Implications of Mexico's Energy Reform on the United States-Mexico-Canada Agreement

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Abstract

The energy sector of Mexico plays an essential role in the country's economic development and social well-being. The recent changes in its energy policies seek to achieve energy autonomy and will have significant implications for the sector's future, particularly within the context of the United States-Mexico-Canada Agreement (USMCA). This research paper analyzes the possible impacts of these changes on Mexico's energy sector, considering the regulations of the USMCA. Additionally, the concept of energy sovereignty — or the right of a country to make decisions about its own energy resources — is used to assess the advantages and disadvantages of this new strategy. Among the positive impacts, better management of energy prices and a reduced external impact of energy trade are highlighted. However, the challenges associated with the pursuit of energy self-sufficiency are also addressed. The resulting uncertainty could negatively affect the new investments and technology required to strengthen Mexico's energy sector.

Introduction

The energy sector has long played a pivotal role in shaping Mexico's economic growth and overall societal well-being. As a backbone of industrial activities and a key driver of development, the sector's strength directly influences various aspects of the economy, including job creation, investment opportunities, and the competitiveness of Mexican industries on a global scale.

Recent shifts in Mexico's energy policy, particularly those focused on ensuring energy security and sovereignty, carry significant implications for the sector's future. These policy changes aim to achieve the following:

- Reduce dependency on foreign energy sources.
- Bolster national control over energy production and distribution.
- Promote the development of renewable energy resources.

While these goals are intended to fortify Mexico's energy independence and sustainability, they also introduce challenges related to regulatory adjustments, potential impacts on foreign investment, and the balance between traditional and renewable energy sources.

As Mexico navigates these policy shifts, the energy sector's trajectory will be closely watched, with outcomes that could either enhance or constrain its contribution to the nation's economic growth. The sector's ability to adapt to these changes, innovate, and maintain competitiveness will be crucial in determining Mexico's economic future.

A Recent History of Mexico's Energy Sector

Since 2015, the significant drop in oil prices has negatively impacted the Mexican government's finances, revealing the vulnerability of its energy security. This financial strain has underscored the country's heavy reliance on oil revenues, which has become increasingly precarious in a volatile global market.[1] In addition, its state-owned company Mexico Petroleum (Petróleos Mexicanos, Pemex) has historically played a fundamental role in defining Mexico's energy policy and infrastructure. As the foundation of the nation's energy sector, Pemex has been crucial in driving economic growth and maintaining energy stability.

However, in recent years, Pemex has faced significant limitations in its ability to reinvest its profits into essential areas such as technology, infrastructure, and human resources, hindering its modernization efforts.[2] This lack of reinvestment has left the company struggling to keep pace with global advancements in the energy sector. Specifically, Pemex has been unable to adopt modern deepwater exploration technologies that are necessary for accessing new and more challenging oil reserves.

Additionally, financial constraints have prevented Pemex from making the substantial investments required for continued fossil fuel exploration, which is vital for sustaining its production levels, and have limited its ability to participate in the development of renewable energy sources — a sector that is increasingly critical for ensuring long-term energy security and sustainability. This inability to diversify into renewables leaves Pemex, and by extension Mexico's energy strategy, vulnerable to future economic and environmental challenges.[3]

As Mexico is both an importer and exporter of energy, the behavior of the international energy market has constrained Pemex's finances and the company's ability to expand its activities. In this sense, the objective of energy security in Mexico has emerged to promote renewable energies, a secure supply, sustainability, sector modernization, gas storage and transport, as well as the general storage of energy products.[4] Additionally, the strategy of energy sovereignty has been proposed with the aim of incorporating issues of social justice and self-sufficiency into the debate and promoting it as a mechanism to address the technological problems of energy production and distribution.[5] Social justice refers to the fair and equitable distribution of the benefits and burdens of energy production and distribution. This includes ensuring that all social groups, especially marginalized and disadvantaged communities, have access to affordable, reliable, and sustainable energy.[6]

Scope of Recent Energy Policy Reforms

Given that Mexico is a member of the USMCA, which includes clauses that directly impact trade and investment within the energy sector as part of North American economic integration, it is essential to carefully review the characteristics of recent reforms to key legislation in Mexico, including the Federal Hydrocarbons Law, the Electricity Sector Law, and the Mexican Mining Law.[7] These laws are foundational to the regulatory framework governing Mexico's energy sector and have significant implications for both domestic and international stakeholders.

The reforms to these laws are not isolated to legal adjustments: They represent a substantial shift in Mexico's approach to energy governance, with potential ramifications for the principles of competitive markets, the role and participation of state-owned enterprises, such as Pemex and the Federal Electricity Commission (Comisión Federal de Electricidad, CFE), as well as private companies operating within Mexico's borders. In the context of the USMCA, these changes could affect Mexico's obligations under the agreement, particularly in terms of fair competition, market access, and investment protections for North American companies.

