about 20 percent fewer direct jobs than other exports, per million real dollars, and fewer than half as many direct jobs as overall economic activity.

This jobs deficit is due to the outsized importance of extractive industries (oil, gas, and mining) among the region's exports to China. Over the last five years, extractive products made up over half of LAC exports to China, but just one-third of the region's exports overall. Meanwhile, extractive industries support only about one-sixth as many jobs in LAC as manufacturing, per million dollars of output. So the export basket to China is much less labor-intensive than the region's traditional export basket.

While Chinese investment is not creating new jobs, its thirst for natural resources is squeezing communities pursuing traditional livelihoods.

Ecuador shows a striking example of this dearth of new jobs. From 2008 to 2012, extractive products made up 58 percent of all Ecuadoran exports, but 70 percent of exports to China. Meanwhile, extraction supports just one direct job and 16 indirect jobs per million dollars of output, compared to 25 direct and 22 indirect jobs for manufacturing. Overall, exports to China support just 30 jobs per million dollars, compared to 70 jobs per million dollars supported by Ecuadoran exports overall.

While Chinese investment is not creating new jobs, its thirst for natural resources is squeezing communities pursuing traditional livelihoods. We find that LAC exports to China use twice as much water per dollar as other exports on average, and ten times as much water per dollar as overall regional economic output. This disparity is due mainly to large-scale agriculture. Among major LAC economies, Argentina shows the largest difference, mostly because of its soy exports, which make up more than 70 percent of Argentine exports to China but just 14 percent of overall exports.

LAC trade with China also has a disproportionate climate impact. LAC-China exports create about 15 percent more net greenhouse gas emissions per dollar than other exports, and over twice as much as overall economic output.

These net emissions go beyond those from power plants. In fact, many of the China-related net emissions are due to the destruction of natural carbon sinks, brought about by deforestation or the clearing of the Brazilian *cerrado* to produce soy exports. As the map of Chinese investment in the Amazon basin shows, its sites are heavily concentrated on sensitive terrain. Chinese dams, mines, oil concessions and railways often intersect important centers of biodiversity.

The darkest green areas on the map—with extremely rich biodiversity—exist only in northern Peru and eastern Ecuador. The dark green areas in Ecuador are nearly invisible due to the presence of Chinese oil concessions, including two new blocks recently won by Andes Petroleum, discussed above.

Also, a long-anticipated transcontinental railway may finally come to fruition after being a major focus of Premier Li Keqiang's recent trip to Latin America. The map shows two possible routes currently under discussion, highlighted in red. The northern route cuts through indigenous territory in the interior of Peru, as well as over highly biodiverse land. The southern route largely avoids these risks. Which route the governments of Peru, Brazil and China pick will have enormous consequences for its environmental and social impacts.

HOLDING THE LINE AT THE END OF THE COMMODITY BOOM

As China's economy slows, its demand for commodities is cooling also. As a result, the region's governments are facing pressure to roll back their environmental and social safeguards to streamline new projects.

Peru has drastically weakened its enforcement of indigenous consultation laws for new extractive projects. It has essentially eliminated protection for tribes that were reclassified as "peasant" communities instead of "Indian" communities decades ago, in a move seen as dignifying at the time. Bolivia's new mining law was set to eliminate the Environment Ministry's authority to take part in the approval of new mining projects, but civil society successfully resisted that provision.

Latin American governments must maintain the policies needed to ensure that economic activity in natural resource sectors is managed in an environmentally responsible and socially inclusive manner. Perhaps more important, as the Bolivian case reveals, is the need for civil society to monitor both governments and foreign companies.

China's prominence is here to stay, as its hosting of the G-20 and myriad new investment projects in LAC show. Without the proper policies in place to make sustainable development part and parcel of its relationship with China, Latin America will continue to experience social and environmental conflict, a burden ultimately detrimental to long-run prosperity.

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THE ECONOMICS OF ENERGY

PHOTO, RIGHT, BY NELSON GARRIDO NELSONGARRIDO@GMAIL.COM NELSONGARRIDO.BLOGSPOT.COM

Transportation is the largest energy consumer in Latin America. " EL TREN DESDE MI AZOTEA" by ADEMIR ESPIRITU/ OJOS PROPIOS, Lima.

What Powers Latin America?

Patterns and Challenges

BY RAMÓN ESPINASA AND CARLOS G. SUCRE

BETWEEN THE RIO GRANDE AND THE STRAIT OF Magellan lie the world's largest crude oil reserves, giant natural gas reservoirs, plentiful mineral deposits, massive rivers and even volcanic activity yielding geothermal power. However, knowing that Latin America has plentiful energy wealth is a necessary but insufficient condition to analyze its energy market.

Important cleavages exist within the region. Caribbean nations rely almost entirely on imported oil products to power lights and transport people, while Andean nations are huge net exporters of crude oil, natural gas and coal. Some countries in Latin America are completely exposed to market forces, while other countries offer generous subsidies.

So how does the general picture look and what is the way forward for Latin American energy markets over the next decade, in terms of new technologies, reforms and regulatory changes?

To put Latin America into context as an energy producer and consumer, we compare it to the United States, China and India to bring to the forefront some of the more salient issues for the region. The comparison with United States and China is important because these two countries are the largest energy consumers in the world, while India consumes roughly the same amount of energy as Latin America and the Caribbean.

A caveat: comparing energy data is intrinsically difficult. Natural gas is measured in British thermal units while coal is measured in millions of tons. Crude oil is bought and sold as barrels per day and electricity consumption is quantified by gigawatt-hours. The disparity in units is only one part of the problem. Another problem is definitions: industrial consumption in one country may be defined as commercial consumption in another, to name but one example. We will thus rely on data from the International Energy Agency that is homogenized and therefore comparable across time, countries, sources and sectors.

THE LATIN AMERICAN ENERGY MATRIX

The transportation sector is the largest consumer of energy in Latin America and the Caribbean (LAC) with 36% of its total energy consumption. This is also true for the United States (42% of its total) but it is not the case in India, where the largest consumers are residences of all sorts with 36%, or in China, where industry consumes 44% of all energy. It is a generally recognized pattern: as a country develops, it moves from using most of its energy for cooking meals and heating homes to powering factories to moving goods and people.

The literature also clearly indicates that the wealthier a country is, the more energy it consumes per capita, with most of that energy used for transportation. Indeed, Latin America's largest consuming sector changed in the early 1970s when industry replaced residential use as the region began to leverage its natural wealth—particularly in hydrocarbons—and many people migrated to cities from the countryside. The second transition took place in the mid-1990s when the industrial sector yielded its first place to transport as LAC began seeing higher levels of wealth per capita.

However, a more in-depth analysis reveals that this consumption pattern for Latin America does not hold true across the board because its regions are radically varied. We can split LAC into four parts: Southern Cone, which includes Argentina, Brazil, Chile, Paraguay and Uruguay; the Andean region, made up of Bolivia, Colombia, Ecuador, Peru and Venezuela; and the Central American isthmus, where we have Costa Rica, El Salvador, Guatemala, Honduras, Nicaragua and Panama. Mexico is a geographical region unto itself. The Caribbean includes Haiti, Dominican Republic, Trinidad and Tobago, Jamaica, and the Eastern Caribbean.

The Southern Cone consumes energy mostly for industrial purposes with 35% of the total and for transportation at 34%. This is a heterogeneous group as Chile, Uruguay and Brazil have higher industrial use than transportation but Argentina and Paraguay use slightly more energy for transport than industry. The patterns of consumption are not the only differences. Chile, for example, is a net importer—by a wide margin—of fossil fuels. Indeed, domestic production is only 30% of energy supplied to the Chilean market—a pattern expected to remain over the next decade.

The ideal arrangement—borne out by experiences in Brazil, Peru, and Colombia—is to encourage private investment under strong regulatory agencies that open the sector to private capital under clear, credible and fair rules.

Uruguay is similarly reliant on international energy markets. It does not produce oil or gas but imports both, along with about half of the oil products it consumes, as it has one refinery that supplies the remaining share. Paraguay is at the opposite end of the spectrum, as it actually exports to Brazil and Argentina 80% of the electricity it generates and imports about one third of the energy it consumes, which is mostly made up of firewood and other biomass products.

The giant in the grouping is Brazil, which accounts for 70% of Southern Cone energy consumption. Brazil is famous for its production of biofuels—started as a security policy in the late 1970s and now a pillar of Brazilian policy—but it is also the third largest producer of oil and fourth producer of gas in Latin America. Brazil's use of hydroelectric power is also the highest in all of Latin America and it is one of only three countries in the region that use nuclear power (Mexico and Argentina being the other two). It also leads the region—by some margin—in the use of non-conventional renewable energy sources like solar and wind.

In contrast to the heterogeneous south, the Andean countries are all similarly blessed with plentiful energy wealth. Bolivia and Peru boast large reserves of natural gas that began to be extracted over the past two decades. Energy use in Bolivia is evenly split between industry and transport, while Peru's is more tilted towards transport.

Colombia's high-quality coal in the northeast and heavy crude oil in the south and southeast are plentiful and should serve the country well over the next decade, though there is pressing need for investment in exploration. Due to its difficult geography and its income level, transport is the largest consumer of energy in Colombia.

Ecuador's energy matrix is almost completely dominated by producing and exporting crude oil. Buoyed in part by a subsidy scheme that is about 7% of GDP, the transport sector is by far the largest consumer of energy in Ecuador with 50% of the total.

Venezuela's certified oil reserves are the largest in the world, and it also has Latin America's largest gas reserves and powerful, dammed rivers that provide hydroelectric power to its grid. The lowest price of gasoline in the world explains why transport energy use is 35% of the total and three times larger than residential usage, but it is industry that takes top billing with 49% of the total.

Energetic homogeneity also exists in Central America but in the opposite sense. Central America imports a whopping 40% of the energy it consumes,

ADEMIR ESPIRITU/ OJOS PROPIOS, LIMA.

while another 40% is made up of firewood and byproducts from sugar-cane production. It is no surprise that as the poorest region by income in Latin America, most of Central America's energy use is in the residential sector with 42% of the total, and transport a distant second with 30%.

Residential consumption is such a large share of Central America's total energy use because its rural areas have not been integrated to the electricity grid so residents burn firewood. Rural electrification programs have gone a long way towards bringing modern energy to remote populations throughout Central America and elsewhere in LAC in order to reduce the use of firewood, but much work remains to be done.

The case of the Caribbean island nations is similar and more dramatic than that of Central America. These nations generally lack domestic sources of energy, with the notable exception of Trinidad and Tobago, an important producer of natural gas. Their reliance on imported diesel and fuel oil makes them uniquely vulnerable to market ebbs and flows, but there is little alternative. Domestic sources have been tapped where available—small rivers in Jamaica, Haiti and Dominican Republic have been dammed, for example—but they will continue to depend on external supplies of energy.

THE ELECTRICITY MARKET

The salient feature of Latin American electricity is the widespread use of hydraulic energy. Indeed, nearly 52% of all electricity generated below the Rio Grande is from hydropower. The region's distant second source of electricity is natural gas with 24%. This reality, however, is changing as most of the large rivers with hydrogeneration potential have been dammed. While there is some space for growth still, particularly through refurbishing old facilities, developing virgin river basins and installing small hydropower stations, over the next ten years hydraulic power will lose some of its preponderance in the Latin American electricity market.

Candidates to take market share from hydropower include a variety of sources. In Central America, geothermal power has become an integral part of the electricity mix and will continue to grow. Solar, wind, and other non-conventional energy sources have grown tremendously in Brazil, Mexico, and Chile since their introduction to LAC in 1992, though today they only represent 0.7% of electricity generation. Nuclear power facilities exist in Brazil, Mexico, and Argentina and though very tentative plans to introduce nuclear plants exist, the prospect for this source is not good.

Diesel and fuel oil plants have been installed to meet growing demand throughout LAC as they are accessible in terms of capital requirements and cheap to operate and maintain. These plants, however, have high environmental costs and Latin America is well known for its low-carbon consumption: its CO2 emissions per unit of GDP are the lowest in the developing world and only slightly higher than those for the EU or the OECD.

The more long-term, cost-effective, and environmentally sustainable source for electricity generation in the face of dwindling hydropower is natural gas. It is an energy efficient investment to refurbish existing oil-powered plants to burn natural gas instead, and the installation costs of natural gas facilities are lower than coal. The region's reserves of gas make it a uniquely suited fuel as demand continues to grow and rivers can no longer supply sufficient power to the grid.

INSTITUTIONS AND POLICY

As the region embarks upon these infrastructure investments, we must remember that over the past century most countries have wisely chosen to leverage their comparative advantage of natural resource endowments. The degree of successful exploitation certainly varies in the sense of the sustained developmental impact of natural resource extraction.

Economic diversification is a wise policy recommendation for the entire region, but it must be understood that on a global scale, Latin America will continue to be an important supplier of commodities and raw materials to the global market. Its valuable resources give it a special comparative advantage over other regions. This does not mean that it will simply be a mine and an orchard to the world, however. Natural resource extraction can foster the development of value-added industries, as in the case of Finland and Nokia or Sweden and Ikea, two valuable companies born out of the timber industry.

In order to continue to extract these resources in the most competitive and cost-efficient manner, best practices from the Latin American experience have shown that private investment must accompany public funding, in a manner that is open, transparent and competitive. This is true for electricity generation and fossil-fuel production, as these sectors require massive, risky, long-term capital investments that the state generally cannot finance alone.

The ideal arrangement—borne out by experiences in Brazil, Peru, and Colombia—is to encourage private investment under strong regulatory agencies that open the sector to private capital under clear, credible and fair rules. This is the model that Mexico is following under its current reform process. The main benefits from such a model are that it attracts capital, ensures competition and transparency, permits access to best practices and state of the art technologies, exposes the sector to market prices and limits monopolistic behaviors.

A second reform need concerns subsidies. Partly as a result of its resource base, many countries have implemented subsidy programs aimed at lowering the costs of electricity and transportation fuels to the general public. However, research shows that there is a high correlation between income per capita and energy consumption, that is, the richer you are, the more you energy you use. Therefore, the better-off segments benefit more from indiscriminate subsidies. Aside from the regressive nature of energy subsidies, the lack of exposure to prices can lead to smuggling and widespread energy waste, which results in environmental damage.

Top: the area around Venezuela's Zumaque oil well; bottom: Venezuelan oil refinery

Clearly defined and targeted subsidies can exist if they secure access to electricity and cleaner-burning technologies such as efficient cooking stoves. In the transportation sector, subsidies can be beneficial when aimed at fostering the use of mass transport. The region would do well to continue to remove across-the-board subsidy programs that still exist and to design more tailored and efficient cost-alleviation programs.

A third area with space for reform is regional energy integration, particularly impactful in small markets. In Central America, integration has proven to be excellent policy by yielding economies of scale required to introduce lower-cost generation facilities that lead to fairer pricing and better energy supply.

Latin America cannot simply rest on its energy-rich laurels. It is lucky to have plentiful traditional and non-traditional energy at its disposal, but it must move without hesitation towards more nimble and attractive institutional arrangements if it is to derive gains that equally benefit the region's poor and rich.

Official data and expert estimates place the required investment to expand the region's electricity generation in the next decade at about US$300 billion. The monies needed to increase oil and gas production reach above US$1 trillion. None of this investment will be possible without a strong partnership between the public and private sector. Our own experience shows that this understanding is possible and beneficial. The challenge is immense, but achievable.

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OPPOSITE PAGE: TOP PHOTO MEREDITH KOHUT; BOTTOM; NELSON GARRIDO, NELSONGARRIDO@GMAIL.COM NELSONGARRIDO.BLOGSPOT.COM

The Impact of Falling Oil Prices

Is Latin America Part of Global Oil Supply Adjustment?

BY LUISA PALACIOS

INTERNATIONAL OIL PRICES HAVE DECLINED BY 40% recently. Some of the region's oil producers have been better than others at adjusting to this reality. In more market-oriented countries like Colombia and Mexico, the collapse of oil prices has not translated into a full-blown crisis thanks to the flexibility of their policy frameworks. In these countries, their floating foreign exchange rate regimes are doing the work of helping their economies deal with the external and fiscal adjustment that such collapse in oil prices entails. But in those countries like Venezuela that are unable or unwilling to adjust, the oil price collapse is significantly deteriorating their dollar liquidity situation and leading to a serious macroeconomic crisis.

Most analysts first evaluate the oil price shock at the macroeconomic level; however, at the industry level, national oil companies also are under financial stress. As a result, their capital investment plans are being slashed. The growth prospects of the countries where they operate are then negatively affected as the national oil companies are generally the largest single company in the country. And this creates a negative loop since the oil production outlook of the region also faces uncertainty and pressure because investment is the only way to guarantee future production. As a result, the macroeconomic impact of the decline in oil prices gets magnified.

Oil production is already being affected in Mexico and Venezuela; Colombia also confronts downside risks. While Brazil had become the region's second most important producer surpassing Mexico last year, recently it massively revised its very aggressive oil production goals: the national oil company Petrobras now only expects a 700,000 barrels a day increase in five years, a sharp drop from the three million barrels a day increase it had previously forecast for 2020,

However unwilling, Latin America is becoming part of the global oil supply adjustment despite its very attractive oil and gas resources yet to be developed.

A big question is which oil industry in which country will be able to come out of this oil price shock in better shape. Mexico's shallow and deepwater resources, Venezuela's extra heavy Orinoco belt, Brazil's highly productive offshore pre-salt play, and the vast shale gas and oil resources of Argentina's Vaca Muerta are all contenders.

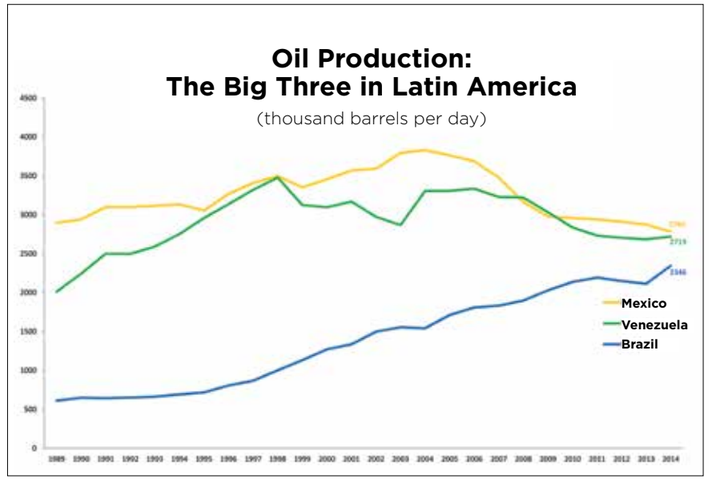
MEXICO: LIGHT AT THE END OF THE TUNNEL

The first casualty of the oil price adjustment was Mexico. The country had already experienced a decline in production of close to 100,000 barrels per day last year and has so far this year been hit with a further decline of more than 200,000 barrels per day in the January-April 15 period compared to the same period last year, mostly because of the sharp pace of decline in Cantarell, Mexico's second largest field. A decade ago, it produced two million barrels per day, but has only averaged 250,000 barrels a day in the first half of 2015.

While Mexico is an oil-exporting country, the country feels the oil price decline not through its external accounts, but through its fiscal accounts. Last year, oil income continued to represent about 30% of the government's total revenues. At the same time, Mexico's oil exports are only 9% of total exports, with oil and gas holding equal shares of total imports. As a result, Mexico's energy trade balance is already negative given its increasing dependence on U.S. natural gas and gasoline imports for its own consumption. In fact, this dependence will only increase in time given Mexico's aggressive plans to expand its pipeline infrastructure and the government has plans to quadruple Mexico's natural gas import capacity from the United States by 2018.

For countries such as Venezuela and Ecuador, such an increase in energy imports would be catastrophic, in part because of large energy subsidies. But Mexico no longer subsidizes energy prices. In fact, current gasoline prices in Mexico are above international prices. This price differential is effectively a tax on gasoline consumption, allowing the government to compensate somewhat for this year's decline in oil fiscal revenues from exports. Between January and April, gasoline taxes provided the government with an additional $5 billion in revenues. That meant that instead of falling by 50% in dollar terms, government oil revenues, which now include gasoline taxes, fell by only 30% in the first four months of the year compared to the same period last year.

Despite declining oil production, Mexico's oil future is looking bright thus far because of a landmark energy reform passed last year that opened the oil and gas sector to private capital after eighty years of absolute government control. The government is proceeding with its auctions of oil blocks this year and has so far announced tenders for about 50 blocks, with the first auction for 14 shallow water contracts slated to take place on July 15, followed by an additional five contracts in September and 26 onshore marginal fields in December. Still expected to come are oil tenders for deepwater, heavy oil and unconventional resources. Overall, Mexico plans to auction a total of 914 fields in the 2015-2019 period and that will allow Mexico to project oil production increases in the medium term, despite current declines in output.



SOURCE: BP STATISTICAL REVIEW OF WORLD ENERGY 2015

VENEZUELA: NO EASY WAY OUT

No country in the region is suffering the collapse in oil prices more than Venezuela, where oil represents 96% of total exports and more than 50% of fiscal revenues. The magnitude of the impact has significantly increased the risks that the national oil company PDVSA and the government will not be able to service their debt obligations.

While Venezuela is sitting on the largest oil reserves in the Western Hemisphere, increasing oil production as a way out of the country's severe economic and financial crisis does not seem to be an easy option. The oil industry does not operate in a vacuum and is not immune to the economic collapse in the country with an inflation rate that is the highest in the world (already at triple digits), widespread scarcity and a growth rate estimated by the International Monetary Fund (IMF) at -7% this year compared to last.

To cope with the situation, the government has significantly reduced imports—effectively starving the private sector of much needed dollars to continue operations. PDVSA seems to have stabilized production, after a decline of more than 100,000 barrels a day last year, and the government is believed to have raised about $10 billion in financing this year, if Chinese financing is included. Venezuela also seems to have reduced its subsidized sales of oil to Caribbean nations with preferential payments through the Petrocaribe oil alliance.

The reduction of subsidized oil exports and the raising of financing have not been sufficient to improve the country's dollar liquidity situation: international reserves have declined by almost $6 billion and by July 2015 were already below $16 billion, their lowest level since 2002. And this dollar liquidity situation is a concern because debt service to both the Chinese and bond debt investors is in the order of $15-20 billion annually.

It will be very difficult for the Venezuelan oil industry to operate successfully under such financial and economic conditions. But addressing them requires major changes to the current economic model, and this includes energy policy. In the absence of reform, oil production faces the risks of further declines. Venezuela seems to be becoming a more costly oil producer and PDVSA's cash flow situation remains under duress with arrears to its oil service providers in the order of $20 billion.

