



Mexico's New Hydrocarbons Model:

A Critical Assessment Four Years Later

By John Padilla and Duncan Wood

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Mexico's energy sector finds itself once again at a fork in the road. The government has spent the past decade trying to create a stronger regulatory framework with better checks and balances and a more dynamic energy market and economy, while at the same time lessening the financial burden on the state and stemming the decline in oil and gas production and reserves. The results of the 2018 elections will determine whether continuity, pause, or rollback are the marching orders of the next *sexenio*. Moving beyond the rhetoric that any massive and complex structural reform entails, an objective assessment of the 2013 energy reform is vital. What are the strengths and weaknesses of Mexico's new hydrocarbons model and where should it go from here?

This paper addresses this question using the results of a series of forums developed and hosted by IPD Latin America in Mexico City in early 2018 with the support of the Wilson Center. Participants included a broad cross-section of local industry executives ranging from upstream to downstream, including lawyers, academics, former senior government officials, and individuals with decades of experience in Mexico's energy sector and abroad. Participants were asked to give a critical evaluation of the 2013 energy reform and its results. What was particularly impressive was that all participants (several of whom have not seen eye-to-eye over the past decade) were unanimous in stating that the reform is a major step forward for Mexico's energy sector and that it has brought Mexico firmly into the 21st century and in line with international best practices. However, those same experts agreed that it has come up short on numerous fronts. With such an ambitious and all-encompassing reform, whose scope is unprecedented at a global level, all participants agreed that there is still an enormous amount of work to be done. The overly optimistic promises made at the onset of the Peña Nieto administration created unrealistic expectations of the energy reform and its implementation. Ongoing modifications to reforms of this magnitude are both needed and should be expected.

Moving from monopolies to a more dynamic market is rarely a smooth transition. In this sense, the reform itself marks a huge step forward. The broad political consensus required for constitutional reform was indeed an impressive achievement that allowed a paradigm shift for Mexico. However, the reform implementation has exposed numerous legal and regulatory issues that need to be addressed.

The goal of this paper is to give politicians, policymakers, and other relevant stakeholders a clear assessment of what has been achieved so far and what remains to be done. Failure to address some of the reform's problems in design and implementation (as well as political will) will limit the positive results and fail to deliver the dynamic energy market and true economic boost—from oil & gas to renewables—that has long been envisaged. The major drop in oil prices that occurred as the energy reform was being passed did not help matters, nor did the Peña Nieto administration's decision not to adjust its strategy or messages. But it is important not to allow price fluctuations, endemic to all commodities, to cloud the merits and deficiencies of the reform itself.

We will begin by looking at the successes of the new energy model in Mexico and will then detail the multiple upstream and downstream challenges and structural weaknesses facing the energy sector today. Lastly, we offer up policy recommendations that should be considered by the new administration that takes over in Mexico in December 2018.

The Strengths of Mexico's New Hydrocarbons Model

Rather than walking through the myriad changes involved in the 2013 Constitutional reform, we have chosen to focus on four main strengths of Mexico's new hydrocarbons model. These are significant changes that provide a strong foundation upon which any future government can build a more competitive and robust sector to benefit the overall economy.

- The 2013 reform and the ensuing secondary legislation of 2014 marked a profound transformation in Mexico's energy sector from what had been the norm for 75 years. In particular, broad-based political consensus on long-held taboos related to Mexico's oil nationalism was finally reached. Enshrining this agreement in the Constitution should help to legitimize the reform and mitigate future attempts to reverse it.
- The adoption of market principles and international best practices, an unequivocal commitment to transparency in awarding E&P blocks, long-term electricity generation contracts and access to pipeline capacity that has placed them beyond reproach, as well as the litany of market opportunities that have begun to emerge, have attracted a broad array of international and domestic investors to Mexico's energy sector. The result: much-needed capital, expertise, and talent that will ultimately increase production and fiscal revenues, provide healthy diversification, and fuel economic growth.
- The new institutional framework is a dramatic improvement. The strengthening of the CNH and CRE and the creation of the Mexican Petroleum Fund (FMP), the new natural gas ISO (CENAGAS), and the new energy sector environmental regulator (ASEA) pave the way for a modern and responsive regulatory environment that could maximize the benefits of the reform if adjustments are made.
- In addition to the depth of the reform, the speed at which it was undertaken was extraordinary. This helped to shore up investor interest and confidence and allowed the benefits to be realized in a shorter timeframe, although the same rapidity resulted in less than optimal outcomes on several fronts.