Scope of Analysis

From this perspective, this paper's objective is to conduct an analysis of the energy sector reforms implemented during former Mexican President Andrés Manuel López Obrador's administration and their impact on the future development of Mexico's energy sector. This analysis focuses on the recent evolution of the energy sector, examining the shift toward an energy sovereignty strategy and its implications within the broader context of North American regional integration.

This study explores the potential advantages and disadvantages of pursuing an energy sovereignty strategy as opposed to maintaining an open energy sector strategy. Specifically, it will assess how these approaches compare in terms of achieving Mexico's goals of energy independence and security, particularly within the framework of the USMCA. By considering the reforms' effects on market competition, the balance between state control and private enterprise, and the broader impact on Mexico's international relations with the United States and Canada, the paper aims to provide an understanding of the strategic choices facing Mexico's energy sector.

This paper also delves into how the energy sovereignty strategy could enhance Mexico's management of its energy resources, potentially strengthening national security and reducing reliance on foreign entities. At the same time, it critically examines the risks associated with such a strategy, including the possibility of decreased foreign investment, reduced competitiveness, and challenges in meeting international commitments to both sustainable development and energy transition to renewable sources.

This paper is divided into four sections:

- **Part I** briefly describes the evolution of the energy sector in Mexico.
- **Part II** highlights the main changes in energy policy executed by the former President López Obrador.
- **Part III** underscores the potential conflicts between Mexico's energy sector reform and USMCA regulations, along with the response from trade partners.
- **Part IV** discusses the benefits and potential drawbacks of adopting the energy sovereignty strategy to develop the sector within the framework of the USMCA.

Part I: Evolution of Mexico's Main Energy Sources

A Brief Overview of Oil Production in Mexico

The oil industry in Mexico has a long and complex history of playing an important role in the nation's economy and political landscape. Oil exploration in Mexico began in the late 19th century and its development accelerated in the early 20th century with important foreign investments, particularly from American and British companies. However, since the industry was largely controlled by foreign interests, this led to tensions between the Mexican government and foreign oil companies.[8]

In 1938, in response to labor disputes and increasing friction with foreign companies, President Lázaro Cárdenas nationalized Mexico's oil industry, creating PEMEX, a state-owned company that became central to its economy.[9] Revenues from PEMEX funded infrastructure, industrialization, and social programs. During the 1970's oil boom, PEMEX expanded production, especially after discovering major fields such as Cantarell Field in the Gulf of Mexico.

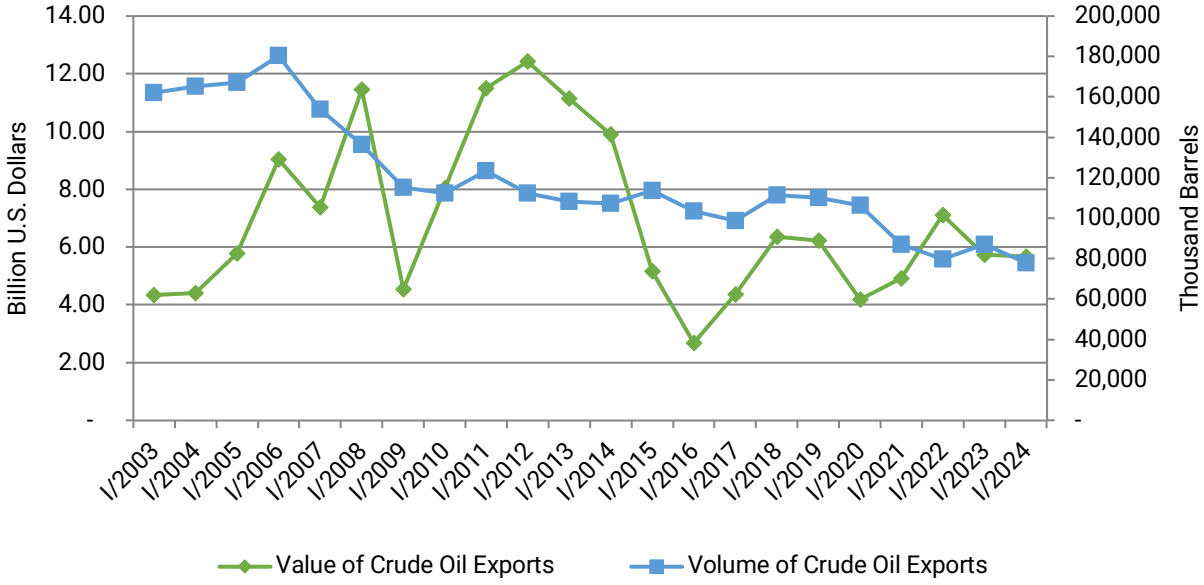
PEMEX faced challenges in the 2000s due to corruption, inefficiency, and underinvestment, worsened by falling oil prices and declining production at Cantarell Field. In 2013, President Enrique Peña Nieto introduced reforms ending PEMEX's monopoly, allowing private and foreign investment to modernize the industry and boost production.[10] However, results have been mixed, with production continuing to decline. Under Mexico's recent president, López Obrador, there was a shift back toward a nationalist approach, emphasizing PEMEX's role while scaling back aspects of the 2013 reforms.