The capacity and willingness to carry out such a major change in economic and energy policy seem difficult today without political change. Any effort at policy adjustment has been aborted. A devaluation of the official exchange rate was needed to ease PDVSA's—and the government's—fiscal situation, along with a major adjustment of gasoline prices. At four cents per gallon, gasoline prices in Venezuela are the lowest in the world and do not even cover the cost of production, let alone the cost of importing the 100-200 thousand barrels per day in oil products that the country is having to import today.

But nothing has happened. In the meantime, Venezuela's production of conventional crude seems to be experiencing declining rates of more than 5%. The national oil company PDVSA seems to believe that the only way to compensate for this is by bringing heavy oil on stream from its vast Orinoco belt reserves. It currently has six different joint ventures to do so with Chinese, Russian and international oil companies like Chevron and Repsol.

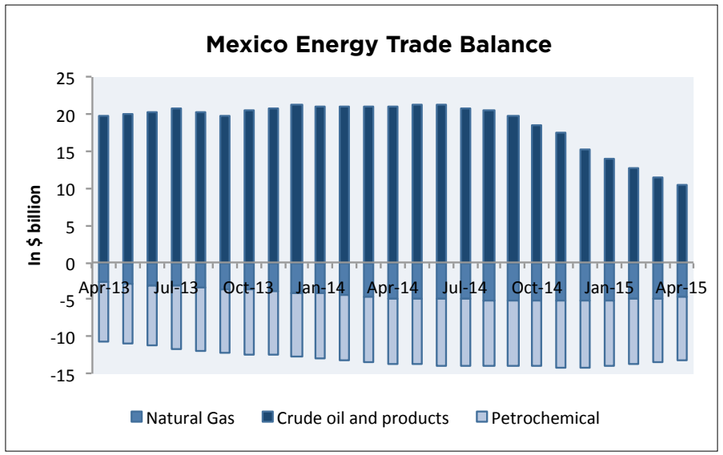
Still, as every new barrel of oil coming from Orinoco is significantly heavier, and given the limited capacity to upgrade this crude, it requires mixing it with light oil or diluents which Venezuela needs to import given declines in own light crude. This increases the marginal cost of oil production, making the economics of a 30% royalty—one of the highest on the planet—too costly in this price environment.

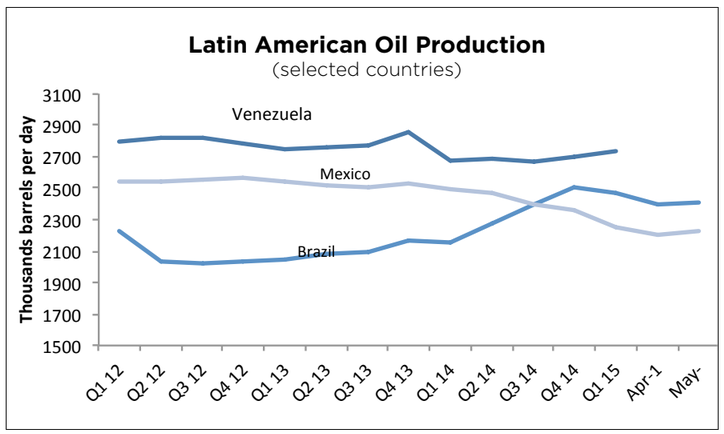
BRAZIL: WHEN IT RAINS, IT POURS

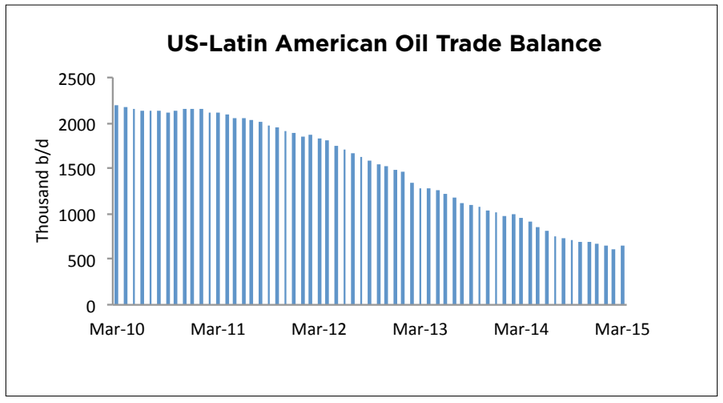
Brazil became Latin America's second-largest producer late last year, overtaking Mexico. But it is not necessarily oil prices that are clouding Brazil's oil outlook. Rather the national oil company Petrobras is bogged down in a severe corruption scandal that has left the company highly indebted, provoking major revisions in its 5-year capital investment plan (see the other articles in this issue on Petrobras by Simon Romero and Lisa Viscidi.)

All of Brazil's anticipated growth will

OPPOSITE PAGE: CHART COURTESY OF FRANCISCO MONALDI







Graph Sources: Mexico Energy Trade Balance (top), Source: Mexican Statistical Agency, INEGI Latin American Oil Production (middle), OPEC, ANP and Sener; US-Latin America Oil Trade Balance (bottom), Energy Information Administration

come from its pre-salt fields. Pre-salt refers to the oil reservoirs found under the thick layer of salt in Brazil's deepwater. These fields have proved to be highly productive, with production already at more than 700,000 barrels a day in May—expected to represent more than 50% of total oil production by 2020. Petrobras believes that presalt is still competitive at a $45-55 per barrel range.

Even if Brazil will see oil production increases, this internal crisis is having important consequences for economic growth as the oil industry represents about 13% of GDP. The corruption scandal is also significantly impacting Petrobras' local supply chain, including the most important construction companies in the country.

At the heart of this institutional crisis was a very aggressive industrial policy of local content requirement gone wrong. What this policy did was force Petrobras to spend more than 70% of its $40 billion annual capital expenditures—an amount which was already one of the highest in the industry—in the domestic economy to develop an oil service sector. It had to do this while at the same time subsidizing gasoline imports, as well as shouldering the very costly development of its offshore oil resources. And all of this without much help from any other company as legislative changes forced Petrobras to hold a 30% stake in any presalt development and be the sole operator.

Petrobras and the government are now having to pick up the pieces of its misguided policies in the midst of a very difficult macroeconomic adjustment which has already thrown the country into recession, taking with it President Dilma Roussef's popularity, now below 10%.

The only way out for Brazil's oil industry—and for Petrobras—is a major overhaul of the same energy policies that led to this crisis. This means a major revision of its pricing policy, local content requirement policy and presalt legislation (a bill to that effect is already in Congress).

ARGENTINA: COUNTER-CYCLICAL ENERGY POLICY

When the world oil price was more than $100 a barrel, government regulation did not allow Argentine oil companies to earn more than $50 a barrel. Now that oil prices have collapsed, Buenos Aires is going much higher than international oil prices by allowing its producers to realize $77 a barrel for their oil—much higher than international oil prices and even providing an additional subsidy of $3 a barrel, which means an average of $80 a barrel for Medanito light oil. Go figure.

But Argentina is defying the global energy trend in more than one aspect: its national oil company YPF announced that its 2015 $6 billion capital expenditure was unchanged from last year, continuing relentlessly in its quest to increase production (YPF's oil and gas output in the January-April period increased by 6% and 15% respectively in relation to the same period last year). YPF produces 40% of the oil output and about 30% of Argentina's 116 million cubic feet a day of gas production. And the rig count—which is a forward-looking indicator of oil production—is increasing in defiance of the worldwide trend.

Because Argentina is a net energy importer, the decline in oil and gas prices is actually helping Argentina's energy trade deficit, which fell by almost 50% in January-May in relation to the same period last year. This likely means that the annual $6.5 billion energy deficit in 2014 is likely to be cut in half, as terms-of–trade effects and lower volumes due to the sluggish economy help to significantly cut its $10 billion a year bill in energy imports to maybe $5 billion— contingent on normal winter weather.

However, some questions remain about a larger development of Argentina's vast shale resources, a possibly important source of growth for the country's economy in coming years.

The U.S. Energy Information Administration identified the nation as holding the world's second largest shale gas and fourth largest shale oil reserves. This translates to an estimated 802 trillion cubic feet of technically recoverable shale gas and 27 billion barrels of oil.

In April 2015 YPF, the largest shale operator in the country, reported that shale oil production remained very low at 22,900 barrels per day and 67 million cubic feet per day of natural gas from three joint ventures in Vaca Muerta: one with Chevron at the Loma Campana field, a second one with Dow Chemical at the El Orejano field, and a third joint venture with Petronas at La Amarga Chica field. Vaca Muerta has been compared to ExxonMobil's Eagle Ford shale field in Texas in terms of its oil and gas potential, but it is even larger in size.

A big question is which oil industry in which country will be able to come out of this oil price shock in better shape.

In the meantime, YPF continues with its relentless drive to emulate U.S. shale producers by reducing the costs of extracting shale oil and gas in Argentina. But despite a pro-business legal environment, the development of Vaca Muerta will not be contingent only on a better price outlook and continuation of cost reduction. It will be particularly dependent on the expected change in the governmental macro policy framework that could come after the October 2015 presidential elections. Necessary changes include the elimination of capital and import controls, moving to a floating exchange rate and the elimination of energy price controls.

U.S.-LATIN AMERICA ENERGY RELATIONSHIP

Equally important to understanding the impact of the oil price collapse on the Latin American oil producers is to understand why it has occurred. This supply shock was mostly generated by the U.S. shale revolution, which has been responsible for the oil oversupply in global oil markets. And this fact brings additional pressure to bear on the competitiveness of Latin American oil industries, which are neither the low-cost oil producers found in the Middle East, nor the competitive fiscal and legal regimes found in the United States.

U.S. shale oil and gas producers managed to bring more than one million barrels per day of oil into the market last year, while at the same time reducing cost and improving efficiencies at $100 a barrel. This process has accelerated even more this year, allowing a part of the U.S. shale oil and gas industry to be competitive even at these low prices. This will put even more pressure on the oil industries in Latin America.

The region's oil trade balance with the United States is still positive, but it has fallen to about 700,000 barrels per day from almost 4 million barrels per day a decade ago. The United States is not exporting its shale oil to Latin America directly, but U.S. oil is finding its way to the region through the surge in oil-refined products. And this is what is leveling the oil relationship between the United States and the region.

So which Latin American countries and oil industries can weather the challenges ahead? Mexico seems to be a good bet because, enjoying a solid macroeconomic framework, it has already done the homework of liberalizing its oil and gas sector, equating its pricing policy to international levels, linking its energy sector to that of the United States.

And while the potential is great in Venezuela, Brazil and Argentina, questions about their oil sectors will remain as they struggle either with uncompetitive energy policies, or with an inadequate macroeconomic framework or with both.

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GRAPHS BY LUISA PALACIOS

Peruvian Oil Production

Challenges and Opportunities

BY ELEODORO MAYORGA ALBA

THE PETROLEUM SECTOR I KNOW BEST IS Peru's, where I recently served as Minister of Energy and Mines. Because of the recent drop in prices, oil-producing countries are starting to adjust their contracts and review the sector regulation in order to protect their investments. In Peru the necessary changes have not been made, and there's a risk production will continue to decline.

The need for adjustments extends far beyond a matter of investments though. It affects the possibility of accessing new technologies to protect the environment and of fair consultations with indigenous and other communities. And if low prices spur low production, the very existence of a pipeline to get oil to markets may be threatened.

In 2014, Peru was slowly starting to reverse its declining production, but the drop in oil prices has had a strong impact. The country had been producing some 200,000 barrels of oil daily in 1980, but the lack of investment and unsuccessful exploration investments had caused a decline. By 2013, Peru was producing only 63,000 barrels a day.

The exception in this downward spiral has been the development of natural gas deposits. Concentrated in the area of Camisea, gas has enabled Peru to enjoy secure, clean and low-cost energy since 2004.

Before the last trimester of 2014, everyone thought oil production would increase. Forecasts indicated that 2015 would end up with a production of 72,000 barrels daily and reach 150,000 by 2020. But now, plans to develop small deposits of petroleum discovered in the northern jungle region are being postponed.

Current production is 58,000 barrels daily—a block less than anticipated. And it's feared that the Northern Oil Pipeline may have to close because of a lack of crude oil. What has happened? What can be done to reverse a situation that will have a negative impact on Peru's balance of payments and future investments?

I'd like to focus here on oil production in the northern and central jungle areas, leaving aside other regions, including Camisea's gas production. And I'd like to propose some steps to avoid declining production and to allow profits (the difference between world price for crude oil production and total costs of local production) to keep on benefiting the country on the national and regional levels, as well as business.

Many oil-producing countries are responding to the drop in oil prices through changes in contracts, particularly those signed for the more risky investments. These measures include deadline extensions for the exploratory phase, reductions in discount rates and royalties, and accelerated depreciation. However, a counter cost to these changes would be compliance with increasingly strict environmental standards and with social policies to commit more resources to benefit the neighboring communities.

RESERVES IN THE NORTHERN AND CENTRAL JUNGLES

The northern and central jungle regions have a potential of likely reserves in relatively small fields of 20 to 30 million barrels. None of these reserves could alone sustain the construction of a new oil pipeline: the success of oil operations in this region depends on the continuity of service of the Northern Oil Pipeline.

Strategic allies need to elaborate a plan that will develop these oil fields so as to profit each operator, allowing production to increase in the short run and to maximize the recuperation and value of assets in the medium- and long-term.

IMPACTED PROJECTS

Perenco, a French company associated with PetroVietnam, has stopped work in blocks 67 and 39 until oil prices go up. Its production costs—including transportation on barges of an essential dissolvent from the Gulf of Mexico and the cost of moving its own oil production to the first station of the pipeline—do not permit it to continue operations until the price of oil approaches US$70 per barrel. Perenco had plans to produce up to 60,000 barrels daily, but now limits its production to 1,000 barrels a day, which is sent by river to the refinery in Manaus, Brazil.

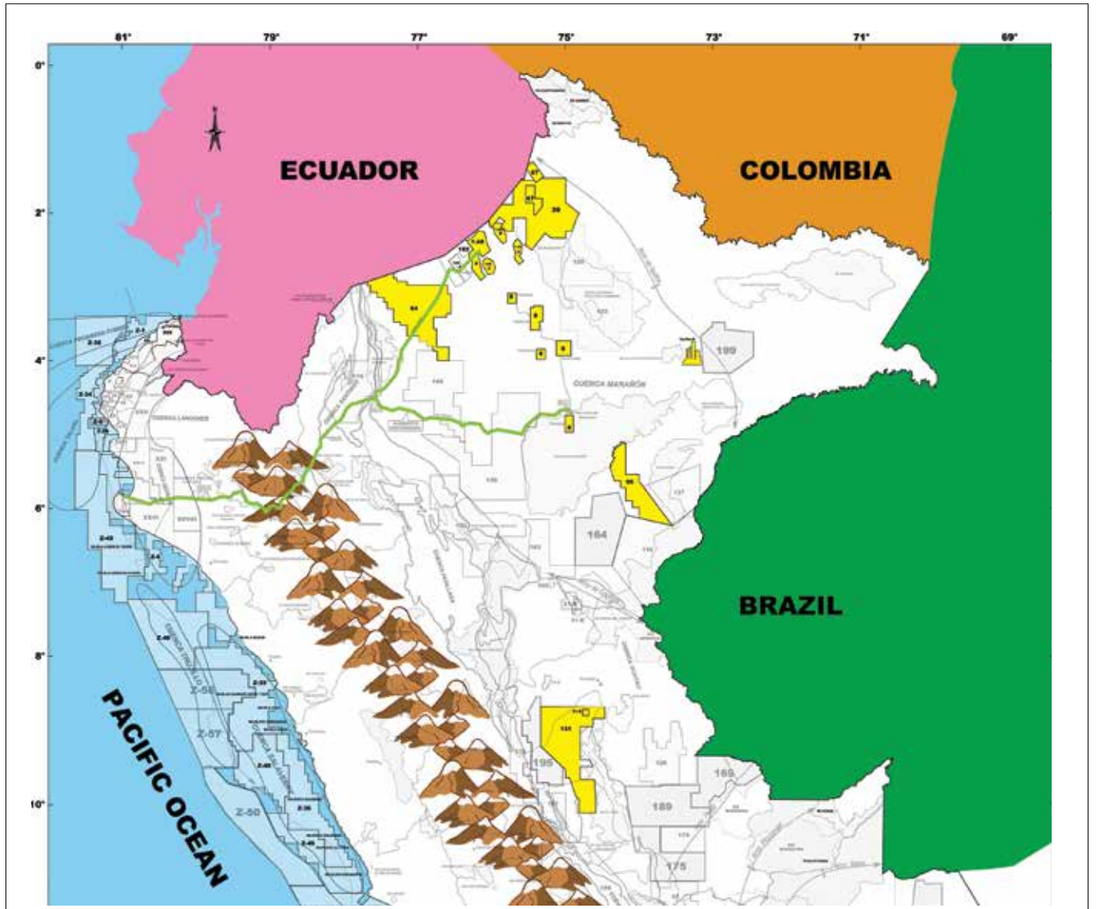
A Canadian company, Gran Tierra, has decided to sell its block 95 because of the fall in oil prices and disappointing explorations of a second well. In January 2014, the company estimated that the block had 61.5 million barrels of proven and probable reserves.

Another company affected by the drop in oil prices is CEPSA, a Spanish firm controlled by the International Petroleum Investment Company of Abu Dhabi. Together with the Canadian company Pacific Rubiales, which has 30% of the project, it operates block 131, which depends on the oil pipeline to get its production to the market. At the end of 2014, CEPSA began production in one well, and encouraging tests from it justified sinking two more wells. CEPSA has confirmed a small deposit capable of producing between 5,000 to 8,000 barrels daily. PETROPERU has been the major purchaser of this production. If the oil pipeline ceases to function, the production will have nowhere to go.

The Argentine firm PLUSPETROL has also experienced a severe drop in production. At the end of the 1990s, its block 8 was producing between 25 and 30,000 barrels a day; now—because of lack of investment and the intrusion of water—it only produces 8,500 barrels daily. Pluspetrol's block 1AB, now reconfigured as block 192, is currently under bid. Once it produced 100,000 barrels of oil daily; now it produces only 10,000. The accumulated production of oil for this block is 716 million barrels. Yet this block holds the country's greatest oil reserves. With its contract scheduled to end in August 2015, its production was evaluated for investment. Development of the proved reserves would increase production to 25,000 barrels daily in 2023, a figure that could be even greater if other reserves are discovered.

Even with low oil prices and the cost of importing the necessary dissolvent, this block provides royalties higher than 25%. Its potential encompasses proved developed reserves of 70 million barrels and an undeveloped potential of 90 million barrels, figures that justify a new 30-year concession. Oil wells with both heavy and light crude oil will permit the block to reach 28 million barrels a day by 2030. This scenario would include the development of the Chonta and Vivian reservoirs

Reserves	Proven and Probable Millions of Barrels
Block 1–AB	198
Block 8	68
Block 67	217
Block 64	55
Block 39	162
Block 95	62
Total>	**762**
source:Perupetro	chart by author



The map shows the placement of the oil blocks in Peru.

MAP BY ELEODORO MAYORGA ALBA

with exploration to determine if they hold sufficient amounts of light crude to compensate for the dissolvent imports.

For this all to work, the current bidding must be successfully concluded. However, a revision of the terms published by PERUPETRO, the oil regulatory agency, is worrisome:

• The deadline to present offers is quite short. The block has a number of fields in different areas, and a fairly complex infrastructure operating for years. Only those who have worked on this block (PLUSPETROL in particular) and have knowledge on the ground are in a position to present sensible offers; the rest of the companies might have to raise their offers.

• Another problem is the existence of payments for assets, as shown on the books. They are no longer realistic, given the low oil prices. Even if the price becomes effective after the second year and can be paid in installments, it still represents a significant burden in cash flow.

• Moreover, relations with the indigenous community have been fraught, and it has been difficult to implement the agreements made before the bidding process begins. The role of the Peruvian state in regards to PLUSPETROL, which has headed the operation for the last 30 years, and the ineffective way of their handling of agreements with the communities, can bring production stoppages and high costs for any company that starts up activities in this block.

• The option for a 25% participation of PETROPERU still up in the air, adds to the uncertainty. It would seem inconsistent for the board of directors to vote in the affirmative on a project with such environmental and economic challenges after turning down simpler and less risky projects. Anywhere else, the participation of the state would be welcome in order to facilitate the relations with the indigenous communities.

• The sequence of decisions that have to be made after a contract is signed doesn't leave time for research on how to improve the engineering practices for this block. To rate the offers only on the basis of who will provide the best royalties or the greatest number of wells leaves out consideration of the time and effort needed to research new technologies.

There is a risk of a further drop in production because of a delay in the bidding process or because the new operator does not have the necessary experience and needs more time to begin operations. In that case, production could go down to 8,000 to 9,000 barrels daily, creating a situation of very high tariffs and endangering the minimum production needed to operate the pipeline.

The operation of the pipeline depends on the volume transported and the tariffs charged. If the current formula is applied, there will be a significant increase in tariffs. The question is how to avoid the paralysis of the pipeline and how to increase production in line with the geological potential of the region.

RECOMMENDATIONS

a) The most pressing need is to maintain or if possible reduce the pipeline tariff, eliminating fixed costs such as depreciation and to reduce the discount rate from 12 to 6%, which ought to be the cost of the capital of PETROPERU. This measure would reduce the tariff during the current crisis period, but later there should be a period of recovery so as not to affect the economy of PETROPERU.

b) In the medium term, production must be increased through cooperation between all the companies involved. Otherwise each will face the problem of economies of scale in the costs of dissolvent and transportation. PERUPETRO, the government regulatory agency, should call up a working group that can coordinate realistic goals for oil production. As PETROPERU operates the pipeline and the Iquitos refinery, it should be part of this group independently of whether it participates in the operation of block 192.

c) I recommend contacting Petroamazonas, Ecuador's state oil company, which has signed new contracts to explore neighboring blocks of the border of Peru. The company must be approached because its production could generate the operating base needed by the pipeline.

d) CEPSA must receive incentives to elevate its production to 8,000 barrels daily to increase the amount of dissolvent available in the region.

e) The new operator of block 192 will play a crucial part in Peru's oil panorama. The bidding rules on this block should be revised because they will determine production in the near future. Combined with the drop in oil prices, a fall in oil production will generate a recession with high social costs for this region of the country.

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Solar energy in high-altitude Arequipa, Peru, is captured through steel and other metal; opposite page: wind energy in Peru.