Emblematic of the success of these four variables, a look exclusively at the E&P bid rounds that have been undertaken since energy reform was passed is revealing. By international standards, the opening of the oil sector has produced impressive results awarding 107 blocks to 73 companies from 20 different countries in less than three years.

Table 1. Summary of CNH Bid Round Results

	Round 1	Round 2	Round 3.1	Farm-outs	Total
Blocks / areas awarded	38	50	16	3	107
Surface awarded (Km2)	20,456	55,561	11,020	1,609	88,646
Number of winning companies	48	31	14	3	73
Cash bonus, carry and upfront payments (US\$ mn)*	0	643	124	2,759	3,526
Work program (US\$ mn)	1,230	2,145	442	206	4,022
Total Committed investment (US\$ mn) **	1,230	2,787	566	2,435	7,018
Potential investment (US\$ mn)	41,319	103,050	8,626	8,806	161,263
Average government take (%)	73%	73%	72%	76%	74%

* Includes cash paid in the form of bonuses and upfront payments to both the government and PEMEX. It is important to note that SHCP started capping maximum royalties with Round 2, requiring a cash bonus in bids that offer maximum government take and, in case of a tie, awarding the block to the party offering the largest cash bonus.

** Committed investment in gas pipelines and electricity alone represents 2.3 times the upstream committed investment to date given the shorter investment cycles seen.

Source: IPD based on CNH, SHCP and SENER

The Weaknesses of Mexico's New Hydrocarbons Model

There is widespread agreement among foreign and domestic experts that Mexico's reform marks a major step forward. However, there is also a consensus that it was incomplete and needs to be fine-tuned, with a focus on addressing new challenges that have emerged and modifying elements that are not working.

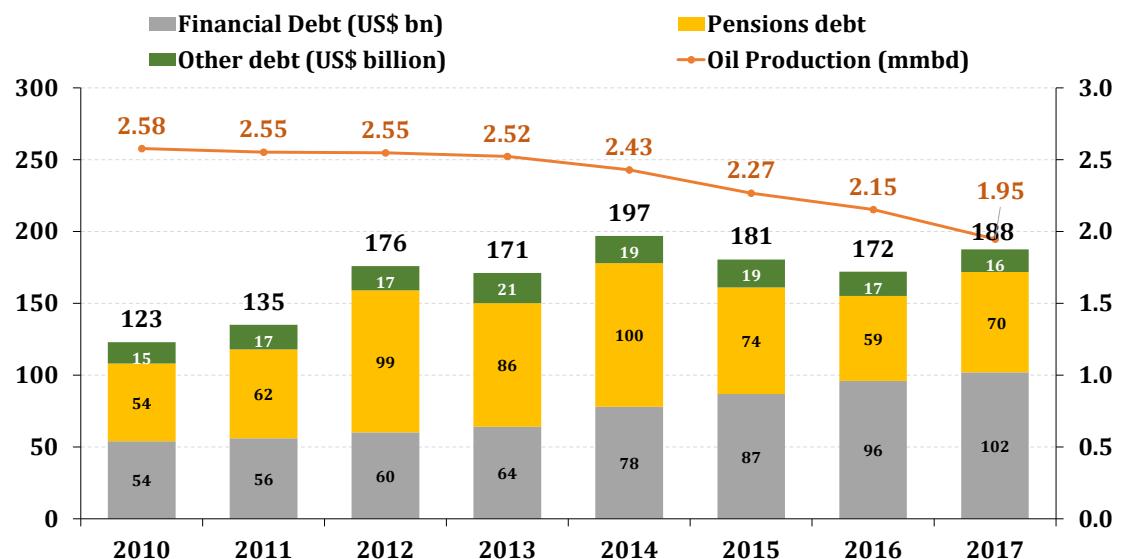
- When the political consensus formed to approve the reform, the short-term benefits were exaggerated or at best naive. The sheer amount of effort it took to establish regulations, procedures, and a litany of related items in order to launch the first E&P bid round in July 2015 and the first long-term electricity auction in March 2016 was truly a Herculean effort. The benefits of these efforts and other investments that have emerged from the energy reform take time, are not instantaneous, and are just beginning to materialize. However, there is little doubt that if the reform efforts can be maintained, significant long-term benefits will indeed be delivered to the sector, the economy, and the Mexican people. The insistence on short-term results, particularly in light of Mexico's upcoming presidential and legislative elections, poses a significant problem. If political considerations stall the investment cycle from being fully played out, incomplete results will be in hand that will hamper effective decision-making on how to best move forward.
- Oil production is down, and although expected, it is a visible item that anti-energy reform proponents point out. And although there have already been very material hydrocarbons discoveries made from blocks awarded, it will be several years before such success is visibly seen in terms of proved reserves and marked oil production gains. While reduced PEMEX CAPEX due to a low oil price environment tends to be pointed to in explaining Mexico's stunning 26 percent production decline since 2013, proportional responsibility