Figure 1 shows the decline in oil production both in volume and value since 2003. In the first quarter of 2003, approximately 1.82 million barrels of oil per day were exported, but by the fourth quarter of 2021, this figure had halved, reaching just under 998.6 thousand barrels per day. In the second quarter of 2022, exports fell even further to around 337.5 thousand barrels per day.

Despite fluctuations in crude oil prices, oil revenues showed a steady downward trend starting in 2022. In the first quarter of 2003, revenues reached $4.35 billion U.S. dollars;

in the first quarter of 2012, it peaked at $12.4 billion and decreased to $5.7 billion in the first quarter of 2024. (Figure 1).

Figure 1 — Volume and Value of Mexico's Crude Oil Exports, First Quarter 2003–First Quarter 2024



Source: The Energy Information System (El Sistema de Información Energética, SIE).

However, in terms of the volume of export barrels, a decrease in exports is observed. The gradual decline in oil production and exports is due to a reduction in proven reserves in mature fields as well as the increased use of these reserves. In this context, Pemex required restructuring to strengthen its export objectives, increase production, seek new deposits, and improve the management and optimization of its internal processes.[11] To overcome the stagnation in oil production during the 2010s, energy reform was implemented in 2013 to reduce state regulation and allow the participation of private national and foreign investors in the oil market.[12] This reform eliminated the federal government's exclusive right to own and use hydrocarbons. In effect, this shifted the objective of natural resources from being strategic to considering hydrocarbons as a source of government revenue while they remain underground, but become privately-owned, commoditized resources once extracted.[13]

The Boom and Decline of Natural Gas Production in Mexico

Natural gas exploration in Mexico began in the early 20th century but remained underdeveloped for decades as it was largely considered a byproduct of oil extraction. Following PEMEX's establishment in the 1930s after oil nationalization, the focus remained on oil, with limited attention paid to natural gas. By the mid-20th century,

PEMEX expanded its operations and identified new gas reserves, particularly in the Burgos Basin, although infrastructure development lagged.[14]

In the 1970s and 1980s, rapid industrialization led to increased domestic consumption of natural gas, particularly in manufacturing and electricity generation. Mexico began to recognize natural gas as a cleaner alternative to oil, especially in response to volatile oil prices. But despite growing demand, the sector suffered from underinvestment and PEMEX's monopoly, limiting private sector involvement and innovation. This led to inefficiencies and, by the 1990s and 2000s, Mexico increasingly relied on natural gas imports from the U.S.[15]

The 2013 energy reforms under then-President Peña Nieto opened the sector to private and foreign investment, fracturing PEMEX's monopoly. These reforms facilitated the development of new infrastructure and joint ventures, but Mexico's natural gas industry remained heavily dependent on U.S. imports. Subsequently, former President López Obrador's administration slowed the pace of reforms, focusing on developing domestic reserves and reducing dependency on imports. Natural gas remains vital for Mexico's energy transition and growing industrial demand.

Between 2003 and 2009, a boom in natural gas production in Mexico occurred due to sustained growth, increasing from 4.55 billion cubic feet to 7.03 billion cubic feet (Figure 2). This growth was related to the increased production of associated gas from the Cantarell Field's oil production wells located in Campeche; the Burgos Basin located in the states of Tamaulipas, Nuevo Leon, and Coahuila; and the Macuspana Basin located in Tabasco. However, starting in 2010, a downward trend in natural gas production was observed due to the stagnation of proven oil and gas fields reserves.[16] As a result, the country's gas imports increased, rising from 757 million cubic feet in 2004 to a peak of about 1.93 billion cubic feet in 2015, although the amount of imports has decreased in recent years.