ALTERNATIVE ENERGY

ABOVE: PHOTO BY RENZO NUÑES/OJOS PROPIOS; OPPOSITE PAGE: DOUGLAS JUARES, OJOS PROPIOS

Wind Energy in Latin America

Realizing the Potential

BY CARLOS RUFÍN

WIND ENERGY HAS ENORMOUS POTENTIAL IN Latin America. With its relatively low population density, vast distances and energy needs in remote places, Latin America offers an ideal setting to harness wind energy.

Energy needs in windy, but isolated or remote places, such as the Caribbean islands, the mountains and plateaus of the Andes and the Mesoamerican ranges, as well as the region's vast savannahs (*llanos, cerrado*, Chaco and pampas), can be met more efficiently by wind turbines than any other alternative. Wind energy is more easily adapted to scale than solar energy: compared to solar panels or solar concentrators, wind turbines generate more electricity relative to the area that they take up, and this difference is growing as wind turbines increase in size and efficiency. Thus, wind energy can be a more appropriate technology in isolated areas with significant energy needs. If planned with care, wind turbine facilities have little adverse effect on ecosystems, and in the region's vast uninhabited spaces, they can have few or no aesthetic and sound impacts either. Wind energy complements very well the region's hydro-dominated electricity grids, because hydroelectric generation can easily respond to the intermittence of winds, in contrast to thermal generation, which is far less flexible in general; and, at least in some parts of the region, the winds are strongest during the dry season, precisely when hydroelectric generation is most limited. Lastly, the relatively accessible nature of wind power technology means that it can be manufactured in the region, unlike other types of energy technologies. Brazil, for example, is requiring local raw materials and manufacturing in wind power installations, and one of the region's key players is an Argentine company, IMPSA.

Wind energy in Marcona, Peru.

Nevertheless, wind energy is still a relatively underexploited resource across the region, particularly in relation to its vast potential.

Several areas in the region are increasingly using wind power. The Caribbean, in fact, has a long history of use of wind energy; many sugarcane mills in the islands were powered by windmills before the advent of highly efficient steam engines burning bagasse (sugarcane fiber). But with the Caribbean sugar industry being displaced in recent decades by highly competitive producers in Brazil and elsewhere, the area confronts high costs of energy as the islands (with the exception of Trinidad) lack traditional energy resources. Not surprisingly, exploiting the powerful and constant trade winds has become once again a highly attractive proposition for the islands, with strong growth in Jamaica, the Dominican Republic and Aruba.

Mexico is, after Brazil (discussed at length elsewhere in this issue of *ReVista*), the second largest market for wind energy in Latin America, particularly in the southern part of the country, where wind conditions are most favorable. Costa Rica, with a strong commitment to renewable energy, has installed the largest number of wind power turbines in Central America, followed closely by Honduras. In the Southern Cone, Chile and Argentina are aggressively investing in wind power, and both countries are expected to overtake Mexico in terms of total installed capacity over the next ten years. Lastly, new projects are also taking shape in Peru and Uruguay.

Nevertheless, wind energy is still a relatively underexploited resource across the region, particularly in relation to its vast potential. For this potential to be realized, energy policy needs to overcome the mindset that has dominated the sector throughout its history in Latin America and the Caribbean: the obsession with hydroelectric generation. Despite the increasing costs of building large dams in more and more distant locations, more protests by indigenous communities affected by dam construction, and growing awareness of the environmental costs of such facilities, many governments in the region remain convinced that tapping the remaining hydroelectric potential is the best way forward, and are spending vast sums of money on projects like the Madeira River complex in Brazil. The old mindset also permeates the operation of the region's national grids, accustomed to the predictability of generation based on dams with large reservoirs of water, as opposed to the greater short-term intermittence of individual wind power installations—despite the reality of climate change, which is altering hydrological patterns and making hydro generation less predictable too.

Many Latin American countries, having restructured their electricity sectors to give a more prominent role to private ownership of generation facilities, also face the challenges of attracting private investment in wind power. Wind energy facilities face a different kind of risk than those of technologies with a longer track record. Instead of hydrological risks or the volatility of fuel prices, wind power depends on a resource—wind—that is less well known throughout the region, and that follows its own patterns. Such uncertainty deters private investors. Innovative policies, perhaps modeled on those successfully employed in Europe, offering a fixed price for every unit of energy generated, must be put in place to overcome investors' reticence.

Discharge side of a hydroelectric plant, Péligre Dam in Haiti: in the background, the dam with the spillways for discharging excess water; in the foreground, the powerhouse, where the turbines and generators are located.

Although environmental and social impacts are less severe than those for large dams, the best locations for wind farms may be in indigenous lands; transmission lines may need to cross such lands or other environmentally sensitive areas. Wind projects in Mexico and elsewhere have already experienced setbacks due to local opposition. These projects are no different from other kinds of resource extraction, and as such they require consultation and prior consent of affected communities, which in turn may entail sharing some of the benefits with these communities. Policy makers, private developers and lenders must be aware of this broader context and develop appropriate protocols and standards to engage these stakeholders to everyone's satisfaction.

To sum up, wind power can and should play a major role in the future of energy in Latin America. It is up to policy makers and the private sector for the potential to be realized.

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ABOVE: DAVID HUAMANI B./ OJOS PROPIOS; OPPOSITE PAGE: ALBERTO LEVY <ALBERTOL@IADB.ORG>

The Power of the Brazilian Wind

How Wind Energy Became a Competitive Source

BY MAURICIO B. C. SALLES

BACK IN 1992, THE FIRST WIND TURBINE IN BRA-zil was about to be installed. The chosen place was also one of the most beautiful places in the country (or even on earth). At that time, the archipelago of Fernando de Noronha had only diesel generators to power its electricity demand, due to the distance between the main island and the continent — 545 kilometers from Recife, the state capital of Pernambuco. The Brazilian electricity generation in that year relied about 92% on hydropower alone.

Almost a decade later, in 2001, a shortage of rain caused the water of the hydropower plant reservoirs to drop to very low levels. Brazil experienced an electricity crisis. As a result, the government recognized it needed to find a more flexible electricity generation model considering different primary sources of energy. Academic researchers had long recognized this fact, but it took a crisis to make the government see the importance of the possibilities they envisaged.

Wind power in the Valley of the Winds (Vale dos Ventos), Brazil.

PHOTO COURTESY OF ABEEólica

To cope with the problem, the use of other energy sources such as coal (3.4%), gas (3.2%), oil (4.9%), and nuclear (4.3%) increased, lowering the hydropower sources to 82%. Between 2000 and 2001, electricity use dropped almost 8% because of energy rationing. Nevertheless, in 2002 the demand started to grow again, as in any other developing country. Brazil needed new electricity generation capacity and was waiting for the first governmental action towards developing wind energy.

In 2004, the federal government began to encourage the use of other renewable sources such as wind, biomass and small hydroelectric plants (SHP) through the Program of Incentives for Alternative Electricity Sources (PRO INFA). By coincidence, that was the year that I defended a Master's Degree at the University of Campinas (UNICAMP) centered on Wind Power in Power Systems (and subsequently wrote one of the first theses on the subject in Brazil). Although PROINFA was not a very successful governmental program, it was certainly an important starting point to begin the new development of wind power in Brazil.

The first governmental auction that included wind power took place in 2009, just after my Ph.D. thesis defense at the University of São Paulo (USP). During the two previous years I spent at a research institute at RWTH Aachen University in Germany, I learned how far behind Brazilian wind power was: the discussions in Germany were about massive constructions of offshore wind farms located at the North and Baltic seas and many manufacturers competed to sell wind turbines in the market.

A few years later, a government agency (the Growth Acceleration Program-PAC) began to focus on the implementation of a wind industry in Brazil, offering incentives to launch new enterprises and produce domestic equipment. Due to high competition in bids for energy production, prices of wind energy have been gradually reduced, positively contributing to the diversification of energy sources. Almost 300 megawatts of wind power capacity were offered at the lowest price ever at a 2012 auction. The Brazilian federal government contracted all the energy that will be produced by those wind farms for a 20 years period. The megawatt per hour (MWh) of wind energy was purchased for less than US$48 (converted from Brazilian currency on 12/14/2012).

These wind-power projects started during a period of major technological evolution of wind turbines, which improved performance through better aerodynamics of the blades, advanced mechanical transmission speed systems (gearbox) and new control and operation strategies for turbines. As a result, wind power has become a very competitive source, generating energy at the same price or lower than hydropower plants. In the first semester of 2015, the use of wind power compared to hydropower was 4.2% and 62%, respectively. The production of wind power energy does not reach its maximum capacity on a constant basis because the wind does not blow all the time—it fluctuates according to the wind patterns. Nevertheless, these numbers show a considerable improvement.

Installed wind power grew from almost zero in 2004 to around 6.2 gigawatts (GW) in the first half of 2015. The Global Wind Energy Council's (GWEC) last reported ranking indicates that Brazil was in 10th place for worldwide installed capacity by December 2014. The expectation is that the country will move to 7th place by December 2015.

POTENTIAL OF INSTALLED CAPACITY

Brazil recently became one of the top five global investors in wind energy and renewable energy. The National Bank for Economic and Social Development (BNDES) ended the year 2014 with an equivalent of 2585 MW of installed capacity investment approvals for new wind power projects. According to the *Atlas of the Brazilian Wind Potential* (preliminary studies for turbine heights above 246 and 328 feet—73 and 100 meters, respectively), the Brazilian territory could have around 350 GW of installed capacity. The potential for offshore installations is not yet exactly known, but the National Institute for Space Research (INPE) concludes in a recent study that the offshore wind capacity potential for the Brazilian coast in water depth up to 328 feet (100 meters) is 600 GW. If you consider the current power capacity of the entire Brazilian energy system to be almost 137 GW, the wind potential is huge. Onshore and offshore together account for almost seven times the installed capacity of all sources and 154 times the already installed wind power capacity.

In this sense, the investments in the Northeast and southern regions are changing these areas of Brazil. More recently, new studies have pointed out a great wind potential also in the southeast in states such as São Paulo, Minas Gerais and Espírito Santo. With the current growth rate and a coastline of 5,600 miles, the country is among the world leaders in installed capacity. Because of the Northeast's strong and constant winds, several companies have been especially attracted to the region for both energy production and installation of the transmission lines. Rio Grande do Norte, for example, is the first Brazilian state to have more than two gigawatts of installed capacity with 80 wind farms: it has become Brazil's main producer of this type of electricity generation. However, the Northeast state of Bahia is constructing many wind power plants and will very soon reach first place.

WIND POWER GENERATION POTENTIAL

Wind power generation potential depends strongly on the wind speed and the efficiency of the turbines. Wind power installed capacity, however, is directly connected to job creation, as well as the selling and buying of equipment (we will get back to that). Brazil is said to have better geographic conditions than Europe and the United States, because the rate of change in wind speed and direction, as well as the turbulence levels, are lower. Wind farm revenue is strongly dependent on this issue and new R&D policies need to create incentives for the adaptation of the European and American designs to Brazilian wind characteristics.

Besides promoting sustainable energy development, the installation of wind farms brings several benefits to the population in areas around the power plants. As most of the farms are built in areas with a poor standard of living as measured by the Human Development Index (HDI), the entry of large business groups has brought new investments to these small cities. Compensatory measures (included in the permit) and social responsibility policies have been carried out to a large degree. Current social projects include free community courses, construction of recycling plants, advice to farmers, modernization of fishing boats and construction of tanks for water storage, among other initiatives that vary according to local needs.

The wind power sector creates many jobs (temporarily or permanently); how many depends directly on the installed capacity. Rural residents have been trained to work in the sector, and local demand for services and products has grown. According to the Brazilian Association of Wind Energy (ABEEólica), 120,000 directly related jobs had been created in Brazil by 2013. In 2014, 37,000 jobs were created and investments were expected to reach more than US$60 billion by 2018. Recently, Presidents Barack Obama and Dilma Roussef announced a joint agreement to generate 20% of electricity power through renewable resources by 2030 (excluding hydropower plants).

These jobs are mainly temporary during the construction of the wind farms, although some permanent jobs remain, mainly in the areas of management and maintenance. The projects also serve as a source of income for smallholders because a portion of their land is leased to house the wind farm, usually with 20-year contracts. In these areas, agricultural and livestock activities still can be carried out at the same time.

Beyond Brazil, the integration of renewable energy into the electric grid is facing many challenges. Germany sets a good example of high penetration of renewable energy. In order to cope with the pre-defined levels of reliability, other sources of energy must be connected to the grid, ready to begin generating electricity in case of a sudden lack of wind. In the case of Germany, the backup source of energy is gas or coal. One of the best alternatives to increase the penetration of renewable is probably energy storage systems, but those are still very expensive and the most promising technologies are only in the infancy stage of development for large amounts of energy. My research as a visiting scholar at Harvard University is about advanced energy storage systems that might allow more renewable energies in power systems.

What is going to be unique in Brazil and will be even more interesting than the seasonal complementarity (between hydro and wind) is the fact that we could use the flexibility of existing hydropower plants to back up the fast changes in wind speeds (because sometimes the wind can stop blowing in an entire region). The large hydropower plants reservoirs in Brazil can be considered great storage systems. This combination would enable high levels of wind energy penetration and would turn the Brazilian electric power generation into one of the most successful sustainable electricity matrices in the world. That will happen if the wind does not stop blowing, the rain keeps falling on the right places and the rivers continue to flow (not considering the negative impact of big reservoirs, which is another long and interesting discussion).

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Ana Maria Peres, *a Brazilian journalist and former resident of Cambridge (MA), collaborated with this article.*

Solar Energy in Chile

Development and Challenges

BY CLAUDIO A. AGOSTINI, CARLOS SILVA AND SHAHRIYAR NASIROV

FOR SEVERAL DECADES, CHILE HAS STRUGGLED to have a stable and reliable mix of energy sources to satisfy its growing needs. In the 1980s, the country relied heavily on hydroelectricity, considered almost the sole solution to its growing energy requirements. As a result, every time the country faced a drought, there were even periods of blackouts and rationing because not enough energy was being produced.

In the mid-1990s, a combination of continued rapid growth in energy demand, increasing environmental concerns regarding large hydro projects, and the unreliability of hydropower prompted the Chilean government to diversify energy sources by encouraging the use of low-price natural gas from Argentina. The low-cost energy from the imported natural gas made it more attractive to build combined-cycle power plants instead of relying on large hydro plants and coal. Thus the energy sector invested heavily in this source, building four pipelines from Argentina, setting up new gas distribution networks and constructing a half a dozen new combined-cycle power plants. In 2004, natural gas accounted for 26% of Chile's total energy consumption, of which 80-90% came from gas supplied from Argentina. As a result, in 2004 the Argentine government restricted the volume of gas exports to Chile in order to relieve its own domestic gas shortages. In just a few years, the gas supply to Chile stopped. This brought about another energy crisis in which generators were forced to replace gas-fired electricity with expensive and more polluting diesel generation, and the government promoted the construction of liquefied natural gas (LNG) terminals to compensate for these changes and have another alternative to Argentine gas.

The successive energy crises have taught us a valuable lesson. The country is now more concerned with energy diversification, understanding its important role for the security of the system. The country has learned that short-term gains come at a high long-term cost. In addition, the economy's dynamism over the last decades, including the significant improvement in the welfare of the population (poverty, for example, has decreased from 40% to 13% in two decades), has doubled electricity demand. Chile is now the country with the highest energy consumption per capita in Latin America, well ahead of larger countries like Argentina, Brazil and Colombia.

Chile is also considered one of the most attractive countries for the development and deployment of renewable energy technologies (RET), mostly because its geographic location and diversity provide abundant renewable energy resources (RES). Significant potential exists in the use of biomass, hydropower, geothermal, solar, wave and wind energy. In particular, Chile has one of the largest solar potentials in the world. With almost 356 days of clear skies, high solar radiation and low humidity, the Atacama Desert in northern Chile offers excellent conditions for generating solar energy. Therefore, adding solar energy to the energy mix can be an important opportunity to contribute to the country's energy diversification strategy.

To attract renewable energy investment, several new regulatory incentives have been introduced. In 2008, the Chilean government took a significant first step forward by requiring energy-generating companies to include at least 5% of their electricity from non-conventional renewable energy sources by 2010, without including large hydro (only up to 20 MW). This quota of renewable energy set a 5% target from 2010 until 2014 as the transition period, with 0.5% increments from 2015 through 2024, when generators are expected to produce 10% of power generated through renewable sources. If companies do not comply with the quota, they have to pay a fine, which doubles if the incompliance occurs again.

The Chilean group met with NREL researchers in Denver, Sandia in Albuquerque and the University of Arizona in Tucson and explored the latest technological developments.

With almost 356 days of clear skies, high solar radiation and low humidity, the Atacama Desert in northern Chile offers excellent conditions for generating solar energy.

Although the fines are in some cases cheaper than the cost of compliance, the policy has been quite successful, and energy generation from RES has met or even surpassed the defined quota of 5%. Renewable energy generation reached 7% of the country's total energy generation in 2012. Until early 2012, small hydro and biomass were the leading renewable technologies used for the compliance of the legal quota, accounting for almost 90% of total renewable generation. However, during the last couple of years, other renewable technologies, including solar and wind, have started to play a more significant role.

In 2013, the Chilean government increased the quota by doubling its renewable-energy target from the previous goal of 10% by 2024 to 20% by 2025. Even though this new target provides attractive incentives to invest in the development of renewable energy projects, the amount of investment in new capacity required to reach the 20/25 target is quite significant. In fact, the new renewable energy capacity that should be added to the current energy matrix in the next 10 years to reach the target is much higher than the average annual renewable capacity that entered the matrix during the last five years. Additionally, to reach the renewable energy target of 20% by 2025, electricity grids will have to be upgraded and expanded.

Investors in renewable energies in Chile also face significant challenges. Although the Chilean government has shown interest in promoting the development of RES, a number of obstacles remain, resulting in a moratorium on several projects. Most of these projects are wind and solar technologies, with only around 10% in terms of capacity realized thus far, despite having environmental approval.

The most important barriers that renewable energy projects face in Chile are the high cost of the initial investment, limited access to financing, opposition from local communities, the practical and regulatory difficulties to connect to the grid, and lack of interest from large consumers to sign long-term contracts with intermittent sources (solar energy is produced only during the day and wind energy is produced only when there is enough wind blowing; solar and wind have plant factors of 30% or 40% at most). Removing or at least mitigating these barriers and creating further incentives remains a key challenge for the development of the Chilean renewable energy sector.

The evidence increasingly supports that solar energy has great potential to become a major source of clean and secure energy in Chile. In addition to overcoming the hurdles facing many renewable energy projects, both misconceptions about solar energy and some of its unexpected benefits must be explained.

Even as the costs of solar power continue to decline, the public and many policymakers perceive solar energy as "too expensive"—thinking that solar energy would lead to increased energy prices. However, solar panel prices per watt generated have decreased 86% between 1996 and 2013 because of sig-

PHOTO: COURTESY OF SERC/CLAUDIO AGOSTINI

Although solar power's most obvious benefit is the environmental advantage from producing less CO2 emissions than fossil-fuel-burning technologies, the use of solar energy has a potentially large social value that is missed by traditional cost-benefit analysis.

nificant technological advances. The costs, therefore, are becoming increasingly competitive with respect to other technologies. If pollution caused by the use of fossil fuels such as coal and diesel were figured into the costs through the implementation of corrective taxes, solar energy cost would become even more competitive.

Although solar power's most obvious benefit is the environmental advantage from producing less CO2 emissions than fossil-fuel-burning technologies, the use of solar energy has a potentially large social value that is missed by traditional cost-benefit analysis. Solar energy can strengthen the economy in rural areas because network extension of traditional energy systems is typically not a viable economic option for these communities. In isolated rural areas with lack of access to electricity, grid extensions are often not cost effective. Therefore, isolated, or off-grid, small solar energy systems can provide a sustainable and cost-effective alternative to the diesel based solutions that are typically deployed in such areas. Chile has more than 3,500 isolated rural communities with no access to energy networks, many of them lacking access to roads and infrastructure to maintain the flow of fossil fuels.

Solar energy has now started to play a greater role in the energy matrix of the country. There are still some problems that need to be overcome to allow the full deployment of its large potential, but a future with cleaner energy and sustainable development is becoming increasingly feasible.

Achieving the ambitious renewable energy goals and overcoming existing barriers require strong, consistent and balanced policy support by the government. Unless the Chilean government takes a leadership role establishing prioritized areas of policy interventions to address challenges rapidly and properly, it could miss a chance to materialize large-scale solar development and to recoup the benefits of solar energy investments for the development of its communities and regions' economic growth. Establishing a policy framework to accelerate market competitiveness, supporting the needed confidence for investments in local technology advancement and manufacturing capacity, facilitating large-scale solar grid integration, implementing new financing and business models, expanding international collaboration to provide accelerated learning and knowledge transfer to Chile, and improving training, education and awareness for solar energy technologies are among the priority policy actions to be taken shortly.

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Geothermal Energy in Central America

Under the Volcano

BY JACQUES E. C. HYMANS

WHEN WE THINK ABOUT GLOBAL TECHNOLOGY leaders, Central America does not typically come to mind. But Central American countries have indeed been in the vanguard in their use of geothermal energy: an abundant, constant, efficient, renewable and low-carbon source of electric power.

Twenty-four percent of El Salvador's electricity comes from geothermal. That figure places it second out of all countries in the world in its level of reliance on this power source. (Iceland is tops.) Meanwhile, fifteen percent of Costa Rica's electricity comes from geothermal, as does ten percent of Nicaragua's and five percent of Guatemala's. Compare those numbers with the worldwide figure of 0.3 percent. The basic reason for Central America's geothermal energy riches can be summed up in one word: volcanoes.

Even more impressive is the amount of geothermal energy that Central Americans have under foot, but so far failed to exploit. World Bank reports indicate that the countries of the region may have up to 25 times more geothermal energy than they are currently using, and that geothermal power alone could cost-effectively satisfy their entire electricity demand.

Yet the Central Americans have added only a relatively small amount of additional geothermal plant capacity since returning to peace and democratic governance after the end of the Cold War. The region's geothermal production did increase approximately fivefold between 1990 and 2012—from 747 to 3,542 giga-

NICARAGUA: MASAYA VOLCANO IN NICARAGUA. PHOTO BY JOSÉ GABRIEL MARTÍNEZ FONSECA/SVALDWARD INK 2012 (FLIKR)

Above: Volcanos in Guatemala; Opposite page: women walk past Caripito Refinery.

watt-hours per year (GWh/y). But during the same time span, electricity generated from imported diesel fuel exploded from a mere 16 to 12,345 GWh/y. Overall, imported fossil fuels accounted for only ten percent of the region's electricity generation in 1990, but today they account for over forty percent. The region's marked shift away from renewables such as geothermal and hydroelectric power since the 1990s is highly problematic from both environmental and economic viewpoints. When oil prices spiked in the mid-2000s, the newly fuel import-dependent Central American countries faced financial shortfalls as high as three percent of GDP.