must be given to the government's failure to implement proper incentives (and meaningful consequences) to avoid the major operational and financial degradation that has been witnessed in the company.

- Although some progress has been made in terms of organizational reforms and partnerships with the private sector, PEMEX remains largely uncompetitive and in desperate need of both refinancing and efficiency and productivity improvements—all items that were supposed to have been addressed directly or indirectly with the reform. This failure to make the hard decisions needed with respect to PEMEX continues to handicap the company as it confronts a more demanding marketplace.

PEMEX's finances have become even more unsustainable since the historic energy reform was passed. PEMEX total financial debt (excluding pension liabilities) increased by over 60 percent between 2013 and 2017, reaching US\$ 102 billion, all while production and reserves continued to plummet. With an ever increasing portion of cash flow servicing debt and pension liabilities amid rising interest rates, higher oil prices and the hope for higher production can no longer solve the company's financial problems. And PEMEX debt as a percentage of total public debt has increased to 36 percent, further impacting the state's financial health. A private company facing similar financial challenges would be declared bankrupt.

PEMEX Debt and Oil Production



Source: IPD based on SENER and PEMEX

- The rapid creation of a legal framework in 2013-14 was undertaken using mature, rather than emerging, oil markets as a point of reference. There is a need to adapt this framework to the realities of Mexico's energy sector as it develops.
- As the regulatory framework continues to be built out and adapted to a developing and evolving market, inconsistencies have emerged. Many have been addressed by quick-fix

government solutions that have not always taken into consideration sufficient market feedback or industry norms.

- In the mid- and downstream sectors, the playing field remains uneven based in large part on access to infrastructure. New infrastructure will start to change this over time, provided that access and interconnection issues are properly addressed. The reform has allowed CFE to emerge as a highly dominant and monopolistic natural gas player. CRE has yet to fully develop and institute policies that will help accelerate greater competition.
- A large number of national, local, and sectoral laws still inhibit the development of competitive energy markets. This problem is particularly acute in the areas of Social License to Operate, rights of way, access to port and airport facilities and marine transportation, and outdated state laws that impede competition in areas such as fuel markets. Coordination of federal, state, and municipal authorities is critical. Serious challenges remain in terms of infrastructure and support from local authorities.
- The new regulatory framework is being overwhelmed by the sheer volume of work, reporting, and the approval systems established by the government. Due to the rapid implementation of the reforms, highly dedicated regulators have not been given sufficient time or resources to adequately fulfill their responsibilities. Nonetheless, a more streamlined approach will be needed as a larger workforce, in and of itself, is unlikely to resolve this issue. Digitalization will help but not fully resolve such issues. At the same time, adding both commercial and technical expertise, whether local or international, to regulatory agencies is imperative. Lastly, personnel turnover issues related to the change in administration need to be considered given the increasing number of resources all of the new investment requires; more work remains to be done on developing permanent government staffers.
- Worsening public security and organized crime issues not only challenge the rule of law and well-being in Mexico but also threaten to deter investors.