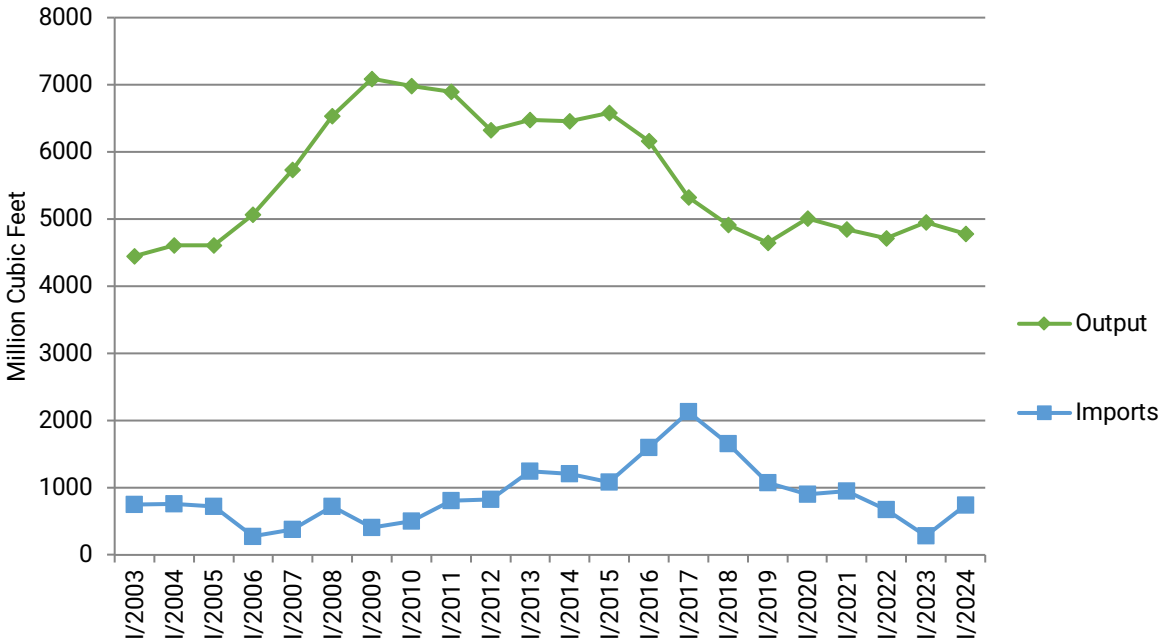
The growth of natural gas imports has created dual pressure on both the quest for the country's energy security and the development of an integrated energy system between the U.S. and Mexico. In this context, the production of lower-cost natural gas from the U.S., combined with the decline in natural gas production in Mexico, contributed to a medium- to long-term dependence on natural gas imports for Mexico from the U.S.[17]

The declining trend in natural gas production is linked to the depletion of the Burgos, Cantarell, and Macuspana Fields.[18] Additionally, government decisions aimed at maximizing oil production did not encourage the expansion of natural gas production. The increase in oil production occurred without the necessary infrastructure to fully utilize the natural gas generated from oil extraction, leading to its flaring instead of its usage.[19]

To address the shortage of domestic natural gas supply in Mexico, imports of this resource were increased. In 2003, 750 million cubic feet of gas were imported, and by 2016, this figure had grown to 1.6 billion cubic feet. The natural gas supply

infrastructure relies on a pipeline system that transports gas from Tabasco and Texas in the U.S.[20] It is worth noting that Mexico's dependency on natural gas is significant, both for consumption and for the manufacturing industry. Therefore, the supply of natural gas is considered strategic, and policies related to its exploration, production, and commercialization are crucial for the country's economic growth.[21]

Figure 2 — Mexico's Natural Gas Output and Imports, January 2003–January 2024



Source: SIE.

In this regard, efforts have been made to boost energy and natural gas production in Mexico, including institutional reforms enacted in 1995 and 2013. The first reform granted the private sector open access to natural gas networks, while the second reform established the National Center for Natural Gas Control (Centro Nacional de Control del Gas Natural, CENAGAS) to operate the pipeline systems and eliminate PEMEX's vertical integration with the natural gas industry, with a goal of increasing competitiveness and pipeline capacity.[22] Despite these changes, the sector has not yet experienced a significant increase in productivity, which has hindered the possibility of achieving energy self-sufficiency and security.

Electricity Production and Market Competition

In 1937, President Cárdenas established the CFE to bring Mexico's electric sector under state control and expand electrification, especially in rural areas. This move was part of a broader nationalist effort that culminated in the full nationalization of the electricity industry under President Adolfo López Mateos in 1960. The nationalization of the

electric sector sought to ensure energy sovereignty, lower electricity costs, and drive national development through widespread access to affordable electricity.[23]

From the 1960s to the 1980s, CFE focused on infrastructure projects, building large hydroelectric plants, thermal power stations, and the Laguna Verde Nuclear Power Station, which became Mexico's only nuclear facility. These efforts greatly expanded the electric grid and increased access to electricity, particularly in rural areas. By the late 1980s, most Mexican households had electricity, marking a significant achievement in national development.[24]

However, by the 1990s, the electric sector faced challenges such as high costs and outdated infrastructure. Reforms in the 1990s and early 2000s allowed private companies to participate in power generation, with further reforms in 2013 under President Peña Nieto opening the sector to greater competition and private investment, particularly in renewable energy.[25]

The installed capacity for total electricity production in Mexico increased from 55,538.9 megawatts in 2012 to 59,206 megawatts in 2020, with an average annual growth rate of 1.5% between 2012 and 2020. Of the total electricity produced, thermoelectric energy accounted for 64.8% in 2020, followed by hydroelectric energy at 20.5% (Table 1). It is important to highlight that the contribution of wind and photovoltaic energy sources remains marginal, with shares of 1.2% and 0.01% respectively in 2020.