The 1990s Washington Consensus liberalization of energy markets was a main cause of Central America's increased dependence on fossil fuels, to the detriment of domestic renewables such as geothermal. In the Central American context, geothermal energy is very economically competitive in the long run, but profit-seeking companies are deterred by its high up-front costs and long lead times before any return on investment. Therefore they prefer to build standard thermal power plants instead.

The Central American countries certainly did not forget about their geothermal riches after the 1990s. Guatemala, Honduras and Nicaragua tried to use exploration concessions to entice foreign companies to develop the geothermal sector, but this proved insufficient to promote significant new investment. El Salvador pursued a public-private geothermal partnership with the Italian multinational ENEL Green Power, but the company showed a strong preference for generating sure profits from existing plants over investing in green-field development, and the two sides ended up in an epic, eight-year-long legal and political battle that is only now coming to an end with ENEL's decision to sell out and depart from the country. The only truly bright spot for geothermal—and for renewables more generally—has been Costa Rica, whose decision to defy the Washington Consensus and keep the Instituto Costarricense de Electricidad in government hands paved the way for longer-term thinking about how best to satisfy the country's energy requirements.

Nevertheless, there is considerable momentum today for further development of the geothermal sector in Central America. The main impetus is coming from a country that sits on the other side of the "ring of fire": Japan. Japanese companies have dominated the global geothermal plant equipment market for decades, in part thanks to strategically placed foreign aid offered by the Japanese government. Now Japan is redoubling its efforts to promote the sector worldwide. In August 2014, the Japan International Cooperation Agency extended a $550 million low-interest loan to Costa Rica to support the construction of three new geothermal power plants, which are expected to nearly double the country's geothermal production when they go into operation around 2020. The Japanese are also providing major support for a Latin America-wide geothermal development initiative that was initially proposed by climate-conscious Germany.

The irony is that Japan has been slow to exploit its own massive domestic geothermal potential and has barely added any plant capacity since the 1990s. Stymied at home, Japanese geothermal plant builders convinced the government to support them abroad. But today, with Japan facing persistent energy woes following the Fukushima nuclear disaster, many industry analysts are expecting a geothermal renaissance inside Japan. If that renaissance does indeed come to pass, will the Japanese still remember their plans for Central America?

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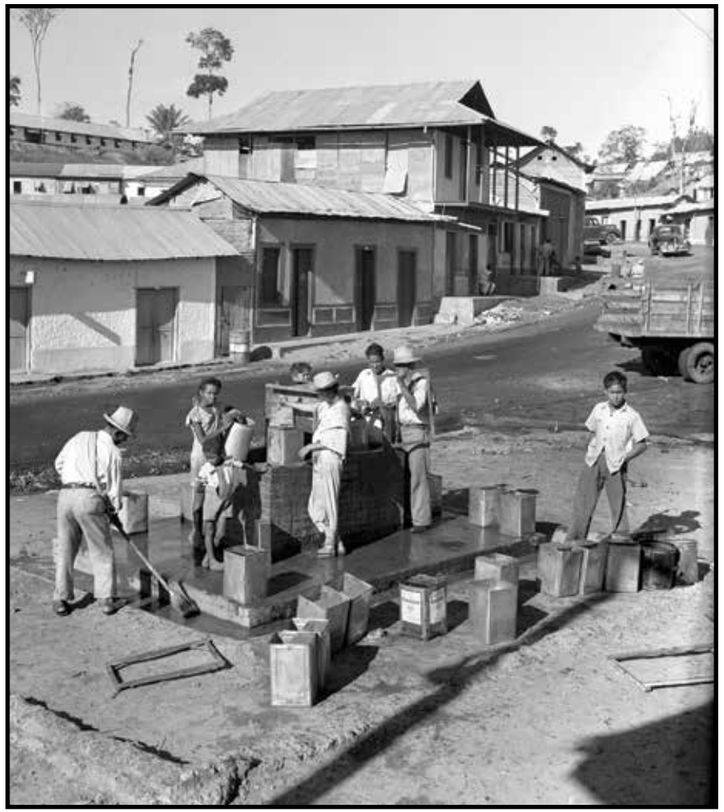
PHOTO ABOVE, CARLOS SEBASTIÁN. OPPOSITE PAGE: UNIVERSITY OF LOUISVILLE, STRYKER COLLECTION SPECIAL ARCHIVE

LIVING WITH OIL

Life in a Venezuelan Oil Camp

Tío Conejo Meets Uncle Sam

BY MIGUEL TINKER SALAS



I GREW UP IN A VENEZUELAN OIL CAMP. EVER since I can remember, I have heard both Spanish and English spoken all around me or conveyed through music or films. With my family, I ate traditional Venezuelan *arepas, cachapas, carne mechada* (shredded beef), fried plantain, and black beans, but invitations to dinners at friends' houses often meant sampling curry goat, roti and *thali,* borscht, or U.S.- style barbecues.

In many ways, Caripito, the oil town where I was raised, embodied the changes occurring throughout Venezuela after the discovery of oil. In 1930, the Standard Oil Company of Venezuela built a port facility and began work on a refinery in this town, in the state of Monagas in eastern Venezuela, to process oil from fields in Quiriquire, Jusepin and Temblador. The promise of the oil attracted Venezuelans from throughout the country; many caripiteños (people of Caripito) had roots in the adjacent state of Sucre. In succeeding decades, people from Trinidad, Italy, Lebanon and even a handful of Russian exiles also made their way to Caripito. By 1939, Caripito had a population estimated at about 5,000 people, some 300 of whom were "white Americans." In Caripito, as in most oil camps, to be white increasingly became synonymous with being a U.S. expatriate. By 1960, the total population had soared to a little over 20,000 people.

At an early age I became acutely aware of how different the oil camp experience was from the rest of Venezuela. After several years of living in the residential enclave, and seeking to avoid the demanding social expectations of the camp, my parents moved to Los Mangos, a neighborhood of Caripito. However, they also recognized the importance of straddling both worlds, and my mother dutifully drove me everyday to the company school and our family selectively participated in many camp activities.

After oil was discovered in 1914, Venezuelan production was concentrated in the interior of the country, where infrastructure and sanitary conditions had improved little since the 19th century. To ensure operations, foreign companies took charge of basic services including electricity, water, sewage, roads, housing, health services, schooling and a commissary. In these rural areas, the companies supplanted the state, and local communities became dependent on foreign enterprises for basic services.

Standard Oil Company of Venezuela (later Creole Petroleum, a subsidiary of Standard Oil Company of New Jersey), and Shell Oil built residential camps to house their employees. In classic Jim Crow fashion, the companies created distinct areas for foreigners, typically white U.S. employees or "senior staff," Venezuelan professionals or "junior" staff, and more modest housing for workers. The senior staff clubs included a pool, golf course, tennis and basketball courts, as well as bowling alleys while the workers club typically had a baseball field, a *bolas criollas* court (bocce), a bar and a dance floor. In spite of this hierarchy, by the 1950s the camps became symbols of U.S.-sponsored "modernity," with orderly communities, higher salaries and access to a full range of services that sharply contrasted with conditions found in the local Venezuelan settlements.

The camps represented an improvised and largely transitory society made up of residents from different parts of the United States and Venezuela. The camps allowed Venezuelans to interact with people from other regions, races

PHOTO ABOVE: UNIVERSITY OF LOUISVILLE, STRYKER COLLECTION SPECIAL ARCHIVE

and countries. With few if any roots to the local community, workers were frequently transferred between camps, and the company promoted an *esprit de corps* among its employees that centered on an all-encompassing corporate culture. Company practices favored hiring family members, thus handing down values such as the "American way of life" from generation to generation.

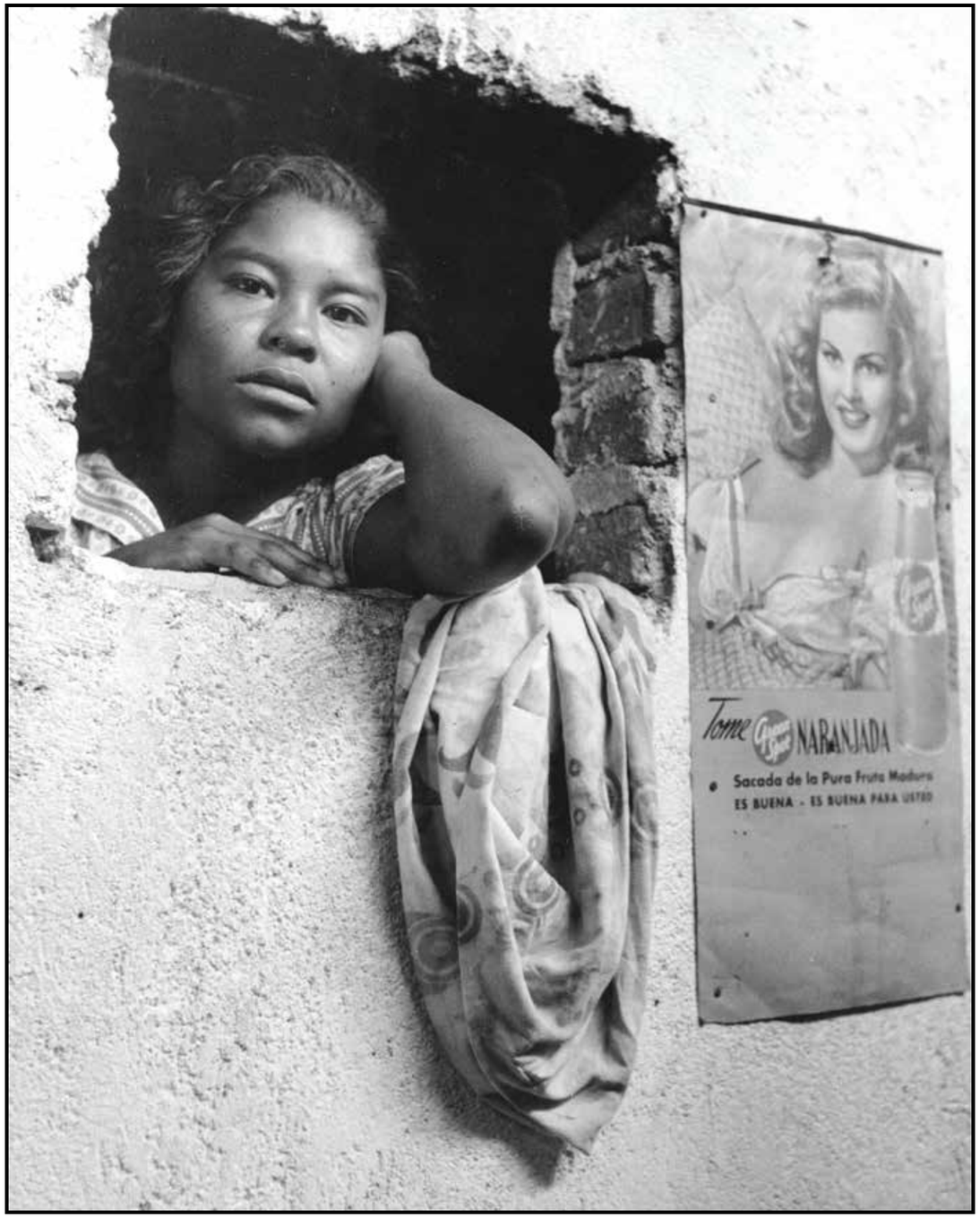
Yet despite their artificial nature, the camps left an enduring legacy in Venezuelan culture and society. For the generations that worked in the oil industry, the camps reinforced their image as a privileged sector of Venezuelan society. Just as importantly, the camps were sites of cultural and social exchange, with the "American way of life" influencing everything from politics to values. Those employed in the industry expected the Venezuelan state to be the guardian of this distinctive lifestyle. Many residents retained a collective nostalgia for the experience of the camps, overlooking the racial and social hierarchy that prevailed and the detachment that existed from Venezuelan society.

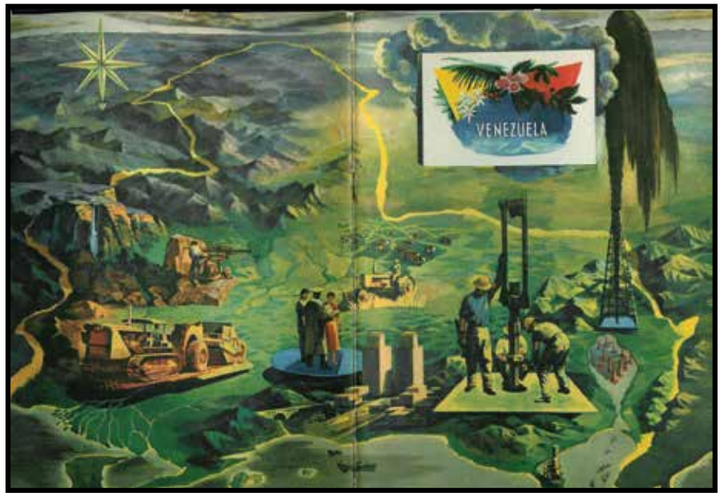
Caripito was typical of this oil town culture. The same ships that navigated the San Juan River to load oil also brought an array of U.S. fruits and canned products for sale in the camp commissary. I still recall the amazement of eating individually wrapped red Washington apples for the first time, or savoring crisp Mexican tortillas that came in vacuum-sealed metal cans. Long before McDonalds appeared in Venezuela, the soda fountain at the company club regularly served the "all American meal" consisting of hamburgers, fries, and Coke. The Venezuelan diet quickly incorporated U.S. culinary preferences and tastes.

Like other children in the camps, I went to a bilingual company school that incorporated both the Venezuelan and U.S.-mandated curriculum. To a certain extent,

Opposite page: workers dig a well in Caripito; This page from top: a Venezuelan work crew takes a break in Caripito; a Coca Cola machine at a Shell gas station reflects the prevailing "American way of life"; a Venezuelan work crew poses on the way to work in Caripito.

TOP PHOTO: UNIVERSITY OF LOUISVILLE, STRYKER COLLECTION SPECIAL ARCHIVE BOTTOM PHOTOS, COLLECTION OF MIGUEL TINKER SALAS





Opposite page: A young Venezuelan woman looks pensively out of her humble abode, which is posted with an ad for orange soda. Expatriates often overlooked the prevailing racial and social hierarchies. Above: a colorful road map produced by Citibank Venezuela in the 1950s.

exposure to a bicultural milieu shaped the consciousness and personal sensibilities of people like myself who inhabited the camps or its environs. Beyond simply the ability to speak both languages, the camps conveyed the importance of dealing with difference. This experience, however, was not shared equally, and it usually fell on the Venezuelans to learn English. Besides understanding English, familiarity with U.S. norms and customs proved essential for Venezuelans seeking to advance in the company. Interacting with foreigners became natural, but so did the imposition of a social racial hierarchy reinforced by U.S. expatriates at the top of the social order.

Festivities in oil camps highlighted the extent to which the camps represented self-contained enclaves of U.S. culture in the heart of Venezuela. Seldom if ever questioned, the pervasive influence of the U.S. oil industry made political and cultural ties with the north appear normal. Celebrations of the 4th of July melded with Venezuelan independence on the 5th of July, becoming shared events that allowed politicians and company officials to make largely perfunctory claims of solidarity. Expatriates, especially from Texas, saw the occasion as an opportunity to prepare Southwest-style barbecues where local beer flowed freely. Uncle Sam, the benevolent father figure that later morphed into a symbol of U.S. imperialism, mixed freely with *Tío Conejo*, a shrewd rabbit from a Venezuelan folk tale who regularly outwits his tiger nemesis, *Tío Tigre*.

Other festivities, however, diverged from Venezuelan traditions for which no parallel activity existed. During Halloween, children dressed as Mickey Mouse, cowboys, ghosts and witches wandered throughout the senior camp asking for candy from befuddled Venezuelans. Thanksgiving celebrations by the U.S. expatriate community, which often included public gatherings, and the consumption of frozen turkeys imported from the United States, remained an exclusively foreign activity. Venezuelans outside of the oil industry had no connection to these events. A traditional Christmas in Venezuela had always included building a Nativity scene, but in the oil camps, this practice was slowly displaced by ornament-laden imported pine trees. To add to the festive mood, the oil company typically decorated a nearby oil well or water tower with colored lights in the shape of a Christmas tree, with adjacent loudspeakers playing seasonal melodies.

Shortwave radios allowed expatriates—and some oil camp Venezuelans—to keep track of events in the United States and important news quickly spread. This was long before the Internet or cable television made speedy news a fact of life. I can recall seeing my U.S. teacher at the Cristóbal Mendoza grammar school break down in tears when the school loudspeaker announced the assassination of President John F. Kennedy.

Another way of connecting to U.S. culture was through movies shown at the camp club; Spanish subtitles allowed the Venezuelan audience to follow the action without paying second thought to the overt racism present in many of the U.S. Westerns that stereotyped Mexicans and Native Americans. Many of my U.S. classmates at the camp shared LP records that came with a coonskin cap, plastic musket, and powder horn and recounted the exploits of Davy Crocket starring Fess Parker.

Venezuelans who did not live in the camp or work in oil sought entertainment in the San Luis movie house in La Sabana across from the Creole Petroleum refinery. I straddled both worlds, and loved to watch Mexican cowboy (charros) films or the comedy of Cantinflas and Tin Tan in the old-fashioned movie house that featured a range of seating from common wooden benches to higher-priced chairs. Outside the theater, my friends and I looked forward to savoring corn empanadas *de cazón* (dried shark), a local favorite in eastern Venezuela, made by an Afro-Venezuelan woman.

The importance of oil to the U.S. economy and military thrust Venezuela into the midst of the Cold War. In 1962, Peace Corp volunteers were assigned to Caripito to teach English in secondary schools and promote U.S. values. In case their efforts failed, Green Beret advisors gathered intelligence and trained the Venezuelan National Guard. In 1962, guerrillas launched an offensive in eastern Venezuela. The U.S. military advisors assigned to Caripito asked my local Scout troop to report on "suspicious activity," includ-

ABOVE: UNIVERSITY OF LOUISVILLE, STRYKER COLLECTION SPECIAL ARCHIVE; OPPOSITE PAGE: COLLECTION OF MIGUEL TINKER SALAS

ing spent cartridges we might find as we hiked through the rainforest. To assuage discontent, the town's poor also received sacks of grain from the Alliance for Progress and from Caritas, a Catholic charity. As I accompanied my parents into some of the poorest neighborhoods of Caripito to distribute food packages it became evident that oil had not benefited all sectors of society equally. The camps highlighted the existence of two Venezuelas, one benefiting from oil, and one for which the promise of oil remained elusive.

Oil never fully transformed Venezuela, but rather it created the illusion of modernity in a country where high levels of inequality persisted. The camps became a tangible symbol of this disparity. Local residents resented the inequities in lifestyle; businesses complained about closed markets; the government worried about divided loyalties; and the left viewed them as part of U.S. exploitation of Venezuela's labor and resources. During the 1970s, popular protest singer Ali Primera wrote *Perdóname Tío Juan* (*Forgive me Uncle John*):

> Es que usted no se ha paseado
> por un campo petrolero/ usted no ve que
> se llevan
> lo que es de nuestra tierra/
> y sólo nos van dejando
> miseria y sudor de obrero/
> y sólo nos van dejando/
> miseria y sudor de obrero. (You have not
> visited an oil camp, you do not see that
> they take what belongs to our land, and
> all they leave us is misery and the sweat
> of our worker's and all they leave us is
> misery and the sweat of workers.)

Having successfully created a trained and acculturated labor force imbued with company values, even the oil companies believed the camps had outlived their usefulness. Despite their eventual integration into local communities, the lived experiences of those employed in the industry coalesced with the perspectives of mid dle- and upper-classes that viewed oil as the guarantor of their status. Attempts to recapture the illusory sense of modernity

Top: Escuela Cristobal Mendoza Caripito; the author of this article is sitting on the floor, second from the right, wearing a bow tie and white shirt; the washing machine is emblematic of the type of modern purchase made possible by the booming Venezuelan oil industry.

experienced during this period inform many of the political divisions that characterize contemporary Venezuela.

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Behind the Corporate Veil

Company Control in the Lago Colony of Aruba

BY KODY JACKSON

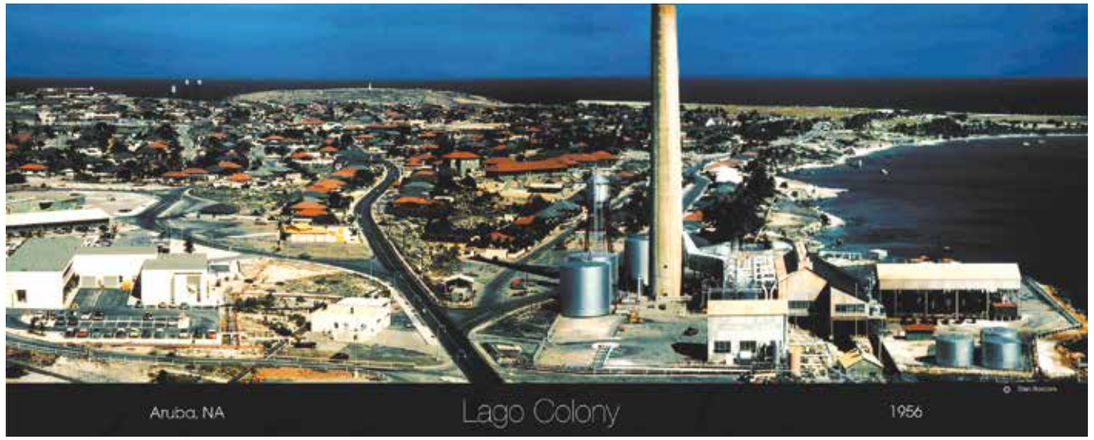
IT BEGAN AS MOST THINGS DO THESE DAYS, WITH a simple Google search. Looking to flesh out my graduate seminar paper on the Lago Oil & Transport Company of Aruba, I typed the company's name into that infamous search bar and prayed that those fickle gods of the Internet might have pity on me, a humble researcher. The title of a domestic court case caught my eye among the results. "Richard Mink v. Lago Oil & Transport Co. (05/02/66)," it announced promisingly, so I clicked on the link and began reading. An appeal before the Supreme Court of New York, "Mink v. Lago" held some startling allegations. Walter Mink, a U.S. citizen and former Lago employee, was suing the Aruban refiner for "improper medical care" given to his newborn son Richard in 1956. In the midst of a simple procedure, company doctors had misplaced an intravenous feeding tube, leading to disastrous consequences. "The fluid," Mink explained emotionally in a 1965 court affidavit, "was not fed into the vein but into some other part of [Richard's] lower right extremity…his ankle bones were literally 'washed away.'" Lago doctors eventually had to amputate Richard's right leg to prevent infection. It was a tragedy, the elder Mink maintained, leaving his son "sick, sore, lame, and disabled…and still suffer[ing] great physical pain and mental anguish." He concluded his suit asking for $325,000 on the basis of his son's disability and his own hardship.