Policy Recommendations to Improve Mexico's Hydrocarbons Model

Despite the multiple problems facing the energy sector in Mexico, forum participants agreed that there are concrete steps that can be taken to resolve them. Most necessary changes can be done via adjustments to existing legislation, regulations, and policies, although certain Constitutional reform will ultimately need to be considered, particularly as it relates to PEMEX. Proposals were made in four key areas:

Legal Framework

- It is vital, particularly in light of ongoing NAFTA uncertainty, that Congress passes an Investor Protection Law to instill greater investor confidence in the energy sector.
- The Hydrocarbons Law must be modified to make its definitions and requirements more precise, including to better facilitate profit-sharing (even following recently published guidelines).
- National content requirements need to be revisited given the lack of clarity and problems being faced by companies in understanding what qualifies and what does not. It will be important to consider a public policy that promotes the integration of supply chains and human capital formation in oil and gas, petrochemicals, natural gas, and electricity.

- The government should create geographical “energy corridors” where sector activities can be concentrated and focused, and energy hubs may ultimately emerge, incorporating research and design, human capital formation and development, and economic activity.
- Mexico must pass laws governing the consultation of indigenous peoples that will better facilitate relations between investors and indigenous communities.
- Overlooked in the 2013 reform, laws in ancillary areas such as ports, maritime law, and airports must be adapted to meet the new realities and requirements of the energy sector.
- Land acquisition laws need to be revisited. Government intervention should be limited to bad developer behavior and protecting land owner rights, allowing negotiations to be exclusively undertaken between developer and land owners as done in all dynamic markets. Due to the increased administrative burden and delays government involvement have created, land acquisition costs since the passage of energy reform have increased between 300–400%, all of which delays the benefits to the local population involved.

PEMEX

No oil company can do everything and PEMEX is no exception. The government must allow PEMEX to focus on its strengths and unsaddle itself from business lines that are unprofitable or not strategic. Monopolies by definition rarely want to relinquish assets or business, which must be taken into consideration. Efficiency and generating value should remain the objectives for the national oil company post-reform. To ensure that these objectives are finally reached, the laws governing the national oil company must be adapted to give PEMEX the opportunity to act more like a private sector company. At the same time, issues concerning the service provider of last resort must be addressed. Beyond these overriding concepts, the group’s recommendations focused on two principle areas to effect meaningful change: 1) Finances; and 2) Corporate Governance.

Finances:

- The company’s fiscal regime must be adjusted to reflect the government take levels that have been successful in attracting a broad array of investors in the CNH bid rounds to date.
- PEMEX can no longer continue to add debt to fund its CAPEX needs as it has been doing, particularly as meaningful declines in production and all operating metrics persist. Financial leverage is no longer resulting in increased economic returns.
- The PEMEX Union’s pension and benefits scheme must be adapted to reflect Mexico’s current labor market conditions, and a credible plan developed to fund them. The overall PEMEX-union relationship must be adjusted as well.
- PEMEX needs to consider the sale of assets or even entire business lines (such as refining) to reduce its losses and generate income.
- The government should consider actively working towards at least a partial IPO for PEMEX to inject capital, properly promote a focus on efficiency, and improve corporate governance. The latter two items have not been achieved by replacing Union Board members with independent ones or an array of other failed mechanisms that were put forward after the reform. In order to pursue a partial IPO (which will require Constitutional reform), the company will need to become financially viable, and establish a clear vision for the future and corporate governance standards that investors will buy into.

Corporate Governance:

- Transparency, accountability, and performance-based incentives, requirements, and procedures must be revisited with meaningful penalties for non-compliance to achieve efficiency, increase productivity, and combat corruption. The lack of progress in the government's Odebrecht investigation via the SFP and PGR, among others, is a glaring issue that places transparency on the polar opposite side of the public bids and auctions that have been undertaken.
- Conflicts of interest on the PEMEX Board must be eliminated, starting with the Secretary of Energy and Hacienda. A majority of independent board members would be a start.
- PEMEX, beginning with its CEO, needs a professional workforce with advancement based squarely on meritocracy, and political influence minimized. The PEMEX CEO should not be a Presidential appointment, but instead selected through an executive search process approved by the Board.