Table 1 — Percentages of Installed Capacity From Electric Power Sources by Megawatts

	2012	2016	2020	2021	2022	2023
Total MW	52,538.94	55,559.46	59,206	60,079	60,430.59	61,344
Thermal	62.12%	62.82%	64.82%	65.29%	65.49%	65.78%
Dual	5.29%	0.00%	0.00%	0.00%	0.00%	0.00%
Coal	4.95%	9.68%	9.23%	9.09%	9.04%	8.91%
Geothermal	1.54%	1.57%	1.56%	1.58%	1.57%	1.55%
Nuclear	3.06%	2.89%	2.72%	2.68%	2.66%	2.62%
Wind	1.14%	1.26%	1.18%	1.16%	1.16%	1.14%
Hydroelectric	21.88%	21.76%	20.48%	20.18%	20.06%	19.78%
Photovoltaic	0.01%	0.01%	0.01%	0.01%	0.01%	0.21%

Source: SIE.
Note: A megawatt (MW) is a unit of power that measures one million watts.

Electricity generation today is primarily produced by Independent Power Producers (IPP) from the private sector. In 2020, 38.8% of the installed capacity for electricity generation produced by thermal combined cycle (which uses both a gas turbine and steam turbine to increase overall efficiency) was generated by independent producers,

reflecting an increase of nearly 5% compared to their share in 2012. As for wind energy generation capacity in 2020, 87.7% of the installed capacity was owned by private investors (Table 2).

Table 2 — Installed Capacity of the Federal Electricity Commission (CFE) and Independent Power Producers (IPP)

	2015	2016	2017	2018	2019	2020	2021	2022	2023
Combined Cycle Power Plants by MW	19,918	20,530	20,787	22,410	24,166	24,971	25,627	26,393	27,159
CFE	38.05%	39.89%	37.43%	41.96%	38.91%	38.79%	38.79%	40.36%	42.09%
IPP	61.95%	60.11%	62.57%	58.04%	61.09%	61.21%	59.64%	57.91%	56.28%
Wind Energy by MW	699	699	699	699	699	699	699	698.55	699
CFE	12.34%	12.34%	12.30%	12.30%	12.30%	12.30%	12.30%	12.27%	12.30%
IPP	87.66%	87.66%	87.70%	87.70%	87.70%	87.70%	87.70%	87.75%	87.68%

Source: SIE**,** Federal Electricity Commission (CFE), and Independent Power Producers (IPP).

The 2014 electricity reform opened the market to investors, promoting competition and creating the Energy Regulatory Commission (Comisión de Régulation de l'Energie, CRE) to grant permits to new generators. Additionally, it allowed the CFE to participate in joint ventures with the private sector.[26] The National Energy Control Center (Centro Nacional de Control de Energía, CENACE) was also established to facilitate access to transmission and distribution networks, and to regulate electrical services in the short, medium, and long term.

However, it is important to note that this energy reform did not generate a significant amount of investment in the transmission and distribution segments, which remain under state control.[27] As a result, in 2021, a reform to the 2014 electricity law was implemented with the aim of establishing conditions for efficient and safe operation while reducing pollutant emissions.[28] This reform marked a 180-degree shift from the previous law, prioritizing CFE's role in the production and distribution of electricity as a foundation for developing energy security and sovereignty.

The Growing Importance of Lithium

Currently, the need to produce essential materials for energy storage in batteries for electric vehicles and electronic devices has significantly increased the demand for lithium. Lithium is the lightest metallic element by weight among all metals and has a

low melting point. It is found in pegmatites, brines, oil wells, geothermal fields, clays, and even in the oceans.[29]

In Mexico, lithium is primarily found in clays. The regions identified as potential lithium deposits in Mexico include Sonora as the primary location, followed by Coahuila, Baja California Sur, Zacatecas, Puebla, and Oaxaca. Notably, the deposit in Sonora, known as La Ventana, is considered the largest individual deposit in the world, with reserves of approximately 243 million tons. This has attracted investment from the British company Bacanora Lithium and the Chinese company Ganfeng Lithium, which have both invested in the region to produce and export lithium.[30]

It is important to note that there is no official data on lithium deposits in Mexico, and information is only available from private companies regarding the Sonora deposit. According to Mexico's Ministry of Economy (Secretaría de Economía), lithium exports have seen exponential growth since 2018, increasing from mere kilograms in 2017 to 36.4 metric tons the following year.[31] Meanwhile, imports have decreased in recent years, although they have remained around several metric tons annually.