This case was shocking, not only because of the lurid details of medical malpractice, but also because it stood at odds with community memory. Former U.S. expatriates were quite vocal about their attachment to Lago and the Lago Colony (1930-1985), their home on the island just north of Venezuela. "In my heart, I know where my true home is and always will be: that small desert island named Aruba," Margie Pate said, remembering her time amongst the 3000 U.S. employees and their families. Eugene Williams agreed, recalling wistfully in 2003 that "when we left Aruba, it was like leaving paradise." These bold assertions only made Mink's experience all the more incomprehensible and, consequently, all the more intriguing. Could secret resentments possibly be hiding behind such fond remembrances?

Not everyone, after all, evaluated Colony life quite so positively. Some female "Lagoites" balked at the gendered expectations foisted on them as part of island life. Company policy required teachers and nurses to give up their careers after marriage, presumably to focus on their wifely duties. "I do not do it wisely or well and I need [my husband] so badly to help me [raise our children]," Charlotte Warden wrote plaintively in her diary in 1947. Local residents on the payroll also resented Colony life, though more based on their exclusion from it, not their entrapment within. Local workers earned less money for equal work, prompting Guyanese draftsman Isaac Chin to complain that "my ceiling as a non-foreign-staff employee was barely above my head" (*Where is Choy?* 2002). Quality of housing openly demonstrated this disparity. Though given their own sports fields, commissaries and houses, Caribbean employees could readily see the luxurious lifestyle of those in the Colony, if only from a distance. Indeed, the company prohibited non-white, non-managers from entering the foreign enclave except to perform the service work such as gardening and cleaning that kept life in the Colony so leisurely. Thus, animosities abounded within and outside the Colony. These examples, however, fail to explain the travails of Walter Mink, the victim of neither sexist expectations nor racial limitations.

Indeed, Mink's grievance went beyond issues of Colony inequality, touching instead on those of company authority. Lago's local laborers well understood this reality. Many remembered the infamous strike of 1951. Though involving almost half of the refinery's labor force, the protest had ended in failure, gaining only a limited wage increase and resulting in the deportation of several labor leaders. Assistance from the Dutch colonial government had guaranteed Lago's victory. Royal Dutch Marines remained stationed around the refinery throughout the strike, a precaution meant to safeguard the facility that processed over 140 million barrels of Venezuelan crude oil each year, employed over 33% of Aruba's workforce and accounted for over 90% of the island's exports. This economic strength ensured government patronage in the years to come, perpetuating Lago's dominance over unskilled Caribbean workers. Such power did not, however, appear to have affected the lives of Lago's expatriates. These engineers, by virtue of their technical know-how, held more bargaining power vis-à-vis the company. Lago could not, for fear of losing valuable employees, implement the paternalistic practices so commonly associated with company towns (e.g. paying in scrip). Instead, it had to influence the Lagoites in more subtle ways, such as reserving certain community privileges like nicer houses, cars and Christmas trees for those with company standing and senior-

The company dominated the political and economic affairs of Aruba, much like the notorious United Fruit Company of Guatemala.



A poster of the Lago Colony in Aruba, 1956.

TOP PHOTO: COLLECTION OF MIGUEL TINKER SALAS; BOTTOM PHOTO: UNIVERSITY OF LOUISVILLE, STRYKER COLLECTION SPECIAL ARCHIVE

ABOVE: WWW.LAGO-COLONY.COM AND STAN NORCOM, © STAN NORCOM, 1956

Black service staff serve white kids at a camp ice cream fountain.

ity. The skills of foreign engineers thus shielded them from the full weight of corporate power.

Or did they? The full story of "Mink v. Lago" hints at the true extent of Lago's authority over its expatriate staff. Though beginning as a junior engineer in 1949, Walter Mink quickly rose through company ranks, eventually becoming a supervisor within the Marine Department. In 1957, upper management selected him for a prestigious taskforce examining off-the-job safety. The middling manager was particularly qualified for the role, and not just because of his rising ascendancy within the Lago operation: his son Richard had suffered that fateful accident the previous year. Initially, the medical malpractice seemed to have little effect on Mink's relationship with his employer. He still worked for the company; Lago had assumed all medical expenses, promising to cover future treatment. The refinery upheld its part of the bargain, but only until Mink's retirement in 1963. In the midst of corporate downsizing and scrupulous penny-pinching, Lago appears to have discontinued its medical payments. Mink sought legal redress, but not through the Aruban courts. What island official, after all, would dare prosecute the company that, in effect, paid his salary?

To try and elude this extensive influence, Mink launched his suit in Queens County, New York. He offered an inventive argument as to how a court in New York could prosecute alleged wrongdoing committed in Aruba. Because of the extensive business conducted between Standard Oil of New Jersey (Lago's New York-based parent corporation) and its Lago subsidiary, Mink claimed, the two companies were one and the same, separated only by a "fictitious corporation veil." This argument, while imaginative, ultimately failed to persuade the judges. They ruled Lago and Standard Oil separate entities, dismissing Mink's case based on a "lack of jurisdiction."

This verdict illustrated the breadth of corporate control at the Lago Refinery and within the Lago Colony. The company dominated the political and economic affairs of Aruba, much like the notorious United Fruit Company of Guatemala. Indeed, such authority undergirded the very existence of the refinery and its staff enclave, government concessions given to Lago because of its economic value. Corporate patronage, therefore, joined the beautiful bungalows and pristine beaches as things essential to expatriate life, realities that made their time in the Colony possible, even enjoyable. Perhaps the most valuable aspect of this company power, however, was not its extent but its invisibility. The true extent of Lago's authority remained largely unseen in the Colony, hidden behind the fond memories of expatriate living, the extensive privilege enjoyed in comparison to local laborers and, according to Mink at least, the false corporate veil separating Lago and Standard Oil of New Jersey.

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ABOVE: PHOTO LAGO-COLONY.COM, FROM A GUIDE PUBLISHED ON NOV 1, 1946.

Añelo and Vaca Muerta

Opportunity or Threat?

BY MARIANA BARRERA

AÑELO, A ONCE FORGOTTEN TOWN 600 MILES southwest of Buenos Aires, Argentina, is now in the middle of an oil boom as a result of the discovery of the Vaca Muerta shale field. My first experience there, in February 2014, was terrifying, and it plunged me right into Añelo's way of life.

Añelo has an unusual and sharp geographic slope that splits the town into two areas with different altitudes. The industrial park and the new urban development are located on the high plateau. By the time I first visited the town, the upland was already cleaned of brush, smoothed and divided into lots for several oil companies that fenced in their areas where trucks and cranes operated. Signs along the side of the road pointed to exploration areas in Vaca Muerta, the world's second largest shale gas reserve and fourth largest shale oil reserve.

Upon my arrival and after a five-hour interview in the local mayor's office, he very kindly offered to drive me in his pickup to the town's new industrial park. I immediately accepted his offer since my small car did not have enough power to make the climb on its own.

Along the way, the mayor told me about his expectations, projects and dreams for this part of the town. "Here's where we are going to build the airport, " he boasted. I found it hard to imagine an airport in the middle of this Patagonian desert; for now, highly congested, unpaved streets were the only signs of urban development. Meanwhile, just like every other researcher, I registered everything I saw with my camera. There was a lot with a company truck, a makeshift house, and an Argentine flag. I leaned out of the window of the mayor's pickup and snapped a couple of shots. A woman came out of the house and shouted at us. We didn't catch what she said, but the mayor kept on driving. He kept going for twenty more minutes, and once we reached the end of the industrial park, we headed back down the same road.

We drove by the lot where the woman had first screamed at us. Then the nightmare began. A bunch of people with sticks and stones were waiting for us. They spotted the pickup and ran towards us, blocking the road. The mayor had to stop driving. They surrounded the car and pelted windows with stones and sticks. The noise was deafening: the sticks, the stones, the glass and the screams.

The mayor decided to lower his side window; immediately, all the aggressors crowded around to his side. They shouted at him. Some of the sticks and stones were now landing inside the car. I decided to slide under the back seat, where I had been sitting, to protect my face and my camera. Eventually, the way was cleared. One of the mayor's advisers asked him to leave quickly. The mayor obeyed, and we escaped unscathed. The front window of the pickup was destroyed, and my neck felt stiff.

Our next stop was the police station. The mayor filed a complaint, with me as a witness to the events. The news of the attack went viral in the local media under the heading "Añelo's mayor was brutally assaulted."

Since then, I've been back to Añelo a couple of more times, most recently in May 2015. I always ask about the people living in the makeshift house up in the industrial park and the mayor's car—I can't avoid feeling guilty about the broken window. The family had been displaced, and the insurance paid for the pickup's front window. Yet I keep thinking that day's events were a condensed example of what Añelo is experiencing since it turned into a boom town.

Vaca Muerta's discovery put Añelo on the map in 2012. What used to be a forgotten pass-through town was rebranded as Argentina's shale capital. Consequently, its simple governance structure suddenly became much more complex and tangled. While external stakeholders arrive in town attracted by the oil industry, local players change their behavior and demands as a result of the new opportunity. Despite their different goals, these stakeholders share the fact that their responses are driven by speculative interests, which translate into contesting agendas and, thus, potential conflicts.

The empowerment of local residents—rather than population growth—seems to be the major change in Añelo's civil society. The coexistence of state ownership of the subsoil and private ownership of the land has encouraged local residents to raise their voices and make demands through blocking roads and oil production. Remarkably, their empowerment is limited. It's undermined by the personal economic benefit promised by the resource boom. Añelo's longtime residents agree almost unanimously not to oppose shale development because of job opportunities and development of new alternatives for income generation. Local residents are aware of their power to demand infrastructure and services, but they won't risk their economic benefit because of it.

At the same time, the local private sector became more complex. The shale boom not only created incentives for local business owners to expand their activities, but also attracted outside companies interested in providing services to the oil industry. Walking around the town, I observed two new casinos, five hotels under construction and a huge commercial center about to be launched (45,000 square feet)—an amazing amount of space, it seems to me, for Añelo's almost 6,000 residents. These new local businesses are attracted by the promise of profits associated with new consumer demands resulting from the cash-generating shale extraction in Vaca

The Argentine flag flies on the lot of the makeshift house. A company truck stands in the field.

ABOVE: PHOTO BY MARIANA BARRERA

Muerta. Although these new businesses will become an integral part of urban life, they are not necessarily committed to promoting a sustainable development in town. The lack of urban regulation means they can arbitrarily change Añelo's urban landscape without permits or consultation.

The shale boom also overwhelmed an understaffed and underfunded municipal government. The mayor's schedule has become busier because of the many companies seeking to set up shop in Añelo. The mayor also opened a satellite office in Buenos Aires, Argentina's capital city, to strengthen ties with the national government and with YPF, the national oil company. As a result, longtime residents often can't reach the mayor by phone or by knocking on his door or window at city hall.

In more academic terms, Añelo's mayor detached from his constituency by transforming the historical horizontal relationship into a top-down one, and leveraged the interaction with the private sector through one-time agreements (known as one-off). Private investment represents a fast and inexpensive way to increase service delivery and urban investment.

Changes in local governance are enhanced by stakeholder parachuting. In essence, this means that many different entities with often conflicting interests seek to pursue their own particular speculative goals. The national government, for one, found in Vaca Muerta the opportunity to solve its energy and fiscal crises. Likewise, Añelo and its new resources provide a solution to the fiscal deficit of the provincial administration, and give oil companies (including YPF) a chance to develop new revenue and business alternatives.

It's important to highlight that stakeholder parachuting also has had positive effects on Añelo's development. New stakeholders deliver significant resources for urban infrastructure and service provision. YPF, for instance, took the lead on bringing the International Development Bank on board for developing the town's Master Plan 2030, a roadmap intended to prioritize investment needs. Unfortunately, the lack of urban regulation and planning institutions undermines the best way to take advantage of these opportunities. With his local advisors, the mayor chooses the projects to be developed in town, using common-sense criteria, along with considerations about funding and land availability. Yet in the face of an understaffed and underfunded local mayor influenced by other stakeholders such as oil companies and federal government, the inevitable question is who actually makes decisions and chooses the projects to be tackled in town.

This all brings me back to the threatening situation I encountered on my first visit and its reflection on the community impacts of living in a boom town. The lot I photographed illustrated some of the different stakeholders and competing rent-seeking interests coexisting in Añelo. On the one hand, without regulation or transparent criteria for the allocation, the oil company agreed with the mayor to settle on a specific lot to operate in Vaca Muerta, and started doing the work. On the other hand, empowered by the shale boom, the local family who settled in the makeshift house in the lot understood this as its opportunity to finally have its own land and house in town. After all, the industrial park was developed in municipal fiscal land.

In the absence of effective institutional mechanisms to channel both stakeholders' claims, the overwhelmed mayor, as the local government representative, was responsible for arbitrating between them, but he couldn't provide a solution. The lack of regulation and planning institutions undermined the ability to make clear decisions; this problem was also challenged by the lack of human and financial resources. I'm pretty sure that the family knew that the pickup was the mayor's and that they proceeded to stone it because they could not find another way to make their voices heard. In a context of decentralization and a weak government, the result of these coexisting and competing rent-seeking interests was a critical and complex situation.

Since the shale boom, Añelo's stakeholders are locked into complex relationships at the local level, characterized by jurisdictional voids and long-term choices made with short-term criteria and through one-off agreements. In a context of decentralization and weak government, local governance is undermined, leading to social and spatial exclusion in the town. The resource curse—the concept that dependence on non-renewable natural resources can cause a paradoxical negative impact on the economy—thus shows up at the local level.

The challenge should be to address this curse, and any effort to do it should do three things. As Uwafiokun Idemudia observes in his 2012 article in the *Journal of Cleaner Production on the Resource Curse and the Decentralization of Oil Revenue*, "…it must alter the opportunities and incentives for rent seeking, and (…) it should empower the majority of stakeholders ...." I believe it should also develop a common agenda among local and external stakeholders that should be embedded in collective priorities

For Añelo, the discovery of Vaca Muerta was the opportunity to be put on the map, and it brought the promise of a prosperous future. Waves of new actors and resources were (and are) attracted to town, increasing the hope for better times ahead. However, generalized rent-seeking interests in a context of weak governments seem to be transforming these opportunities into potential threats.

The good news is that this resource boom also brings the opportunity for innovating and developing better planning to address these opportunities and threats. In the particular case of Añelo, the discovery of Vaca Muerta represents the prospect of opening a conversation about how planning can be employed as a tool to avoid the resource curse at the sub-national level, and to translate resource discovery into better welfare for Argentina.

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FOCUS ON THE AMAZONS

OPPOSITE PAGE: PHOTO BY THEODORE MACDONALD. OIL WELL FIRE CLOSE TO LAGO AGRIO, 1982.

Beyond Dinosaurs and Oil Spills

Oil Development and Amazonian Indigenous Peoples

BY THEODORE MACDONALD

ECUADORAN WRITER JAIME GALARZA'S SCATH-ing critique of international oil giants and pliant governments in Latin America in his widely read book, *El Festin del Petróleo* (1974), helped to win him two years in jail just as Ecuador was opening up its Amazonian region, once again, to oil development. Galarza painted a big-brush picture of rapacious transnational companies in the mid-early 20th century: his Seven Dinosaurs—Standard Oil of New Jersey, Shell, Mobil, Gulf, Texaco, BP, and Standard Oil of California—doing whatever they darn well please in weak countries. Transnational oil companies' plunders are now tempered by stronger and more democratic governments and the existence of national oil companies across Latin America. While Galarza was later named Ecuador's first Minister of the Environment, oil development for indigenous communities remains highly controversial and heavily disputed.

Legitimate concerns over spills and other forms of pollution persist. However, a community perspective now encompasses more than concern about the environmental damage wrought by looming international giants and includes national governments and international law. Indigenous peoples have new rights to land, natural resources and citizenship, nationally and internationally. They are also accessing international legal institutions with greater frequency and success. And, though often with great difficulty, they are demanding that their governments not simply ratify international human rights agreements and progressive new laws, but actually implement their associated duties.

LOOKING AROUND: FROM DC-3S TO BELL HELICOPTERS.

When Galarza's book appeared in 1974, I was doing ethnographic research in Arajuno, a Kichwa (Quichua) Indian village located between the Napo and Pastaza rivers of Ecuador's Upper Amazon. I picked up a copy from the Libri Mundi bookstore in Quito. Though fascinated by Galarza's anti-imperialist stance, I also hoped to understand why, during the 1940s, Shell Oil had constructed and then abandoned a long, solid and well-drained airstrip in Arajuno, but left little other visible impact and almost no unpleasant memories among the resident Kichwa. In fact, many people enjoyed the short-term jobs. And elders said that since so many young men were busy working for Shell, wild game actually increased. Retired Shell officials in Quito later explained that while some exploring had taken place in Arajuno, the strip, only a 20 minute flight from Shell's home base in Shell-Mera, was a backup for emergency landings of DC-3s in bad weather. Shell left Ecuador in 1950 without finding marketable oil in this foothills area. And they left no mess, resentment or permanent disruption. But Galarza's lament about these earlier times (1920s-1950) was hardly the end of the oil story.

By the mid-1970s, oil development was again in, and sometimes on, the air. Several sites that were to become battlegrounds today fanned out to the east of Arajuno. A few years earlier, most of the men of town—like those throughout the Oriente region—were being shuttled about in Bell helicopters as they worked stints for Western Geophysical, cutting paths through much of the northern and central Oriente to permit exploratory seismic studies. In my time (1974-76), and about 100 miles to the northeast, Texaco-Gulf, having finished a massive pipeline to the Pacific coast in 1972, began pumping crude oil out of a growing network of wells between the Aguarico and Napo rivers, connected through an ugly new boom town they named Lago Agrio, close to the rainforest homes to Cofán, Secoya, and, later, Kichwa and Shuar indigenous peoples.

About 150 miles to the southeast, the crackling chatter of Occidental Oil workers frequently overlapped with my daily, two-way radio, weather reports for local bush pilots, telling them whether or not the morning mist had lifted or shifted instead to heavy rain. Occidental Oil was preparing to drill along Peru's Pastaza, Tigre, and Corrientes rivers, an area now known as Block 1-AB, and home to numerous Achuar, Kichwa and other indigenous peoples.

In mid-1976, two Arajuno Kichwa men, another American and I meandered slowly for about a week by dug-out canoe—fishing and hunting and observing—from the headwaters of the Curaray River, through some Huaorani settlements, to the junction of the Villano and Curaray rivers, the site of another Quichua village, Villano. There, suddenly and like some scene from Coppola's *Apocalypse Now*, large planes were flying in heavy equipment and men, shattering the quiet as Arco Oil prepared to explore another old Shell site, then named Block 10. At the time, everyone thought all this was quite exciting. That changed.

Now each of these sites casts current oil development disputes into high relief, sometimes produces banner headlines, and draws considerable local anger. In Lago Agrio (Ecuador's most productive region), a $19 billion suit against Texaco (now owned by Chevron) for pollution near there is world-famous. Those in Villano and their nearby kin-community of Sarayacu are, of course, concerned with pollution. No one wants to live in a polluted and dangerous place like Lago Agrio. Meanwhile, some Kichwa have ratcheted up the debate to engage, indeed challenge, the Ecuadoran government. They are testing Ecuador's understanding of and compliance with international human rights and national legislation as it applies to oil and other natural resource development. These and other cases and issues were also the subject of multi-party (international oil companies, indigenous leaders and environmental organizations) Harvard Dialogues on Oil in Fragile Environments, which took place at the Weatherhead Center and in Latin America from 1996-2002.

Above: A map of the location of Block 1-AB in Peru.
Below: A meeting this summer brought the community together to discuss the new potable water project in Arajuno. ACIA has negotiated that it will not allow oil projects to take place in their communities until the community is provided with potable drinking water. Three years have gone by with no progress, but now it seems that construction of a water treatment plant will begin in March.

POLLUTION: THE PERSISTENT PROBLEM

Disputes over the mess created around Lago Agrio in Ecuador and other oil sites in Amazonian Latin America have been going on for decades. Pollution has been massive and undeniable. The Texaco case is certainly the best known and currently controversial. In both Ecuador and the United States, numerous legal suits have bounced back and forth since the early 1990s. In 1996, Texaco paid out about $40 million to clean up more than 100 well sites and seven spills, a remediation that it was supposed to share with its national oil company partner, Petroecuador. Although the work, coordinated by Petroecuador, now the sole owner of the plots, won Texaco releases from communities and organizations, many areas remain severely polluted and unhealthy. Current efforts to revisit the case by suing the new owner of Texaco, Chevron, and truly remediating the sites and communities where Petroecuador is the sole owner remain quite contentious. In a high-level battle now characterized more by large egos than environmental or social concerns, ambitious Chevron executives take on controversial class-action lawyers, an evasive national oil company, and questionable Ecuadoran legal procedures and judges, with no likely settlement or clean-up on the horizon, leaving lots of hopeless, angry, abandoned, and impoverished people in northern Ecuador. (See Paul M. Barrett's excellent recent account, *Law of the Jungle*.)

By contrast, in Peru, after a series of similar complaints regarding that country's largest production area, the government declared Lot 1-AB to be an "environmental disaster," complicating current desires to renew contracts. The area's original single operator, Occidental, has worked to repair environmental damages, reaching an "out-of-court" settlement to provide funds to local communities. Nevertheless, Block 1-AB—now a patchwork of operators including Occidental, Pluspetrol, Burlington, Repsol, China National and others—recently suffered a large rupture in its 39-year old pipeline,

MAP BY YUAN WANG; PHOTO BY MEGAN MONTELEONE

Shell Oil's 1940's airstrip at Arajuno, 1974.

Opening rain forest roads for oil pipelines and timber extraction, and avenues for colonization.

and a large area awaits cleanup.

None of this is new, or surprising. In addition to breaks and spillage along pipeline routes, toxic waste, which, by law even in the "old days" should have been reinjected into the well, was dumped into unlined pits. From there pollutants flowed into rivers during heavy rains or simply escaped when the dirt walls eroded. And in Ecuador, crude oil was even thrown onto the roads in dry weather to keep down the dust.

All of this early work produced ugly landscapes—large sections of denuded tropical rain forest, severely polluted rivers, and sickened human populations. No one denies it. Numerous observers, journalists, independent scientists, and even government agencies and the oil companies have documented the northern Ecuadoran Oriente.