Midstream and Downstream

- CFE must be properly regulated to address anti-trust concerns over market dominance (asymmetrical regulation should be implemented as occurred with PEMEX).
- CENAGAS must be strengthened to create greater market stability. The creation of an ISO for pipelines transporting liquids, similar to CENAGAS, is also needed.
- Pemex Logística must be reorganized to allow for more speedy and effective decision making given the impact it is having on the market. The creation of an independent logistics manager for the overall market should also be considered.
- There is an urgent need for greater transparency related to pricing and tariffs.
- An “all hands on deck” approach by the government must be taken to counteract rapidly rising fuel theft that is having widespread negative ramifications.

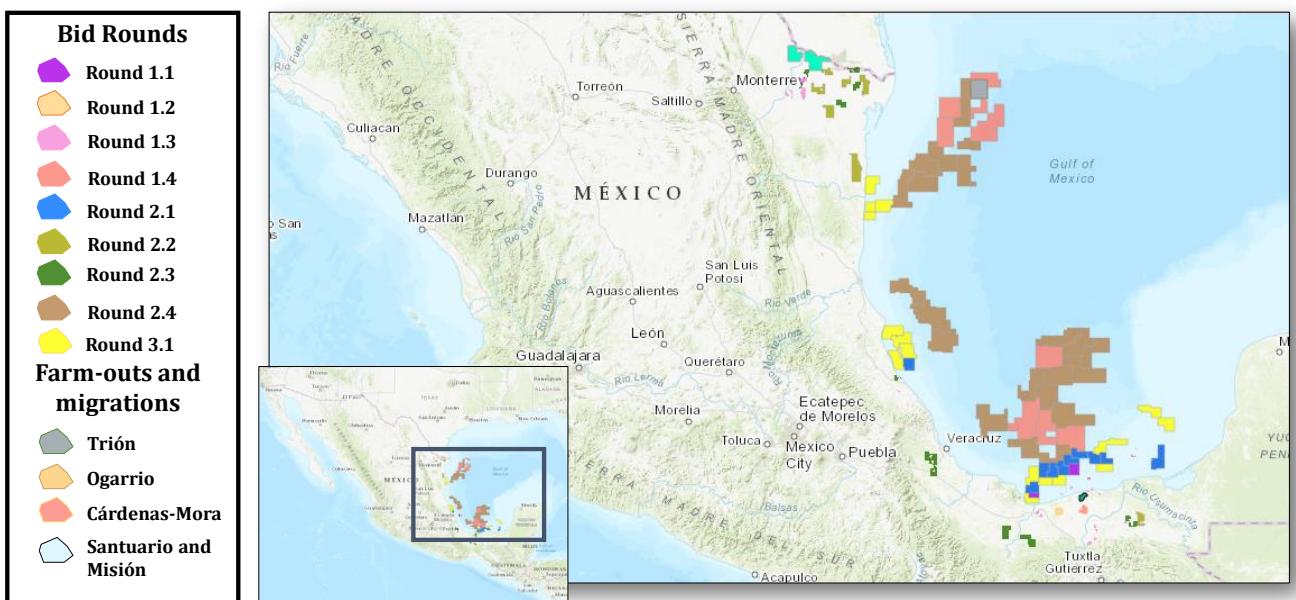
Institutional and Regulatory Framework

- Regulators must be given greater autonomy and their commissioners should be chosen according to technical and professional guidelines rather than politics. The ASEAN should be given full and equal status with the CNH and CRE.
- The mandate of ASEAN must be revised to reduce its responsibilities, and it should become independent of SEMARNAT. It is impractical to expect the agency to carry out regulatory duties covering the environment and safety across the entire hydrocarbons value chain (no country of Mexico’s size does this).
- Regulators must improve their response time without sacrificing transparency. The example of jurisdictions such as Texas and Alberta highlight the advantages of moving towards online platforms.
- An online “one-stop shop” should be created to allow companies to submit documentation once and allow it to be shared among all relevant agencies to eliminate duplication and allow quicker and better informed decisions.
- There is an urgent need for greater coordination among government agencies at all levels. This is particularly acute with regards to a litany of non-energy sector agencies and local authorities that impact energy sector activities.
- Mexico faces a crisis of security and rule of law. The energy sector is significantly affected by these problems and the government must make more of an effort to coordinate efforts with state and local authorities to protect economic activity overall.