The potential for lithium commercialization is promising, as the uses for lithium extend from the aluminum, glass, and ceramics industries to lubricants and the growing demand for electric vehicle batteries. However, it should be noted that the required investment and access to technology are critical factors in developing the lithium industry, which is still in its early stages in Mexico. For this reason, it is believed that the production of this mineral could expand more rapidly with the addition of national and foreign private investments.[32]

In 2022, the Mexican government reformed the mining law, eliminating concessions to foreign companies for lithium production in the country. This measure, seen as a nationalist approach, has drawn criticism due to the lack of a government strategy to use the mineral and its limited financial resources to develop the lithium industry. As a result, there are concerns that lithium production could decline under a state-controlled approach.[33]

Part II: Main Characteristics of Mexico's Energy Policy

Amendments to Energy Laws

Mexico's energy policy from the postwar period until the 1974 oil crisis was aimed at ensuring energy self-sufficiency and control over resources by seeking new oil reserves.[34] During the 1970s and 1980s, the state took exclusive control of the oil and electricity sectors, leading to a rapid increase in hydrocarbon extraction and a peak in oil reserves in 1983.[35]

In the early 2000s, under then-President Vicente Fox's administration, a corporate management approach was implemented, prioritizing long-term strategic planning for

each sector and region of the country, including a 25-year vision, a mission statement, and cost-benefit analysis in strategic documents. However, no significant reforms were implemented in the energy sector, nor were substantial changes proposed in other areas. Despite intentions to open the energy sector to private investment, no concrete reform proposal was presented, and the legal structure remained unchanged. Additionally, there was no effective connection between the oil industry and the energy sector as a whole, nor an adequate linkage with macroeconomic or fiscal policy.[36]

During President Felipe Calderón's subsequent tenure, the importance of energy in economic growth and the need to address the decline in hydrocarbon reserves were emphasized. To achieve this, a 2008 reform was proposed, seeking to promote a diversified and competitive supply of high-quality energy, stimulate private investment, and maximize energy revenues.[37] Additionally, the goal was to achieve sustainable development in economic, social, and environmental terms, as well as to promote research and technological development in the hydrocarbon sector at the national level, which led to changes in the legal framework and a strengthening of technology in this sector.

In 2013, President Peña Nieto enacted a constitutional reform affecting Articles 25, 27, and 28 related to the energy sector, introducing the concept of "state productive enterprises" for Pemex and the CFE.[38] This reform established such principles as efficiency, productivity, transparency, and accountability. Unlike the 2008 reform, which focused on secondary laws and budgetary changes for PEMEX, the 2013 reform was more profound, modifying the three articles of the constitution and numerous secondary laws. Both reforms liberalized economic activities previously controlled by the state, but the 2013 reform widely opened the sector to private investment, transformed PEMEX and the CFE into state productive enterprises, and established a new regulatory framework.[39]

However, as previously noted, these various strategies could not prevent a consistent downward trend in hydrocarbon reserves, reaching a critical point starting in 2015. This event marks an important milestone in the evolution of the national energy industry, with significant implications for energy security and long-term planning in the country.

López Obrador's Reforms to Strengthen State Energy Enterprises

In an effort to grant greater market power to Mexican state-owned energy companies, the López Obrador administration implemented reforms and additions to hydrocarbon and electricity laws starting in 2019.

In doing so, López Obrador emphasized that ending the import of fuels such as gasoline and diesel is essential for achieving energy self-sufficiency. He considered these reforms as a tool for sovereignty and the welfare of future generations. In addition, López Obrador linked the 1938 oil expropriation by President Cárdenas to democratic ideals and social justice, emphasizing the public's support for such measures. He also

strongly criticized neoliberal reforms that "privatized" strategic resources, advocating for the necessity of maintaining national control over oil and energy.[40]

In 2021, modifications to various provisions of the Hydrocarbons Law were published. This decree argued that the changes were implemented to simplify regulations, procedures, and services, foster economic activity, and create conditions for the private sector to contribute to national economic development.

The benefits to the oil sector were expected to come from strengthening PEMEX by reducing regulatory burdens and relaxing permit requirements. To achieve this, several articles of the Hydrocarbons Law were amended. It is worth noting that some of these reforms have generated controversy due to their implications within the framework of the USMCA, especially concerning permits for the transportation, storage, and commercialization of petroleum products.[41]

The following reforms are particularly noteworthy:

- **Article 57:** "Regarding the permits referred to in this Law, the authority that issued them may carry out temporary occupation, intervention, or suspension to guarantee the interests of the Nation, understanding that the rights of third parties will be safeguarded. To ensure the continuity of the activities covered by the permit, the authority may contract state productive enterprises for the management and control of the occupied, intervened, or suspended facilities."[42]

- **Article 59 Bis:** "The Ministry of Energy and the Energy Regulatory Commission may, within their respective competencies, suspend permits issued under the terms established in this Law, when there is an imminent danger to national security, energy security, or the national economy."[43]

These two articles have significant implications for the state's involvement in hydrocarbon production and distribution, prioritizing the management and participation of state-owned enterprises. This has led to questions about Mexico's participation and commitments under the USMCA, as the new provisions appear to be at odds with the stipulations of the agreement's chapters.[44]

In the same vein, and within the perspective of having greater control over energy production by the state, the López Obrador administration also proposed to amend the 2013 energy reform measures. According to a decree published in the Official Gazette of the Federation (Diario Oficial de la Federación) on Sept. 11, 2021, Articles 25, 27, and 28 of the constitution were amended, stating that "the State shall maintain its ownership, without prejudice to its ability to enter into contracts with private parties under the terms of this Law. Basic supply is a priority activity for national development."[45]