Both the Lago Agrio and Block 1-AB cases focus on cleanup. Current and carefully monitored technical regulations suggest that nothing resembling the neglectful messes left by Occidental and Texaco in northern Peru and Ecuador will be repeated. The ARCO Villano case now illustrates some of the recent technical advances. In Block 10, ARCO, in addition to controlling toxic wastes, set new environmental standards by constructing a road-free well site and laying pipeline in the rainforest. The company followed the model of an offshore rig, where equipment and men are ferried in by air, and pipelines are laid by helicopters hovering atop narrow cuts in the forest. This minimized damage to the forest and avoided the sorts of invasive roads that easily and quickly become troublesome vectors for colonization, logging and other incursions into indigenous territories. The same sorts of technologies are being used in Peru's huge Camisea Gas project and many other rainforest sites.

In reviewing this innovative project at the Harvard Oil Dialogues in 1997, the general manager of ARCO-Ecuador commented to NRDC and The Nature Conservancy:

"What will you guys say when we can get oil out of the ground by osmosis?"

Many smiled and nodded their heads. However, for the indigenous participants at the Dialogues, vexing social and political questions, and the neglected responsibilities of the government, outweighed discussions of spills and other environmental questions. Two of the major and persistent concerns—consultation with affected communities and respect for indigenous organizations—are illustrated by situations that developed in and around the ARCO sites at Villano and nearby Sarayacu.

FROM POLLUTION TO PARTICIPATION: WHERE'S THE STATE?

In mid-1989, while I was sitting one afternoon with members of FOIN (Napo River's regional ethic federation), leaders of this as well as the national indigenous organization (CONIAE) rushed in to announce their departure for Sarayacu. An extraordinary drama of land and natural resource rights was unfolding. Earlier, contractors exploring ARCOs' Block 10 had been ejected by Sarayacu community members, who argued that the workers were exploring illegally within their territory without prior consultation. Oil company and government officials flew to Sarayacu's small jungle airstrip. Community members welcomed the meeting but immediately placed logs on the airstrip, preventing the officials from departing. They also invited leaders of other indigenous organizations, who, for several years, had also been petitioning the government for recognition of broad ethnic territories. The "meetings" lasted 12 days, during which some government officials became ill (indigestion, it was reported), while in Quito some, including President Rodrigo Borja, trumpeted the incident as a "kidnapping in the jungle," despite Sarayacu's statement that the officials were free to walk out at any time (a long walk). Given the often voiced government claim that Ecuador was a "multicultural nation," this tense symbolic national drama drew no military response, despite the close proximity of a large Ecuadoran army base in Shell-Mera. Instead the officials and community leaders jointly drafted the Sarayacu Accords, which, along with significant restrictions on regional oil development, promised to demarcate and title indigenous territories. Secure land rights would promote a unified territory and solid base from which OPIP, the umbrella indigenous association, could negotiate any future oil development and regional planning. The idea was, of course, to prevent repetition of the environmental mess to the north, but more important, to replace small community development projects and individual handouts with integrated pan-territorial development planning, utilizing a significant share of the region's oil revenues.

However, over the next couple of years the Sarayacu Accords languished. Meanwhile ARCO was negotiating access and providing modest local economic support to the small communities closest to its anticipated well site. This flew in the face of OPIP's broader demands. So, in July 1992, OPIP staged a spectacular and highly publicized, 500-kilometer, 2,000-person March from the Amazon city of Puyo to Quito, the capital. Shortly thereafter, President Rodrigo Borja's government titled significant amounts of indigenous lands. However, this was awarded not as the single indigenous territory envisioned by OPIP, but rather through a series of irregular blocks in Pastaza Province. The government thus rejected OPIP's demands for a broad participatory development program while continuing to press ARCO to meet its obligations to provide for communities' basic needs and services.

While ARCO easily contracted community relations specialists, the private company would never be in a position to design and implement, let alone allocate sufficient resources for, a regional development program that would extend far beyond its narrowly defined work area.

The government thus determined control over lands and defined the duties of the companies. So the public debate continued, with ARCO arguing that the company was obliged only to help those communities directly affected by its work; and ARCO continued this policy even though it led to fierce factional disputes within the communities and, at

PHOTOS BY THEODORE MACDONALD

one point, sparked a short-term kidnapping of the ARCO community relations manager in one of the Villano communities. OPIP and its NGO supporters, meanwhile, responded that any development should be a broader ethnic "territorial" matter, and argued that the company was seeking to weaken OPIP by pitting the communities against one another.

Each had a point. Yet, several years later, at the Harvard Dialogues, both ARCO and OPIP representatives expressed frustration with the absence of the government in areas where, they argued, policy decisions and provision of basis services were its responsibility. OPIP interestingly added that earlier governments consistently relied on foreign missionaries to provide basic health and education to isolated indigenous communities. Now it was oil companies.

OPIP continued to draw national and international supporters for its legitimate demands. This led to OPIP's inclusion in a multi-party commission convened to discuss the project's progress. In 1999, oil began to flow uninterrupted out of Pastaza Province from ARCO's environmentally pioneering and road-free well site and pipeline. And OPIP was not managing regional planning.

At the time (early-to-mid 1990s) this highly publicized dispute was largely, and unfortunately, a matter of words, recriminations, charges and counter-charges between relative unequals. Respect for indigenous territories and organizations was largely a matter of choice and relative power, which favored the government and the oil company. Many, of course, supported the underdog OPIP, but it seemed that traditional sources of power and wealth once again predominated. Fortunately, that was not the end of the matter.

SARAYACU AND INTERNATIONAL PROTECTIONS

ARCO did not return to neighboring Sarayacu after 1989. But in 1996, after land titling reshaped the provincial map, an Argentine oil company, CDG, signed an agreement with Ecuador to explore and develop Block 23, a concession which, as with ARCO's earlier, overlapped with Sarayacu's territory. And once again the community said no, refusing to permit contractors to gather data for the essential Environmental Impact Assessment. Sarayacu in many ways was the same story with the same actors as Villano—an oil international company (CDG), indigenous communities and regional federations, government support for CDG, and international NGO support for the indigenous communities. But after the mid-1990s, the nature of the debate shifted and altered the earlier power imbalance.

In May 1998, Ecuador ratified ILO Convention No 169. The international treaty went into force in May 1999, and Ecuador's 1998 Constitution incorporated many of the same rights. Consequently, though Sarayacu's community persistence, CDG's responses, and government actions produced many of the same sorts of petty intrigues, rumors, accusations, counter-accusations, demonstrations, insinuations and factions that surrounded the Villano case, outcomes were different.

No longer were terms like "territory," "development" and "organizations" simply part of an indigenous vocabulary thrown into the soup of a debate. International conventions and national legislation clearly stated that indigenous territories must be respected, natural resource development must not harm and in fact must benefit affected communities, and any related negotiations must respect the authority of indigenous organizations.

But a common legal argument soon developed. Because CDG had received the concession before the ILO Convention was ratified and before Ecuador's new Constitution took over, the company argued that the new laws should not be applicable retroactively. But earlier community opposition had prevented completion of the required environmental studies, so exploratory activities were, in fact, suspended until 2002. Despite divisive activities that created individual community agreements and spontaneous settlements, pitting communities against each other, Ecuador passed a series of laws requiring consultation with the communities, and creating mechanisms to enforce them. But as debates swirled and government agencies competed with (or at least contradicted) one another over interpretation and implementation, CDG, beginning in 2002, advanced its seismic studies and placed explosives in the ground. Sarayacu blocked further advances and led the company to declare "force majeure" and stop working. But the explosives remained in the ground. Eventually, the Ecuadoran government, frustrated and angry with Sarayacu, used violence (military and police) and intimidation. And, as inter-community tensions rose, police failed to protect Sarayacu citizens passing through adjacent communities.

The aggressive violence elevated Sarayacu's claims from civil disputes to criminal actions. This won international NGO support for the community. But, decisively important, the violent actions and legal inactions drew the attention of the Inter-American Commission on Human Rights, where a complaint was lodged and accepted. Subsequently, the Commission granted "precautionary measures" to require the removal of explosives, and recommended movement towards some mutually acceptable agreement on the entire dispute.

Meanwhile, and directly related to the community's original concerns, two judgments by the Inter-American Court of Human Right on the land rights and consultation in indigenous communities of Awas Tingni (vs. Nicaragua, 2001) and Saramarka (vs. Surinam, 2007) produced critical precedents regarding indigenous territories as "property" and requiring "consultation" with regard to all phases of development affecting indigenous lands and communities.

The oil company (CDG) clearly had not respected those rights. In November 2010, the Ecuadoran state petroleum company, Petroecuador, terminated CDG's contract. Some suggested that this was a "victory" for Sarayacu. The transnational company was gone. However, Ecuador's decision to terminate CDG's contract was based a number of other interests. More important, Block 23 would simply come up for bids again when a new round of offering took place in the future. And concerns had shifted to the government.

Oil well valve near Lago Agrio, Ecuador.

With the new legal precedents, and the Ecuadorian government's persistently tense relations with Sarayacu, in 2011 the Inter-American Commission elevated the Sarayacu case to the Inter-American Court on Human Rights. In its 2012, 90-page decision, the court concluded, of course, that the violence was unacceptable and that the explosives must be removed from the territory. But the bulk of the decision focused on Ecuador's failure to respect the property rights of, and to properly consult with, community members in the development plans. The court explained, in great detail, why such actions were no longer acceptable or legal in Ecuador or across Latin America. Any subsequent oil development on Block 23 would have to recognize community property and include community members in all activities.

The case demonstrates that—in Sarayacu and across Ecuador and other Latin America landscapes—disputes over natural resource development have now shifted from a nearly exclusive focus on the dangers of large international companies to the duties of the state. While Galarza's "Seven Dinosaurs" now have the UN-defined responsibility to respect human rights, most corporate responses to complaints and efforts at remediation, however satisfactory, will probably remain voluntary. Complaints and suits will probably be resolved out of court, as illustrated by the current Texaco/Chevron in Ecuador and Occidental in Peru. Such outcomes are largely matters of good will and private decisions, which do little to alter the traditional power asymmetries. States, by contrast, now have the formal legal obligations and duties to respect the human rights of indigenous peoples. Drawing on the ILO convention and UN Declaration, as well as Peru's and Ecuador's new constitutions, indigenous peoples now have legal frames, mechanisms, and precedents through which to argue and advance inevitable local disputes and claims with regard to natural resource development.

CAUTION NONETHELESS

These well-known cases, which are often clouded by explanatory global tropes that have shifted from Imperialism and Colonialism to Neoliberalism and Foucauldian Power (all minimizing human agency), illustrate significant advances enabled by international human rights. Though they cannot be expected to spark instant social or economic equality, the new human rights laws, seen from the perspective of those who benefit most from them, offer the possibility of long-term changes in historically imbalanced settings. The new power of human rights, however, should not be overemphasized. Though a shift is underway, ex-UN Special Rapporteur James Anaya has stressed that large gaps remain between recent and impressive indigenous rights legislation and broad realization of those rights, particularly as they relate to land and natural resources. But the contrast between what went on in Villano and Sarayacu, and how communities approached remedies, suggests not only that recent legal advances make a difference, but that this change may be structural and permanent, grounded in law rather than on caprice or contingency. While technical advances and environmental regulations have not tabled concerns over pollution and spills, invoking their harm is not the main concern of indigenous peoples today in Latin America. Nor, it now seems clear, was it when these cases first emerged.

None of these communities and organizations is inherently opposed to natural resource development. But most will argue against the manner in which it is generally undertaken; that is, without proper local participation and consultation. The danger of such neglect and exclusion was clearly illustrated six years ago this summer, when violence and deaths shook the oil region near Bagua, Peru. The major challenge of the early 21st century is the failure to bridge the easily avoided gaps between progressive legislation and insensitive actions that most indigenous peoples see as the main problem, as a glance at the Latin American indigenous news webpage *Servindi* illustrates almost daily.

Bringing this story full circle, in early June 2015, the indigenous organization Acia Arajuno, non-existent when I lived there, responded to renewed interest in oil development around nearby Ruculacta, and rumors abounded that oil company's helicopters would soon be hovering overhead. The indigenous assembly proclaimed its opposition, not because of any anticipated mess, but because they had not yet been informed or consulted. And, the leaders added, before any government officials showed up to discuss any possibility of oil development, the government had to fulfill its basic duty and its delayed promise to provide Arajuno with potable water.

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Settlers near caserío Nueva Italia, San Martín region, Peru, located on the edge of Palmas del Shanusi plantation.

Forests for Energy?

Biofuels and Palm Oil in the Peruvian Amazon

BY JUAN LUIS DAMMERT B.

IN 2008, I WAS CONDUCTING FIELDWORK ON THE edges of a recently established large-scale oil palm plantation: Palmas del Shanusi. My investigations took me to the *caserío* of Nueva Italia, in the area known as Cainarachi, between the San Martin and Loreto regions in the Peruvian Amazon. A conflict had been triggered there between the company, part of the powerful Grupo Romero, and people from the plantation surroundings. To get there, two colleagues and I drove along one of many timber roads that penetrate into the forest from the recently built North Interoceanic Highway.

The landscape of destruction was impressive. On each side of the road we saw recent or ongoing clear-cutting of the forests. New migrants had a deal with *madereros* (timber merchants) operating in the area: they wanted the *madereros* to extend the road to make their farms more accessible so they paid them with timber from trees they cut down. At the end of the road, a trail started (where the road is presumed to continue as clearing advances). After walking for 15 minutes, we arrived in Nueva Italia, where we found a few ramshackle huts and scarce fields for crops. Most of the settlers had recently migrated from the Andes, they told us, although they mentioned other residents who had been in the area for decades.

The settlers explained they were resisting the company's unstoppable clear-cutting of forests and took us to the very edges of the company's operations. We walked along a trail under a canopy that suddenly stopped by a fallen log, opening the view to thousands of acres of clear-cut past forests. The expansion of the agricultural frontier on the forests revealed a whole new, massive and industrial dimension. Security guards approached us, and before asking us to leave, explained that they had all legal permits to operate in that land.

Local conflict and large-scale deforestation are the most visible dark sides of oil palm plantations. The oil extracted from the fruit of the plant (palm oil) is used for vegetable oils and fats (used for chips, chocolate and cooking oil, for example), cosmetics (soap, shampoo, body creams, etc.) and, more recently, biodiesel. The new and growing market for biodiesel from palm oil and its accompanying narrative of green energy captured my interest and had brought me to the plantations in the first place. Peru had recently passed biofuels regulations, and oil palm plantations were rapidly expanding in the Amazon. Facing the landscape of destruction, it was hard for me to remain enthusiastic about the environmental credentials of biofuels.

The Law of Promotion of the Biofuels Market (2005) stated that energetic crops are an opportunity for agroindustrial development, a source of jobs and an alternative to illegal crops (coca). Peru introduced a progressive blending schedule of biofuels beginning in 2009, though implementation was delayed several times due to technical problems with refineries and gas stations. Today there is a mandatory blend of 7.8% ethanol in gasoline and 5% biodiesel in diesel. To fulfill the demand generated by this law, an estimate of 250,000 tons is required annually, i.e. approximately 173,000 additional acres (depending on productivity per acre).

Palm oil is one of biodiesel's most important components. The crop has steadily expanded globally in the past three decades, given its large yields (it is the most efficient oleaginous crop in the world), its high value compared to other agricultural products, and rising demands for its many uses. Southeast Asia has been the predominant producer region since the 1980s, processing around 90% of the world's palm oil. Partially because available land in that region is diminishing, the industry is also growing in other tropical areas such as Africa and Latin America. Much of the Amazon rainforest is suitable for oil palm cultivation. In the case of the Peruvian Amazon, in addition to biophysical suitability, the recently pacified region has a growing transport infrastructure and a favorable legal framework for the establishment of oil palm plantations, which are rapidly expanding.

The passing of biofuel regulations has spawned the development of many new biofuel projects. Biodiesel mills in Lima, sugar cane plantations and ethanol mills on the northern coast and new oil palm plantations and biodiesel mills in the Amazon are some examples. The most visible investment was made by Grupo Romero, which in addition to the new Palmas del Shanusi plantation, built a biodiesel mill in its long-established Palmawasi plantation in Tocache.

The biodiesel business turned out to be a major failure for domestic producers, unlike ethanol which, though with some difficulties, has been profitable for sugar cane investors on the coast. Both small and large-scale oil palm growers saw a secure market for biodiesel production, and invested accordingly. But refineries, both public and private, preferred to buy imported biodiesel. They claimed that Peruvian palm oil biodiesel didn't meet the technical specifications required by law. Allegedly, Amazonian biodiesel didn't respond well to cold temperatures when transported across the Andes. Biofuel producers have been working to meet the technical criteria, though they claim that the criticisms are unfounded. The real reason is that refineries prefer to buy subsidized and dumping-priced (i.e. cheaper) imported biodiesel, most of it coming from Argentina, they contend. The impasse has been taken to INDECOPI (the regulatory organization for competition in Peru), which in 2010 applied compensatory measures in favor of domestic production, but only for a limited period of time. Industrias del Espino, part of Grupo Romero, formally denounced unfair competition from Argentine biodiesel, and the case is under a new investigation by INDECOPI.

In April 2014, Grupo Romero announced the closing of its biodiesel mill, after almost five years of operation at less than 20% of its capacity. Peasants with small plots of land have also denounced the biofuel policy as a false promise. Many point out that farmers had substituted oil palm for coca because of that promise, and now find themselves without markets to sell their products.

The 2005 biofuels law aimed to diversify Peru's energetic matrix and agroindustrial development, and stimulate the conversion of illegal crops through state promotion on the basis of free competition. Under a free-market economy like Peru's, there was no guarantee that the demand could be met with domestic production. Unlike the situations in Ecuador, Colombia or Brazil, where biofuels producers coordinate with their national states to secure domestic consumption of domestic production, this has not been the case of Peru, where improvisation and lack of planning are the rule rather than the exception. Dumping practices are incompatible with free competition, and INDECOPI might rule in favor of domestic oil palm producers in future months. But it is quite ironic that producers call for state intervention when it comes to commercial matters, and show no enthusiasm at all when it comes to environmental and zoning regulations for oil palm projects.

Oil palm expansion has far from stopped, however. On the contrary, the crop is growing at a higher pace than ever. Cultivated surface area of the crop has grown from 35,000 acres in 2000 to around 150,000 acres in 2013. About two-thirds (around 100,000 acres) have been cultivated by peasant associations of small landholders, in most cases with support from international cooperation, as an alternative to coca growth. But this ratio is changing, as currently another additional estimated 280,000 acres in large-scale projects are pending approval or starting operations. Two large-scale companies are leading the expansion. One is the pioneer Grupo Romero. The

PHOTO BY: THOMAS MÜLLER / PERUVIAN SOCIETY FOR ENVIRONMENTAL LAW (SPDA)

Deforestation for oil palm in Loreto, Peru.

other is the recently arrived holding company created by investor Dennis Melka, a Czech citizen, and his associates, locally known as *los malayos* (the Malaysians) after the established oil palm plantations they own in Malaysia.

These new plantations have been involved in large-scale deforestation. In most cases, companies are attempting to buy large, contiguous forested lands from the state, free from legal claims by settlers or communities. Selected areas require the appropriate biophysical conditions (in terms of soil quality, temperature, slopes, etc.) for oil palm to grow. Deforested lands do not always meet these conditions, and their soils are usually degraded. Buying forested land can be very cheap because of good prices from the state. The resulting timber can be sold or used for building camps; the deforested, non-commercial biomass is left to rot to fertilize the soil.

The Peruvian Ministry of Agriculture and oil palm producers claim that oil palm projects don't involve deforestation. When evidence against this is shown, they explain that the projects are developing in soil categorized as suitable for agriculture; so legally speaking, they are not cases of deforestation. The Roundtable on Sustainable Palm Oil (RSPO) recently started its implementation in Peru and is currently working on a "National Interpretation Draft of RSPO Principles and Criteria." One of the criteria for certification is precisely that plantations don't involve deforestation. It is yet to be seen how certification is going to address the cases of so-called legal deforestation.

Forestry regulations are contradictory in Peru, and the institutional framework is going through critical changes, which makes the procedure for starting oil palm projects particularly unclear. Through decentralized regional governments and the participation of the Ministry of Agriculture, the state has been active in promoting projects and has issued some legally questionable permits; however, the Ministry of Environment has taken legal action to stop deforestation brought about by the spread of the crop.

Despite the failure of the nationally produced biodiesel business in the past decade, oil palm cultivation is growing in the Peruvian Amazon. There is an expectation that, in the future, after technical and competition barriers are overcome, biodiesel will still be an important market for Peruvian palm oil, especially when it is portrayed as a green alternative to fossil fuel dependency.

Of course, not all agriculture-based biofuels production necessarily entails large-scale deforestation and social conflict. Crops can be grown in different areas, under various production techniques and social arrangements, such as, for example, associations of peasant landowners who abandon coca growth for a legal activity such as palm oil production in already degraded areas. Making these distinctions is crucial, but what we might call sustainable biofuels are unlikely to be developed under weak institutional and contradictory legal frameworks such as those of Peru. Furthermore, narratives of green energy and sustainable production are heard too often but seldom seen on the ground.

Demand for biofuels is growing globally, and it also comes from areas that are not important biofuel producers such as the European Union (EU). Organizations like Oxfam and Friends of the Earth are highly critical of the EU's biofuels target, as these organizations claim that the EU doesn't take into account the impacts of biofuel production on people and the environment in producer countries.

According to Oxfam (2012), biofuels are an important driver of the global rush for land deals, or land grabs, and countries with poor protection of land rights (like Peru) are magnets for land deals involving biofuels, or crops that can potentially be used for biofuels production (like oil palm). This is what we witnessed in Nueva Italia: capitalist companies partner with fractions of the state to purchase large tracts of land, and poor farmers migrate to the area to secure land that is perceived to be scarce, reinforcing conflicts over land and patterns of forest destruction.

Unlike the situations in Ecuador, Colombia or Brazil where biofuels producers coordinate with their national states to secure domestic consumption of domestic production, this has not been the case of Peru, where improvisation and lack of planning are the rule rather than the exception.

Using vast areas of land for biofuels production reduces the amount of land that can potentially be used for food production. And as we have seen, it may involve large-scale deforestation. This leads us to the obvious question of how convenient is it for a country like Peru, with the second largest forest cover in Latin America, to destroy its forests to produce fuels. Biofuels projects gained momentum as a clean fix to the energy crisis of fossil fuels, regarded as polluting and perceived as scarce. However, a massive transition to biofuels could bring about unforeseen impacts such as land grabs, diminishing available land for food and large-scale deforestation. All for the quest to maintain or increase the current high energy consumption rates, which always seems to be the indisputable priority.