Mexico's Energy Future

The evolutionary process that culminated in the 2013 energy reform has brought about impressive progress in Mexico's energy sector. The paradigm shift has moved Mexico from a model imagined in the 1930s to one designed to meet the demands of the 21st century. The model has already proven successful in attracting 73 investors from 20 different countries in 107 exploration and production projects alone as previously noted. Estimated investment could reach as much as US\$ 200 billion in exploration and production, transportation and downstream projects according to the government. But even if those figures are not fully realized, the volume of activity and participation to date are impressive. In the medium- and long-term, many of the projects awarded and those being independently pursued will help deliver higher oil and gas production, more robust infrastructure and redundancy, more efficient and subsidy-free markets, economic growth, and new employment.

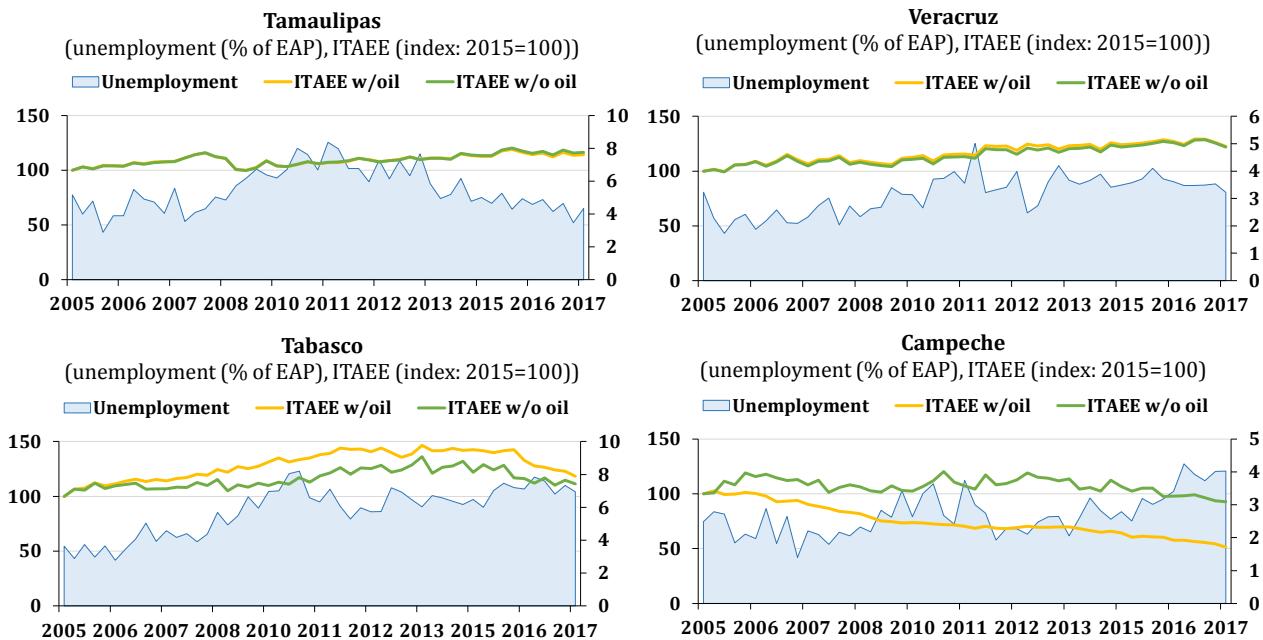
Areas with E&P Contracts



Source: IPD Latin America GPS maps

However, there is still plenty of work to do. The energy reform has failed to deliver results fast enough to satisfy the demands of public opinion and significant obstacles remain in effecting the transition to stable and efficient energy markets. Formal employment levels have fallen in Mexico's main oil states with Campeche being hit hardest—20 percent since 2012. This has occurred due in part to the decline in global oil prices and also to the freezing of PEMEX supplier contracts. PEMEX's operational and financial degradation have not helped calm public opinion, regardless of how much responsibility lies with reform implementation and how much on the company itself and/or political will. The energy reform's legislative and regulatory framework needs to be modified to resolve outstanding problems that have slowed project development and could create massive bureaucratic bottlenecks. Beyond the immediate energy policy environment, there continue to be serious problems that must be addressed related to security, rule of law, Social License to Operate, and community relations.

Economic Activity and Unemployment Indicators per State



ITAEE: State indicator of Economic Activity || Source: IPD based on INEGI