Among the main activities to be carried out, the proposal included converting the CFE into a vertically — and horizontally — integrated state entity, reincorporating CENACE into the CFE. Additionally, it specified that the CFE would exclusively receive and distribute the total supply of electrical energy and generate 54% of the national electricity consumption, while private investors would be responsible for 46%, subject to the planning and control of the national electricity system by the CFE.[46]

In this way, private investment by independent producers was recognized in accordance with the law. However, the provisions on permits for production have also been subject to controversy under the USMCA, as the establishment of new rules for the production and distribution of electrical energy would require the cancellation of all granted electricity generation permits, power purchase agreements, and pending applications. Additionally, the generation of surpluses derived from permits exceeding the original allocation will no longer be recognized by the state under these latest reforms.

The third action that complements the strategy to expand state control over energy generation in Mexico is related to the reform of the Mining Law, which seeks to establish control over lithium production in Mexico. Thus, in 2022, the decree reforming and adding various provisions to the Mining Law was published in the Official Gazette of the Federation.[47] Notably, Articles 1, 5 Bis, 9, and 10 were emphasized:

- **Article 1** of the amended law aligns with Article 27 of the constitution regarding mining, assigning its execution to the Ministry of Economy and establishing the creation of a public entity to oversee the exploration, exploitation, benefit, and utilization of lithium.

- **Article 5 Bis** declares lithium to be of public utility and national heritage, prohibiting concessions, licenses, or permits in this field and designating mining reserve zones with lithium deposits.

- **Article 9** seeks to improve the utilization of mineral resources and generate basic geological information for the nation.

- **Article 10** stipulates that the management of the economic value chains of lithium is entrusted to the state through the aforementioned public entity.

As the USMCA has started to take effect and be applied, lithium exploitation has become increasingly important due to the necessity of ensuring a supply chain within North America. Within three years, cars manufactured in the three USMCA countries are required to have at least 75% of their components produced in the region to be marketed tariff-free.[48] This includes lithium batteries, which could become a profitable business for Mexico. However, the 2022 Mining Law reform is causing a delay in the development of this mineral, likely limiting the opportunity to leverage these resources for the development of the electric automotive industry.[49]

Thus, the energy policy of the López Obrador administration marked a shift from the previous administrations' strategy of opening the energy sector to private capital, because it aimed to consolidate the state's role as both the leader and a participant in the activities of production and distribution of Mexico's main energy sources, using the concept of energy sovereignty as a mechanism to solve the problems of energy generation and distribution in contrast to the market alternative.

Part III: Energy Policy Changes Under the USMCA

USMCA Chapters Related to Energy Generation and Regulation in Mexico

Mexico's energy strategy under the López Obrador administration and continued by current President Claudia Sheinbaum aims to advance regulatory practices in the energy sector. It also promotes coordination with the countries of the USMCA by eliminating technical barriers, enhancing transparency, and improving regulatory quality to harmonize standards across North America, as established in several chapters of the USMCA. However, some of the recent energy reform provisions may conflict with the USMCA, as these reforms support the recognition of state ownership over hydrocarbons and electricity and the sovereign right to amend the constitution.

For example, reforms in the hydrocarbons sector — related to the granting and suspension of permits and prioritizing state-owned companies — as well as reforms in the electricity sector, which aim to increase the participation of CFE in electricity supply in Mexico, pose challenges when it comes to complying with USMCA provisions. This is complicated by the fact that Chapter 14 of the USMCA establishes mechanisms to protect foreign investors in the event of disputes or violations of the treaty.[50] Additionally, Chapter 22 of the USMCA requires that state enterprises and monopolies avoid discrimination to prevent negative impacts on trade and investment.[51] Finally, Chapter 28 of the agreement calls for the establishment of regulatory practices that promote trade, investment, and economic growth.[52]

USMCA Members' Reactions to Mexico's New Energy Strategy

Mexico's energy legislation has sparked disagreement in the United States oil sector and among U.S. legislators. The president of the American Petroleum Institute (API), Michael J. Sommers, expressed concern in a letter to Secretary of State Mike Pompeo on June 11, 2020.[53] He noted that Mexican reforms allow for the suspension of permits in cases of risk to national security, energy security, or the economy. He also mentioned that Pemex's involvement in the management of permit holders creates uncertainty for investors.