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THOMAS MÜLLER / PERUVIAN SOCIETY FOR ENVIRONMENTAL LAW (SPDA)

Oil and Indigenous Communities

Sowing Discord in the Peruvian Amazon BY BARBARA FRASER

ON A DRIZZLY MORNING IN LATE FEBRUARY, A boat full of silent Kukama men motored slowly into the flooded forest off the Marañón River in northern Peru. Cutting the engine, one man began to row, maneuvering the boat past a partly submerged pile of rotting sacks of oily boots, gloves and rags. As he glided into a backwater, the oar stirred up an oily sheen accompanied by the smell of gasoline.

Two days earlier, a delegation of government officials had visited the site and declared it free of oil after a pipeline leak in June 2014 had spilled between 1,600 and 2,000 barrels of crude into the rain forest. Apparently they had not seen the waste dump and the oil slick, and had not noticed that the booms that had once formed a barrier across the pipeline canal were useless once the water rose and left them floating in the forest.

"They didn't go to these places," said one man, who had piloted one of the boats ferrying members of the delegation to the canal. "They didn't look."

The pipeline spill in Cuninico, a Kukama Indian village in the Peruvian Amazon, was small by most standards. It is dwarfed by the Deepwater Horizon spill in the Gulf of Mexico and the oil and wastewater dumped along the Corrientes, Pastaza and Tigre rivers to the north. For the villagers, however, it has been a lingering disaster. It also became a temporary employment opportunity, when the state-run oil company, PetroPerú, hired local workers to clean up the oil and contaminated soil and vegetation. But now, with the jobs and money gone, reality has settled in again, says Galo Flores, the *apu* or president of Cuninico.

"The spill violated our rights," Flores says. "It has affected our entire life, but especially the water, because we don't have safe water to drink."

In Peru's northeastern Amazon region, where there are virtually no roads, a river is the lifeblood of the communities along its banks. People drink its water and bathe and wash clothes and pots in it. The river is the only route for traveling to nearby fishing grounds, neighboring communities or distant cities. And it is the dwelling place of spirits, including those of relatives who drowned and whose bodies were never recovered. To pollute the river—created when sap flowed from the mythical *lupuna* tree to relieve a woman's thirst—is also to contaminate their spirit world.

In Cuninico and other Kukama communities, fish are a source of both protein and income. Before the oil spill, the network of lakes and channels up the Cuninico River from the village was a rich fishing ground for people from about half a dozen communities. As word spread about the spill, however, the market dried up. Not only did buyers shun fish from Cuninico, but vendors who brought fish to sell in the community charged two or three times the usual market price.

With food and cash scarce, villagers jumped at the chance to work as day laborers for PetroPerú, first searching for the place where the pipe had ruptured, then laboring on cleanup crews. The wage of about $25 a day was three or four times the usual day labor rate. Women cooked or washed clothing for the hundreds of cleanup workers, and several families rented houses to the company for lodging company managers.

ECONOMICS AND ENVIRONMENT AT ODDS

The effort started badly—more than a dozen men worked for a week searching for the rupture, submerged to their chests in oily water around the pipeline for hours at a time, clad only in regular clothes or stripped down to their underwear. Only after a national television news magazine showed footage of the scene did PetroPerú contract a company with experience in handling spills and provide the workers with protective gear. The state-run company also began to deliver bottled water, rice, canned fish, sugar and cooking oil to families in the village.

By October, nearly every adult male in the village and many from surrounding communities were working for PetroPerú or its contractors. Some women dropped out of the work force, feeling that they were neglecting household responsibilities. Cuninico was in the midst of a housing boom—virtually everyone was rebuilding, roofing or expanding their homes. The exception was the coordinator of Cuninico's Catholic community, who declined to work for the company. His family's home remained unchanged, with his son's paintings of nature scenes still visible on some of the walls.

Water levels in the Marañón River and its tributaries rise and fall with the seasons, and company officials said they were working as quickly as possible to finish the cleanup before flooding began toward the end of the year. In mid-December, they declared the work finished and moved almost all their personnel out. The jobs and the money vanished, but demand for fish from Cuninico did not reappear. And when the high water brought ribbons of oil floating down the Cuninico River again, villagers worried anew about whether it was safe to eat the fish or drink or bathe in the water.

In an interview in March, company officials admitted that they had been unable to clean up part of the site—where sacks of oily vegetation and barrels filled with recovered oil had been

Clockwise from top left: A boy washes his hands in water purified by a new water treatment plant in Dos de Mayo. A man tests the depth of oily water after a pipeline break near the Kukama community of Cuninico, in the lower Marañón River valley in northern Peru. A woman washes clothes near the mouth of the Cuninico River, traditionally her community's source of water for drinking, cooking, washing and bathing.

PHOTOS BY BARBARA FRASER

Dead fish and oily twigs gathered by villagers in Cuninico after an oil spill in June 2014.

stored, and where the boat oar had stirred up the oil slick—before it flooded, and said work would resume when the river levels went down again.

LONG HISTORY OF CONFLICT

The Cuninico villagers' experience with the oil spill resembles similar events in other parts of the Amazon. The highest-profile case is that of Ecuador, with its prolonged and contentious legal battle over pollution from decades of poorly regulated oil operations in its northern Amazon region. A similar situation in Peru, although less widely publicized, has caused rifts within communities and indigenous organizations between those who want jobs and those worried about pollution, and over how to handle thorny issues such as remediation of and compensation for damages.

Occidental Petroleum and PetroPerú began operating in the northern Peruvian Amazon near the border with Ecuador in the 1970s, in two leases—known as Block 8 and Block 1AB—now operated by Argentina-based Pluspetrol. During most of that time, the hot, salty, metals-laden water pumped out of the wells along with the oil was dumped into the Corrientes, Pastaza, Tigre and Marañón rivers or streams that flow into those rivers. Lakes and soil were also polluted by oil spills, as was part of the Pacaya Samiria Reserve, a wetland supposedly protected under the Ramsar Treaty, where part of Block 8 is located.

Discontent over pollution in the region—known collectively as the *cuatro cuencas* or "four watersheds"—has been building steadily over the past two decades. Five Achuar communities on the Corrientes River inside Block 1AB reached a settlement with Occidental in September 2013, after nearly a decade of litigation in U.S. courts. The settlement, announced in Lima on March 5, 2015, a year and a half after it was reached, prohibits the parties from revealing details of the agreement, but Achuar leaders said it includes a development fund of an undisclosed amount, to be managed by the five communities and used for projects such as fish farms, health care and education.

In 2006, after health exams found cadmium and lead in the blood of indigenous villagers, demonstrators occupied various Pluspetrol facilities, including the airstrip across from the town of Trompeteros, on the Corrientes River. Those protests ended with a pact known as the Acta de Dorissa. Pluspetrol committed to remediation of contaminated areas and to pumping produced wastewater back underground, into either abandoned wells or new wells drilled for reinjection. It also agreed to provide funding for a government-run health program for the indigenous communities.

The reinjection program was completed, and the company claims on its website that it has remediated "almost all" of the affected sites. However, a 2014 report by the government's environmental oversight office (Organismo de Evaluación y Fiscalización Ambiental, OEFA) identified more than 90 sites requiring cleanup. In January 2015, that office upheld fines of nearly US$10 million related to infractions in the Pacaya Samiria Reserve, which the company had appealed.

A YEAR OF NEGOTIATIONS

The lease on Block 1AB, now renumbered 192, expired in August 2015, but when the auction was held by the Peruvian government, there were no bidders. The government could simply extend Pluspetrol's contract. Until recently, the indigenous federations in the *cuatro cuencas* had insisted that all damage be remediated and that a consultation should take place before a new round of bidding opened on the lease. Under Peru's prior consultation law, which took effect in 2011, indigenous communities must be consulted about any development project or administrative decision affecting their communal rights.

They changed their position, however, after nearly a year of negotiations with government officials on issues ranging from territorial rights to health to compensation for damages. Under an agreement announced in March, the government decided to go ahead with preparations for the auction in parallel with a consultation, which is now under way in the watersheds.

The 19-point action plan signed by indigenous leaders and government representatives includes health studies, measures to improve health care in the communities, and installation of temporary water treatment plants. Government officials put the total cost at about US$30 million, not including a remediation fund and development projects for communities in the four watersheds. At a press conference in April, Environment Minister Manuel Pulgar-Vidal told foreign journalists that under its contract, PlusPetrol is responsible for remediating all damage in the two blocks, and that the government remediation fund would be used for "contingencies" or emergencies.

Under Peru's prior consultation law, which took effect in 2011, indigenous communities must be consulted about any development project or administrative decision affecting their communal rights.

At the time the agreement was signed, conflicts were continuing in parts of Block 1AB/192, where some communities, afraid that Pluspetrol might pull out without compensating them for damages, were negotiating individual deals with the company. Some indigenous leaders said the tactics were fragmenting the organizations—a common complaint in Amazonian regions where extractive industries operate—and called for close monitoring of implementation of the March agreement.

Both territorial rights and prior consultation are potential flashpoints, not just there but in other parts of the Peruvian Amazon where oil and gas concessions overlap indigenous communities. More than 1,000 Amazonian indigenous communities in Peru still lack formal title, in an area totaling some 20 million hectares, according to the Interethnic Association for Development of the Peruvian Amazon (Asociación Interétnica de Desarrollo de la Selva Peruana, AIDESEP). Titling applications are stalled especially in places where infrastructure such as oil pipelines, drilling platforms or roads is located on community lands, according to Wendy Pineda, who heads AIDESEP's geographic information systems team.

Designation of several new reserves to protect semi-nomadic groups that still shun contact with outsiders has also been on hold, and both indigenous leaders and environmental groups have protested the expansion of the Camisea gas field—in the tropical lowlands of the southern Cusco region—into the Nahua-Kugapakori-Nanti Reserve, which is inhabited by both nomadic and recently settled groups.

Most of the Peruvian Amazon is now parceled into oil and gas concessions, and the government had planned to auction at least a dozen of them this year, but with low international oil prices making exploration less attractive to companies, those plans are likely to be put on hold. In May, Hunt Oil informed the Native Federation of the Madre de Dios River and Tributaries (Federación Nativa del Río Madre de Dios y Afluentes, FENAMAD) that it was suspending exploration in part of a block that overlaps the Amarakaeri Communal Reserve, a protected area in southeastern Peru jointly managed by indigenous communities and the Peruvian park service. The company said it had not found the gas it had expected and that it would reevaluate its data before deciding on its next steps. In August, the government extended Hunt's exploration permit by three years.

When the damage from the past 40 years will be cleaned up, however, remains an open question. Meanwhile in Cuninico, when children break out in rashes, mothers worry that it is because they are bathing in polluted water. And they worry about the future. A year after an oil slick and a mass of dead fish signaled a break in the pipeline, they still have no buyers for their fish.

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PHOTO BY BARBARA FRASER

In the Shadows of the Extractive Industry

A Hard Road for Indigenous Women

BY NELLY LUNA AMANCIO

A TELLTALE DETAIL GAVE AWAY THE CHANGING way of life for the indigenous Machiguenga women living around Peru's most important gas project in the Cuzco Amazons: they had stopped harvesting yuca. Why bother planting the traditional tuber that was the mainstay of their daily diet if they could simply buy it at one of the dozens of little shops that had sprung up around the Camisea gas project installations? Indeed, why bother with yuca when one could easily buy rice? "If yuca is needed, you just buy it," Eulalia Andrés Incacuna, an indigenous woman from the Kirigueti community, told us in 2006, when we first went to the far-flung villages two years before the gas project actually began full operations.

This change in food habits reflected new forms of economic exchange accompanying the Peruvian gas project operated by the private company Pluspetrol. Nine years later, health clinics in the zone report a statistical increase in chronic cases of malnutrition and sexually transmitted diseases such as HIV infection; alcohol consumption is also on the rise and often translates into domestic violence. In spite of the millions of dollars in royalties paid to the Peruvian state, the quality of life of the indigenous population—and especially that of women and children—has not

Previous page: Leslie Searles makes a portrait of a woman preparing yuca, the traditional staple dish. Above: A woman gently washes her newborn.

improved.

Observing the effect of the extractive industries on indigenous women in the Amazons, Peru's Vice Minister of Interculturality, Patricia Balbuena, asserts that "it is harder for women [than for men] to adjust to the changing forms of production that the extractive industry has brought to the Amazon regions, and this ultimately influences gender relations. The firms hire men who then acquire goods that displace women from their traditional routines," observed the vice-minister, a lawyer with expertise in gender, development and demography.

Men no longer hunt nor fish nor dedicate themselves to agriculture. The economy of the family is greatly altered. It goes from being a money-free economy to a highly monetized one with all the social impacts that one can imagine. In her investigation, "Ideas about Progress in Indigenous Wage Workers: The Case of the Machiguengas and the Camisea Gas Project," sociologist Cynthia del Castillo warns that communal indigenous life has been completely altered by alcohol use. "Tensions surround the adoption of new practices and attitudes with the introduction of a monetized currency, as revealed in extensive interviews. We are referring to excessive beer consumption. The fact that not all the persons interviewed were willing to talk about the subject made the tension visible and, paradoxically, underlined the conscious secrecy surrounding this subject," she observes.

HYDROCARBONS, WOMEN AND TERRITORY

What happens in the Cuzco jungles is repeated with different nuances throughout the Amazon regions of South America. In the last fifteen years, increasing international demand for hydrocarbons has stimulated new explorations and exploitation of gas and oil in territories inhabited by approximately two million indigenous people, about half of them women. In these regions of Peru, Colombia, Brazil and Ecuador, there are at present 81 hydrocarbon fields under production and another potential 246 sites. Together, the area encompasses 0.41 million square miles or 15% of the entire Amazon region.

Peru has one of the greatest Amazon areas with leases given to the extractive industry; an estimated 80% of hydrocarbon concessions are located in titled indigenous lands, generating social conflicts with the local population. In some regions affected by the contamination of years of oil extraction, such as Loreto, indigenous women have organized and brought their complaints and demands to United Nations officials. "They have asserted that the contamination affects women in particular because of the changes brought about by the quality and availability of water, the effects on cattle raising (the only source of work for many women) and the negative effects on family health," indicated a 2013 report by the former UN Special Rapporteur for the Rights of Indigenous Peoples, James Anaya.

The social impacts of the extractive industries are complex, but seldom studied. "The extractive industry modifies gender relationships. They pay the workers well, but women have very little say in the use of this money," Balbuena explains. Excluded from decision making, the indigenous woman becomes a passive subject of the impact of the extractive industries and the resulting social change.

The extractive industries affect indigenous women in many ways. "Water pollution is one of the main concerns of the indigenous women. With the loss of quality of this resource, the ability to guarantee her family's health is greatly diminished," says anthropologist Óscar Espinosa, a professor at the Catholic University of Peru who recently investigated the impact of oil exploration on two communities in the Amazon region of Bajo Marañón.

In his initial findings, Espinosa has found several cases of stress and severe symptoms of anxiety in indigenous women. "We interviewed many indigenous women and observed that many suffer from these problems. Indeed, several women have experienced hair loss. There's no adequate treatment available for these women," he says. Women leaders from the zone also associate oil industry contamination with an increase in the number of cases of cancer and birth defects. Uncertainty and the lack of response to these health issues only increase their anxiety.

THE SILENT ADVANCE OF HIV

Communities that were once abandoned by the state and isolated from urban areas have now become more involved in commercial exchange and migration to the cities, particularly among the men. As a result, by 2005 the Amazonian indigenous communities were reported to experience the first cases of HIV infection. Although statistics are hard to come by, local sources indicate that cases of HIV are on the rise.

In the communities bordering the Camisea project, the first officially reported case of HIV infection was in 2010. That year, the local health network identified 11 cases in the native communities located around the gas project. Mario Tavera, adviser to the Vice Minister of Public Health of Peru, says that the increase in HIV cannot be attributed to the extractive industry alone. "There are additional factors such as migration and economic exchange that ought to be taken into account in environmental impact studies of all these projects," he observed.

Carlos Torres Huarcaya, an epidemiologist in Camisea's zone of influence, explains that the HIV cases are imported into the area by the men. "The young indigenous men have begun to go to centers of nighttime entertainment set up in other towns, attracted by the great concentrations of employees and workers since the beginning of the gas exploitation."

Distance and poor infrastructure of the health posts make the efficient and timely diagnosis of HIV quite difficult. The head of the indigenous program of the People's Defender (Defensoría del Pueblo), Daniel Sánchez, recognizes the weakness of the state: "The health system is not prepared to handle the cases of HIV in the indigenous populations of the Amazons. It ought to have a specific strategy that would take into consideration the use of interpreters, as well as a

PHOTOS BY LESLIE SEARLES <WWW.LESLIESEARLES.BLOGSPOT.COM>

greater state presence." Half of the diagnosed cases are pregnant women who find out they have HIV during routine prenatal checkups. Only four patients have received antiretroviral drugs.

ALCOHOLISM AND FAMILY VIOLENCE

Another social impact associated with the extractive industry is the increase in alcohol consumption. In the communities near the Camisea project, beer has replaced *masato*, the traditional drink made from fermented grains that is consumed by the indigenous peoples of the Cuzco jungle. Crates of beer pile up in the port and in the small shops, and improvised bodega-bars sell it throughout the day. The local health authorities point out that although they have no formal study of the illnesses associated with alcoholism, the consumption of beer is evident on a daily basis.

No local studies exist linking domestic violence and alcohol in the indigenous populations of the Amazon, but most of the women associate abuse with alcohol consumption.

No local studies exist linking domestic violence and alcohol in the indigenous populations of the Amazon, but most of the women associate abuse with alcohol consumption. The Peruvian vice minister notes with concern the lack of anthropological studies on the effects of the extractive industry on indigenous women. "There is no real sense of the size of the impact, starting with the way that monetary economies disrupt traditional gender relations. The breakdown in their traditional system will create new patterns if these changes are not monitored, "observes Balbuena.

What can be done, then? The vice minister believes that Environmental Impact Studies have to be modified to incorporate more information about social impact. "When we talk about monitoring extractive projects, we think about natural resources and the effects on the environment, but the social impact requires the same degree of study as the environmental one. At present there are no anthropologists or specialists working on these problems; there is no analysis of gender issues. It's not enough just to say there is a certain number of women in each community and to offer them workshops in cooking and textiles," the vice minister concludes.

What's to be done then? Environmental impact studies should incorporate more research into social impact. "Monitoring of extractive projects focused on natural resources and pollution, but not on the social impact," declares Espinosa.

Studies about the extractive industries' impact on the lives of indigenous women are very scarce. Del Castillo stresses in her thesis that it is necessary to carry out "more in-depth study to observe how spouses appraise the 'progress' their husbands say they are experiencing. The view of the individual who has not left the community, who has stayed to take care of the home, who supports her husband in his work tasks, who does not have the same opportunities as her spouse, can be quite different from the ideals of life held by the Machiguenga man."

Without these studies, the Peruvian state's support of the affected communities becomes deficient, above all because there is growing evidence that indigenous women and their children are experiencing a more precarious situation than they had in their traditional system of life.

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An indigenous woman prepares food.

PHOTO BY LESLIE SEARLES <WWW.LESLIESEARLES.BLOGSPOT.COM>

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Transforming U.S.-Latin American Relations

A REVIEW BY MICHAEL SHIFTER

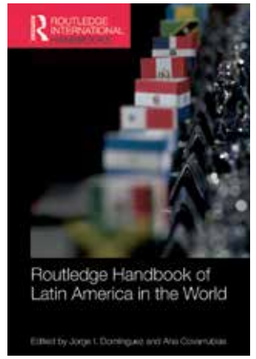
Routledge Handbook of Latin America and the World, edited by Jorge Domínguez and Anna Covarrubias (Routledge: Taylor and Francis Group, 2014, 482 pages)

On December 17, 2014, after U.S. President Barack Obama and Cuban President Raúl Castro simultaneously announced the decision to move towards normalizing bilateral relations—after more than half a century of estrangement—there was little backlash. Cubans cheered, and even in Miami's traditionally hardline Cuban American community, criticism was muted. A counterproductive policy, linked to the Cold War and frozen in time, had at last been adapted to the 21st century.

That development, which secured Obama's legacy in Latin America and took away virtually the only U.S. policy stand unifying the entire region against it, came too late to be included in this excellent and impressively wide-ranging volume co-edited by Jorge Domínguez of Harvard University and Anna Covarrubias of El Colegio de Mexico. The book systematically reviews the dramatic changes that have taken place since the Cold War to the present, not only in inter-American affairs but especially in Latin America's global relations. Until now, U.S.-Cuba policy had been an outlier, notably out of sync with most of Washington's other approaches towards the region.

Domínguez and Covarrubias have assembled a diverse and first-rate group of analysts and scholars to illuminate in particular the processes that have rendered Latin America's relationship with the rest of the world barely recognizable from the 1980s. The volume is soundly conceived, conceptually coherent and well-organized.

It begins with a fine overview chapter by Abraham Lowenthal and Hannah Baron highlighting the region's transformations, followed by sections focused on varied theoretical approaches, examinations of five Latin American countries' foreign policies, the role of extra-regional actors, the progress—and limits—of integration and multilateral efforts, and thematic studies most germane to Latin America's international relations. There is a lot to track and digest. Although some overlap and unevenness in quality are inevitable—the sheer scope of the material covered results in some unwieldiness—the chapters are generally of very high caliber. Each makes a distinct and valuable contribution to interpreting an enormously complex and constantly evolving landscape. The chapters make clear that Latin America's engagement with the world did not begin with the end of the Cold



War—in fact, the region's global links were arguably stronger before that fierce ideological battle emerged—but there is little question that globalization in recent decades has accelerated such a process. In the latter part of the 20th century, the United States was the predominant external actor involved in the region. Vast asymmetries in power defined a complicated and ambivalent relationship, often marked by both cooperation and conflict. Such power differentials naturally gave rise both to a paternalistic attitude in the United States and to suspicions and resentments against the United States in many parts of Latin America. For Washington during that period, anti-communism trumped all other interests. The Cold War years left a lot of baggage that, as a number of the chapters argue, manifests itself to this day. There are signs that the shift in U.S.-Cuba policy has begun to mitigate some of the associated costs.