Despite these challenges and problems, Mexico's new energy model is a compelling example of how an outdated and inefficient energy sector can start to be transformed if the political will and resources are made available. Around the globe, policymakers and analysts have recognized the extraordinary achievements of the reform process and the truly revolutionary nature of the change. Most importantly, the reform will bring substantial benefits to Mexico's oil and gas sector, economic competitiveness, and the Mexican people, if it is allowed to run its course and if the necessary adjustments are made. Policymakers in Mexico must now decide how to ensure the transformation is permanent and capable of generating the true and lasting value needed by the nation in light of the specific realities they confront today. If they fail to do this, or if they reverse the progress already seen, then generations of Mexicans to come will suffer the consequences.

Summary of Policy Recommendations

Legal Framework	Regulatory and Institutional Framework	Midstream and Downstream	PEMEX
Reform to PEMEX Law.			Finances: Adjust the company's fiscal regime.
Creation of a Prior Consultation Law.			Adjust PEMEX Union's pension and benefits scheme.
Reform to improve infrastructure.	Reform ASE: <ul style="list-style-type: none">· Full and equal status with the CNH and CRE.· Reduce its mandate.· Autonomous from SEMARNAT.	Address anti-trust concerns regarding the CFE's market dominance. Strengthen CENAGAS to create greater market stability.	Consider assets sales to reduce losses.
Modifications to the Hydrocarbons Law.	Technical and professional criteria for choosing regulatory board members.	Consider creating an ISO for pipelines transporting liquids.	Work towards at least a partial IPO. <ul style="list-style-type: none">· Financially viable.· Clear vision forward.· Corporate governance standards.
Modifications to National Content requirements.	Improve regulators' response time without sacrificing transparency.	Re-organization of Pemex Logística to allow for more speedy and effective decision making.	
Land acquisition laws must be changed.	Single window for submission of permits and documents.	Greater transparency related to pricing and tariffs.	
Reinforce legal investment protections (same level as NAFTA).	Greater coordination among government agencies at all levels.	Implement an "all hands on deck" approach by the government to counteract fuel theft.	Implement transparency, accountability, and performance-based incentives, along with meaningful penalties for non-compliance.
Promotion of the integration of supply chains and human capital formation.	Better coordination with state and local authorities to address security issues and rule of law issues.		Eliminate conflicts of interest on the PEMEX Board. Start with a majority of independent board members.
Creation of "energy corridors."			Build a professional workforce based on meritocracy, and political influence minimized.