Several chapters devote attention to what Covarrubias and Domínguez call, in their superb introduction, "the second wave of regionalism (that) took place in the late 1980s and early 1990s." They aptly characterize the 1990s as the "liberal decade," when it appeared to many observers that, with the end of the Cold War and the move from authoritarian to democratic rule, Latin America was converging on three fundamental notions: democratic politics, market economics, and productive cooperation with the United States. The heightened promise of multilateralism in the hemisphere (which ultimately proved to be elusive) is amply documented. Chapters on the Organization of American States by Thomas Legler, trade and economic integration by Antoni Estevadordal, Paolo Giordano and Barbara Ramos, and North America by Robert Pastor (to whom the volume is dedicated) provide an analysis of this phase. Today there is a greater measure of realism on these questions. Expectations have been considerably scaled back.

New global forces and pressures—coupled with Al Qaeda attacks on New York and Washington, D.C., on September 11, 2001—helped turn the page on that brief interregnum of unity and hemispheric cooperation and ushered in what Estevadordal, Giordano and Ramos identify as a "third wave of regionalism" starting around 2003. In some respects, the most recent period has been paradoxical. On the one hand, as Natalia Saltalamacchia documents in her chapter, regional groupings have proliferated over the past decade—some, like the Bolivarian Alliance for Latin America (ALBA), with a decidedly anti-U.S. cast, and others, like the Union for South American Nations (UNASUR) and the Community of Latin American and Caribbean Nations (CELAC), following a tradition dating from Simon Bolívar that expresses Latin American solidarity and independence. On the other hand, however, if one carefully examines policy positions, Latin America has arguably never been more variegated and fragmented, as each government pursues its separate national agenda.

This volume helps resolve the apparent contradiction between heightened regionalism and unprecedented disunity. Several chapters, especially one by Arturo Santa-Cruz, emphasize the importance of Latin America's identity, reflected in a long history of shared history and culture. In this sense, markedly divergent national strategies on a range of issues—from trade to basic notions of governance—are fully compatible with a desire to join together at the regional level, to project and assert greater confidence on the global stage.

In the 2000s, with the United States suffering setbacks in its Iraq misadventure and the economic and financial crises, Latin America had a larger space to pursue a more independent political and economic course. This is particularly true of/in South America, as Mexico and Central American remained profoundly connected to the United States. A confluence of factors account for the region's opportunity to exercise greater "autonomy," a construct that runs through the volume and gets detailed treatment in theoretical chapters by Roberto Russell and Juan Gabriel Tokatlian and another by Arlene Tickner. No country exemplifies such a shift in its regional and global profile since 2003 (when Lula became president) as much as Brazil, a story well told in the chapter by Monica Hirst and Maria Regina Soares de Lima. During this period, moreover, the region (with few exceptions) sustained solid growth rates and managed to reduce poverty, even inequality, and expand its middle class.

To be sure, one of the most significant developments in Latin America of the past decade has been the greater presence and deeper engagement of extra-hemispheric actors, most particularly China on the economic front. China's major economic role in the region is, not surprisingly, mentioned in virtually every chapter in the volume. In a separate chapter, Margaret Myers offers a comprehensive analysis of China's evolving engagement in Latin America, chiefly through trade, but also financing and, increasingly, investments in infrastructure. Despite its economic slowdown, China remains a formidable economic player in many of the region's countries, and there is no sign that its strategy will become less aggressive or diminish in coming years. The volume also contains solid chapters on Latin American relations with Europe and another with Japan. Others could have been included on the region's relations with India and South Korea, which were not discussed in this otherwise complete volume.

Among the book's many merits is an emphasis on the complex interplay among domestic political factors for foreign policies and global relations. Andrés Malamud's chapter on presidential decision-making in Latin American foreign policy is particularly instructive. In another chapter, Russell and Tokatlian argue that during the Kirchner era foreign policy was significantly shaped—more so than in other periods—by internal domestic politics. All of the authors understand that to explain foreign policies one has to examine the dynamics of national politics.

As a measure of the volume's scope, the analysis goes beyond governmental relations and encompasses globalization processes originating in the region, including civil society groups and movements and expanding numbers of *multilatinas*, Latin American businesses that operate worldwide. In light of the dynamic quality of global interactions today, the book might have even gone a bit deeper, probing the implications of social media and accelerating people-to-people connections. Indeed, the volume demonstrates that the region has offered a great deal to the rest of the world. Kathryn Sikkink argues persuasively that much of the work on human rights that emerged in Latin America has been of immense value and utility to the same cause in other parts of the world. And in another chapter on human rights, Peruvian jurist Diego Garcia-Sayan maintains—somewhat at odds with prevailing assumptions—that despite the relentless attacks against the inter-American system in recent years, the impact of rulings by the Inter-American Court of Human Rights has, on balance, been positive and quite considerable.

Although history shows that Latin America's global engagement does not necessarily march forward in linear fashion, there is reason to believe that the tendencies witnessed, particularly in recent decades, towards the region's deeper and more varied relations with the rest of the world, will continue. This is even so for the United States which for all the talk of its declining influence, remains a key player in Latin America. Mark Williams offers useful ideas how it can take better advantage of opportunities to become more productively involved. As Nicola Philips reminds us in her compelling chapter, the volume comes out precisely at a moment when fundamental power shifts are taking place throughout the world and there is tremendous flux and

uncertainty.

Prominent Latin Americans have long had key global leadership roles, but perhaps no one more so than Jorge Mario Bergoglio, archbishop of Buenos Aires, who became Pope Francis in 2013. The first Latin American pontiff has already had an enormous impact of an array of questions, including helping to broker the U.S.-Cuba rapprochement. Although the Church gets scant attention in this volume, few doubt that Pope Francis will continue to bring his peculiarly Latin American perspective and sensibilities to global challenges—another eloquent reminder of the region's rich contributions to the world.

Michael Shifter *is president of the Inter-American Dialogue, a policy forum on Western Hemisphere affairs based in Washington D.C. He is also adjunct professor of Latin American politics at Georgetown University's School of Foreign Service. With Jorge Domínguez, Shifter has co-edited three editions (2003, 2008, and 2013) of* Constructing Democratic Governance in Latin America, *published by Johns Hopkins University Press.*

Human Rights, Human Woes

A REVIEW BY DANIEL GONZALEZ

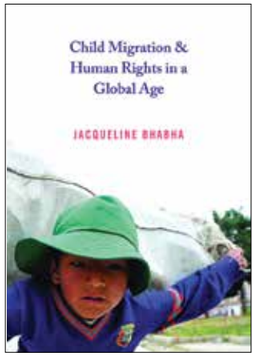
Child Migration & Human Rights in a Global Age by Jacqueline Bhabha (Princeton University Press, 2014)

The two boys walked up the road to the top of a levee and then sat down in the gravel and weeds. In the near distance overhead, the Anzalduas Bridge spanned the Rio Grande, connecting Mission, Texas and Reynosa, Mexico.

The boys, no more than 13, turned out to be from Honduras. Earlier that Saturday, in the pre-dawn dark, they had crossed the muddy greenish waters on a raft piloted by smugglers, who deposited them on the banks of the United States and told them to keep walking until they encountered a truck painted white with and green stripes, the markings of the U.S. Border Patrol.

Within minutes, a Border Patrol vehicle came zooming in from the distance on top of the levee, a plume of white dust trailing behind. A Border Patrol agent told them to climb inside and the truck sped off.

It was mid-June in 2014, the peak of the so-called "surge" of child migrants fleeing Central America and then crossing the border from Mexico into the United States along the Rio Grande Valley in south Texas. Never before had I witnessed such an astonishing scene, taking place the last day of my week-long trip to the U.S.-Mexico border to cover the surge for *The Arizona Republic*. Instead of trying to evade the Border Patrol, as unauthorized migrants have done in the past, these children—traveling alone, or with mothers and other family members—were actually turning themselves in to the Border Patrol in a desperate hope that by doing so they would be given "permisos" to stay in the United States permanently.



The "permisos" of course, turned out to be a lie, marketed by enterprising smuggling organizations to exploit the growing desperation of children and juveniles eager to flee the grinding poverty and vicious gang violence gripping many areas of Honduras, El Salvador and Guatemala.

The flow of Central American children and juveniles to the United States is just one element of the growing phenomenon of child migration explored in Jacqueline Bhabha's sweeping new book, *Child Migration & Human Rights in a Global Age*.

Bhabha, the Professor of Practice on Health and Human Rights at the Harvard School of Public Health and a lawyer, is one of the foremost experts on transnational child migration, refugee protection, and children's rights and citizenship.

Spanning multiple continents, her superb book is a comprehensive examination of child migration across the globe and the accompanying human rights implications.

Divided into three parts, the book first explores the movement of children who cross borders attempting to reunite with parents who migrated earlier in search of work to support their families or parents who had fled war and other calamities.

"The basic human intuition that family life is crucial for the well-being of children is confirmed by human behavior, by the sacrifices made, the plans developed, the migrations embarked upon to secure reunification when family unity has been interrupted," Bhabha writes.

The basic right to family life is a "crucial bedrock of a just migration policy," she later adds.

Even so, through various examples, Bhabha shows how family reunification for deserving migrant children is often delayed or denied altogether by legal obstacles and flawed policies.

A second part looks at the hidden phenomenon of child trafficking, in which children are transported, often by smugglers, for the purposes of exploitation, either for their physical labor or for work in the sex trade.

In this section, Bhabha argues that the common characterization of trafficking as a form of modern-day slavery, which is how I have often heard it presented, is inaccurate. It ignores the fact that it is the migrant children themselves who seek out a relationship with their traffickers believing they both will benefit through an offer of work only to end up being exploited because of their vulnerability.

"Understanding and engaging with this "voluntary" element in trafficking relationships affecting children is crucial to developing lasting solutions," Bhabha argues.

The third part of Bhabha's book explores how children fleeing persecution and seeking asylum in other countries increasingly "encounter hostility and a climate of suspicion despite a broad international consensus supportive of their rights to protection."

Because of wide media attention, the public is familiar with some facets of child immigrationsuch as the flow of unaccompanied minors from Latin America to the United States and from Africa and the Middle East to the European Union.

As Bhabha's book points out, the children are not fleeing for a single reason, but often for multiple reasons at the same time. Some are traveling to join families that have already migrated. Some are fleeing war, civil unrest, natural disaster and persecution. Others are in search of work, education, opportunity and sometimes adventure. Still others are being trafficked or smuggled, when, as Bhabha notes, they are at great risk of exploitation, and abuse.

Bhabha's book goes beyond some of these more obvious forms of child migration and is most provocative when delving into myriad human rights issues associated with international adoptions. It had never dawned on me to think of international adoptions as a form of child migration, but of course they are, since so often they involves the movement of children from dysfunctional developing countries to nations in the developed world, usually to families with means in the West.

The book contrasts the differing public attitudes toward international adoptions and children fleeing to other countries on their own. International adoptions tend to be viewed in a favorable light, since the public perceives that these families, often unable to have children of their own, are "saving" children who might otherwise grow up in orphanages lacking opportunities afforded them in their new environments.

But why then are children who are fleeing often horrendous conditions on their own, who in effect are attempting to "save themselves" or to reunite with family members already abroad, often not viewed in the same favorable way? These children, as Bhabha notes, are impeded by conflicting legal and bureaucratic hurdles intended on one hand to protect the rights of children and on the other to protect national sovereignty.

And if the solution to the rising phenomenon of unaccompanied children is to improve the conditions in their home countries, so there is less reason to migrate, why then is not the same standard applied when it comes to international adoptions? The author argues they should be viewed as a last resort, so that children have more of a chance of growing up with their own families in their own countries. The implication, of course, is that international adoptions, rather than being philanthropic, provide a convenient alternative for childless families in developed nations.

This sort of ambivalence is a common theme throughout the book, and reminded me of the day several years ago when I accompanied members of the Immigration and Customs Enforcement's newly formed Fugitive Operation teams, or Fugops. We met before dawn at ICE's headquarters near downtown Phoenix where I watched as burly, heavily armed members of the team finalized their list of "targets" —immigrants who had been ordered to leave the United States but had remained after their deportation dates had passed and were therefore now considered immigration fugitives. All of the targets were what one ICE supervisor had referred to as "low-hanging fruit"— fugitives lacking criminal records living and working relatively openly in the United States despite their removal orders under the mistaken notion that no one would come looking for them. After agents knocked on the door of one house, I watched from the curb as a teenage girl, a U.S. citizen left behind with a legal resident aunt, stood outside in the doorway tearfully calling out, "Mommy, Mommy" as agents took her mother and father away.

Afterwards, back at ICE's headquarters, the supervising Fug-Ops agent asked me what I had thought of that morning's raids. I found the work heartbreaking and told him the arrests seemed to confirm critics' accusations that the newly energized policy of aggressively pursuing undocumented parents of U.S. citizen children was breaking up families. The ICE supervisor, acknowledged that the raids were indeed heartbreaking. But he quickly dismissed the criticism that the raids were tearing apart families. The deported parents, he argued,

were free to leave with their U.S. citizen children instead of leaving them behind with legal family members or friends.

Since then, more than 100,000 undocumented parents of U.S. citizens have been deported, according to some estimates, and indeed many of them have taken their children with them rather than live apart In her book, Bhabha makes a compelling argument that thousands of U.S. citizen children have been subjected to "defacto" deportations as a result of the government's removal of their undocumented parents.

Bhabha's book is provocative on many levels, pointing out that while migrant children are afforded certain human rights protections under a growing body of international law, these rights are frequently rendered ineffective by the push to deport migrant children at the country level.

Daniel Gonzalez, *a senior reporter at The Arizona Republic, writes about immigration, the U.S.-Mexico border and Latino affairs. He was co-lead reporter for The Republic's 2014 "Pipeline of Children" series about the surge of unaccompanied children and families fleeing Central America, which was awarded the 2015 Hillman Prize for Newspaper Journalism. He also received this year's Ancil Payne Award for Ethics in Journalism. He is a two-time Virg Hill Arizona Journalist of the Year. He has a journalism degree from The University of Iowa.*

Musical Creation and Hardship

A REVIEW BY PEDRO REINA-PÉREZ

The People's Poet: Life and Myth of Ismael Rivera, an Afro Caribbean Icon by Rosa Elena Carrasquillo (Pompano Beach: Caribbean Studies Press, 2014, 246 pages)

The day Rafael Cortijo's remains were put to rest in Puerto Rico in 1982, his admirers came out in full force to honor their tropical music hero one last time. But one man caught everyone's attention as he walked in front holding the coffin over his head with both hands. To all the people who lined the streets, Ismael Rivera's grief was evident, in this last tribute to the man with whom he had shared the stage and a long history of musical creation and hardship.

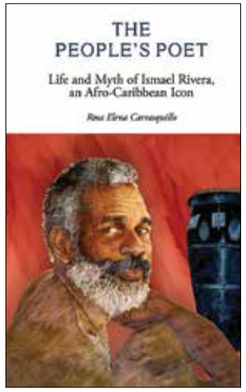
Few artists have captured the public's imagination like singer Ismael Rivera, "Maelo," a veritable legend of urban Puerto Rican music. His was a life of extremes, a dramatic journey both literally and metaphorically whose dramatic arch extended well beyond his lifetime. Tenacity, creativity and audacity were three of the traits that distinguished him from his peers. Today he is still revered as troubadour genius for his resourceful intonation and for his unique talent for improvisation. With Rafael Cortijo, his compadre and musical sidekick, he burst into the San Juan scene at a time of many cultural and economic changes that would come to define "modern" Puerto Rico, and their music became the sound of an era.

In *The People's Poet: Life and Myth of Ismael Rivera, an Afro Caribbean Icon,* Rosa Elena Carrasquillo traces the life of Maelo, offering a nuanced interpretation of his rise and fall as lead singer for the ensemble Cortijo y su Combo as a metaphor of post-colonialism in the Caribbean, and Puerto Rico in particular. She follows his evolution from childhood in Santurce (Musical Cradle 1931-1954); his rise to stardom (The Golden Years 1954-1962); troubles with the law (Imprisoned 1962-1966); incursion into the emerging salsa scene (Salsa Heights 1966-1979); and final curtain call (Desolation 1979-1986). Santurce is a storied neighborhood where runaway slaves took refuge in the 17th century and infused their new-found community with strong musical practices. By the 20th century, Santurce had become San Juan's first suburb, a very dynamic neighborhood with cultural diversity and richness. Life in Villa Palmeras, the modest section where Maelo grew up and spent the better part of life, was infused with musical rhythms rooted in African traditions like *bomba* and *plena*. Maelo learned how to build *barriles* and *panderos*, the two percussion instruments used in these two popular genres in which dancers and drummers constantly improvise. This was the foundation upon which he built his artistic career.

Maelo's mother Margarita initiated him in music. Through interviews and archival research, Carrasquillo takes a close look at this family, revealing how intimate influences played a crucial role in his sensibility.

In 1954, Maelo and Cortijo soon joined forces in Conjunto Monterrey where Cortijo played bongos and Rivera, congas. Maelo gained a reputation as a clever lead singer with much creativity in improvisation. After a short stint in the U.S. Army, he returned home to become the lead singer for Orquesta Panamericana and shortly after rejoined Cortijo in his new Combo and went on to reach stardom traveling with the band to New York, Europe and South America.

At the same time this was happening, Puerto Rico underwent a dramatic transformation led by industrialization and by the development of tourism as a magnet for economic growth. Beachfront hotels with casinos were built, and the island was promoted as a tourist destination in the U.S. market with great success. Yet, for all the talk of modernization, people of color were not allowed in ballrooms and most hotels. Musicians had to enter through the service



door. Cortijo y su Combo, however, challenged convention as they clearly defined themselves as *mulatos* and were in very high demand. They began playing in hotels, and with the advent of television became regulars in variety shows conquering the public with their unique sound. Crowds adored their original and defiant approach to *plena* and *son*. No other group had achieved so much fame in an island with such pervasive racism. They tested established prejudice and found extraordinary support in the general public. But when Ismael was arrested and charged for drug possession as the band was returning from playing in Panama, he and the band quickly fell from grace, experiencing a devastating blow to their popularity. Maelo served a four-year sentence.

After being released, he formed a new band, Ismael Rivera y los Cachimos. But things were not the same. Although they played for eight years and recorded some of his most memorable songs (written by Tite Curet Alonso), his life was irreparably broken.

Carrasquillo's book approached Maelo's biography not simply as that of an artist fallen from grace by his fame and fortune but that of a creator whose work brought down barriers in terms of social class and race. In her words, "Ismael illustrated a type of hero of postcolonial times in which heroism abandons patriotic martyrdom for daily survival. Particularly on an island where the U.S. Congress ultimately controls politics, Puerto Ricans give great significance to the realm of daily routines and culture as it is the only allowed possibility for imagining a nation."

Pedro Reina Pérez, *a historian, journalist and blogger, was the 2013-14 DRCLAS Wilbur Marvin Visiting Scholar. He is a professor of Humanities and Cultural Agency and Administration at the University of Puerto Rico. Among his books and edited volumes are* Compañeras la Voz Levantemos *(2015),* Poeta del Paisaje *(2014) and* La Semilla Que Sembramos *(2003). More of his work at www.pedroreinaperez.com*

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ReVista, the Harvard Review of Latin America, is published three times a year, and each issue focuses on a different theme. We welcome queries from students, professors (Harvard and non-Harvard) and community members, but most article assignments are made by invitation. Harvard faculty and students may submit suggestions for the "Building Bridges" section. Interested book reviewers (non-Harvard welcome!) are also welcome to express their interest. We prefer books written or edited by Harvard-related authors. Queries to <jerlick@fas.harvard.edu>.

Building Bridges with Cuban Libraries

BY LYNN M. SHIREY

Since the beginning of the U.S. trade embargo on Cuba in the 1960s, the Harvard Libraries have been unable to purchase materials directly from Cuban institutions, publishers or booksellers. We rely chiefly on vendors from third-party countries—for example Uruguay, Canada and Spain—who make regular purchasing trips for U.S. libraries. In recent years, several small U.S.-based vendors have been able to do so as well.

We encourage Harvard students on semester-long Study Abroad trips (Harvard has sent students to Cuba on an exchange with the University of Havana since Spring 2007) to bring back books, posters and other materials to donate to the university libraries. Faculty members who travel to the island and visiting Cuban researchers often collaborate as well.

As the librarian for Latin America, Spain and Portugal at the Harvard Library (Widener), I took advantage of a recent trip to Cuba to renew ties and agreements for academic resource-sharing with administrators and librarians at Cuba's leading research institutions.

The Cuban government subsidizes the great majority of academic publications on the island. That means that many of those materials are not available commercially: thus personal contacts among institutional staff remain paramount. The Biblioteca Nacional de Cuba José Martí and the libraries of the Universidad de La Habana and the Casa de Las Américas (research institute) all publish essential materials on Cuban history, politics, economics, culture and education that are only available through exchange or as gifts (Cuban institutions are very generous)! I met with representatives of all three institutions and returned with a suitcase full of books, publication catalogues, and renewed connections that should serve Harvard Library's users well.

Of course, researchers of Cuba require collections of non-academic materials as well. Several large U.S. research libraries, including Harvard's, collect posters, printed ephemera, postcards, photographs and film. Artists' books are particularly interesting: Ediciones La Vigía of Matanzas has a long history of fabricating works-of-art-including-text (or vice versa) using artisanal and low-cost techniques such as mimeograph and Xerox, as well as staples, brown paper and found objects. Their recent publication *Pescador de eneros* (2015), by Rey Montalvo, is printed on brown craft paper and hand-bound in cardboard that has a white string netting and pieces of blue colored fabric affixed to it. The cover, which is made to look like a variation of the Cuban flag, also displays the image of a guitar and the black silhouette of a man playing the guitar. The Casa Editora Cuadernos Papiro (Holguín) also publishes artists' books like *Orishas en Cuba*, a portfolio containing six booklets with legends of Afro-Cuban deities, printed on paper made of recycled fibers, and annotated: "Para hacer el papel de este libro no se dañó la naturaleza. Se utilizó papel reciclado blanco incorporándole fibras de tabaco. " ("This book's paper was made without damaging nature. It uses recycled white paper that incorporates tobacco fiber.")

We will continue to rely on a mixture of personally coordinated exchanges and out-of- country vendors to obtain Cuban materials until a true economic opening between the two countries is achieved. Complete freedom to purchase and exchange library materials through direct commercial entities would most likely involve the lifting of the U.S. embargo, which must be authorized by the U.S. Congress.

In the meantime, I have begun conversations with publishers and potential vendors in Cuba in preparation for such a change. Scholarly journals are beginning to be published and accessible online (*Revista de la Biblioteca Nacional de Cuba José Martí*; *Temas*), but print monographs continue to be elusive, fragile and time-consuming to obtain. Our goal is to make the best Cuban research available to our users in a timely fashion—for this we need open economic relations and a developed book trade. Cooperation with our Cuban colleagues remains crucial during this time of change.

***Lynn M. Shirey** is the Librarian for Latin America, Spain and Portugal at the Harvard Library (Widener).*

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