Glossary

- **ASEA:** Safety, Energy and Environmental Agency (acronym in Spanish). Specialized environmental and industrial safety regulator for the hydrocarbons sector. It is a decentralized agency of the Secretary of Environment and Natural Resources.
- **CAPEX:** Capital expenditures.
- **CENAGAS:** National Gas Control Center (acronym in Spanish). Responsible for managing the country's natural gas transportation and storage network (SISTRANGAS). It also functions as a natural gas transporter, through proprietary pipelines.
- **CFE:** Federal Electricity Commission (acronym in Spanish). Mexico's state-owned electric utility, founded in 1937.
- **CNH:** National Hydrocarbons Commission (acronym in Spanish). Technical regulatory agency for the Mexican upstream industry.
- **CRE:** Regulatory Energy Commission (acronym in Spanish). Economic and technical regulatory agency for the Mexican energy industry (except upstream).
- **E&P:** Exploration and Production.
- **GDP:** Gross Domestic Product.
- **ISO:** Independent System Operator.
- **IPO:** Initial Public Offering.
- **MMBD:** Millions of Barrels per Day.
- **Mexican Petroleum Fund:** Specialized fund set up to manage the Mexican state revenue received from all exploration and production activities, including awarded E&P contracts.
- **NAFTA:** North American Free Trade Agreement, signed by Canada, México and the United States of America. Came into force on January 1, 1994.
- **PEMEX:** Petróleos Mexicanos, Mexico's state-owned oil company, founded in 1938.
- **PGR:** General Prosecutor's Office (acronym in Spanish). Government entity dedicated to investigating and prosecuting federal crimes.
- **SEMARNAT:** Secretary of Environment and Natural Resources (acronym in Spanish). Responsible for the protection and conservation of the country's ecosystems and natural resources, as well as fostering sustainable development.
- **SFP:** Secretary of Civil/Public Service (acronym in Spanish). Responsible for coordinating, assessing and monitoring the federal government's procedures and actions.
- **Social License to Operate:** Approval required by all local stakeholders impacted by a project in order for it to be realized. Frequently involves a broader level of acceptance than what is strictly required by regulation.

About the Authors

John Padilla

As Managing Director and partner at IPD, John leverages years of Wall Street experience in structured energy and infrastructure financing to offer comprehensive perspective on energy investment throughout Latin America. John led IPD's expansion into Mexico in 2001. He has since played a vital role in the development of lobbying efforts to encourage a healthy, more vigorous Mexican energy sector. With 15 years of direct consulting experience in Mexico, John is one of the premier experts on the politics and policy of that country's energy industry. In 2011, he relocated to Bogota in order to participate more directly in the resurgence of Colombia's oil and gas sectors. John co-heads IPD's business throughout Latin America, contributing a strong pragmatism and tactical expertise to support project risk and opportunity assessment. He has devised comprehensive government relations, key stakeholder management, and legislative and regulatory analysis services to enhance clients' ability to navigate Latin America's complex business environments. John is frequently quoted in the U.S. and international press, and speaks regularly at industry conferences and events.

Prior to joining IPD, John was Vice President and a Global Relationship Manager with Dresdner Kleinwort Benson in its N.Y. based Energy, Utility and Infrastructure Group, focusing on large domestic and international projects in Latin America, the U.S. and Asia. He also held positions with the project finance group at Banque Paribas and the transportation group at Manufacturers Hanover (now JP Morgan Chase).

Duncan Wood

Duncan Wood, Director of the Wilson Center's Mexico Institute, is a "North American citizen," lecturing and publishing widely in the United States, Mexico and Canada on intracontinental issues and relations, with a primary focus on U.S.-Mexican ties. He regularly gives testimony to the U.S. Congress on U.S.-Mexico relations, is a widely quoted source on Mexican energy politics, and has published widely on this and other issues. He is the author or editor of 10 books and more than 30 chapters and articles. He is currently a regular participant in the World Economic Forum's Global Future Council on Energy, an editorial advisor to El Universal newspaper, and is a member of the editorial board of Foreign Affairs Latinoamerica. From 1996-2012 he was a professor and the director of the International Relations Program at the Instituto Tecnológico Autónomo de México (ITAM) in Mexico City for 17 years. In 2007, he was a non-resident Fulbright Fellow and, between 2007 and 2009, he was technical secretary of the Red Mexicana de Energía, a group of experts in the area of energy policy in Mexico. He has been a member of the Mexican National Research System, an editorial advisor to both Reforma, a Senior Associate with the Simon Chair and the Americas Program at the Center for Strategic and International Studies (CSIS) in Washington, D.C. He studied in the UK and Canada, receiving his PhD in political studies from Queen's University, Canada, and is a recipient of the Canadian Governor General's Visit Award for contributions to the Mexico-Canada relationship.