Additionally, in a letter to Secretary of State Anthony Blinken on May 5, 2021, Sommers shared his belief that both Mexican laws aim to obstruct private investments in the

energy sector and damage existing private assets, violating Mexico's commitments under the USMCA.[54] Furthermore, on July 20, 2021, Texas Representative Vicente González sent a bipartisan letter to three senators and 16 representatives, urging President Joe Biden to take action against Mexican government actions that threaten the USMCA and U.S. investments in energy infrastructure on both sides of the border.[55]

Reactions to the reforms culminated in an official action by the U.S. government on July 20, 2022 when U.S. Trade Representative Katherine Tai announced that the U.S. had requested dispute resolution consultations with Mexico under the USMCA.[56] These consultations were related to the energy reform measures favoring Mexico's state-owned electric utility (CFE) and the state-owned oil and gas company (PEMEX) on the basis that this special treatment undermined U.S. companies and U.S.-produced energy. Canada's Trade Minister Mary Ng indicated that Canada has joined the U.S. in challenging these actions through the same dispute resolution mechanism.[57]

It should also be noted that Mexico's latest energy reforms are incompatible with Article 2.3 of the USMCA, as Mexico has not granted national treatment to U.S. goods in accordance with Article III of the General Agreement on Tariffs and Trade (GATT), which was established in 1994.[58] This provision requires that parties treat imported goods no less favorably than similar domestic products concerning all laws, regulations, and requirements affecting their sale, purchase, transportation, distribution, or use.

Furthermore, the amended Electric Industry Law violates Article 14.4 of the USMCA because Mexico has accorded less favorable treatment to U.S. investors compared to Mexican investors under similar circumstances.[59]

The U.S. dispute resolution consultations request references a June 2022 letter from Mexico's Secretary of Energy, the CRE, and CENAGAS, which announces an energy policy incentivizing users of natural gas transportation services in Mexico to source from CFE or Pemex, imposing restrictions on the import of natural gas.[60] This violates Article 2.3 of the USMCA by failing to grant national treatment to U.S. products.[61] According to Article 31.4.5 of the USMCA, the parties must begin consultations within 30 days of the U.S. request unless they agree otherwise. If the parties do not resolve the matter through consultations within 75 days, the establishment of a panel may be requested per Article 31.6.1. A ruling in favor of the U.S. and Canada could lead to retaliatory measures against Mexico, including the imposition of tariffs on Mexican imports equivalent to the perceived economic damage as noted in Article 31.19 of the USMCA.[62]

The reaction of U.S. politicians and the Biden administration to changes in Mexico's energy sector laws, along with the looming possibility of a dispute through a consultation panel, underscores the existing conflict with Mexico's proposal for energy development based on the concept of energy sovereignty. The relevant changes to energy sector laws present a dilemma for the management and development of energy sources, where these two perspectives clash. The first is linked to the privatization of the sector with significant involvement from foreign companies within the context of

the USMCA, while the second is based on the concept of energy sovereignty centered on state control over energy resources.

Energy Reforms: A Pending Problem

The energy reforms led by former President López Obrador in Mexico are underway but have not been fully implemented due to legal challenges, political opposition, and international agreements.[63] In the oil and gas sector, López Obrador's government focused on reversing the privatization initiated by the 2013 reforms. While constitutional changes have not been made, public investment in Pemex has been prioritized. Efforts to reduce private sector involvement have included suspending new bidding rounds for exploration and production, but existing contracts with private companies remain, as canceling them could result in international disputes under the USMCA.[64]

In the electricity sector, the López Obrador administration aimed to reform the Electric Industry Law to strengthen the state-owned CFE. The proposed reforms seek to prioritize CFE over private companies in electricity distribution, particularly limiting renewable energy producers. The administration has also prioritized conventional energy sources such as gas and coal over renewables, prompting significant controversy and resistance, particularly from the private sector and foreign investors who have heavily invested in renewable energy projects. This policy shift has raised concerns about the country's commitment to reducing emissions and transitioning to cleaner energy.[65]

In consequence, the reforms have faced significant obstacles. Constitutional changes were blocked in Congress in 2022, and several legal suspensions have delayed the implementation of key measures following lawsuits from affected companies.[66] Moreover, the proposed changes have caused tensions with the U.S. and Canada, as they argue that the reforms violate the USMCA by giving preferential treatment to state-owned enterprises. Thus, AMLO's energy reforms advanced partially but continue to face legal, political, and international hurdles. The inability to fully implement AMLO's reforms left the 2013 framework largely intact, maintaining an open market approach while limiting the realization of his proposed state-centric energy sovereignty vision.

The Energy Plan of Sheinbaum: A Shift of Strategy?

Claudia Sheinbaum's National Strategy for the Electric Sector for 2024–30 was presented shortly after her inauguration on Oct. 1, 2024.[67] The plan aims to achieve 45% renewable energy generation by 2030 and involves an estimated investment of $35–$40 billion over the next six years.[68] However, much of the plan's success depends on securing the necessary legal changes to allow greater private sector participation, particularly through long-term contracts with the CFE, which are currently limited under existing law. The plan centers on guaranteeing energy access for all citizens, while reducing emissions and enhancing energy efficiency.

Among its core objectives is achieving energy sovereignty, ensuring that Mexico becomes self-sufficient in its energy supply. It also aims to bolster economic resilience by ensuring that the energy sector contributes steadily to public finances. The focus on energy efficiency emphasizes reducing energy consumption even as GDP grows, while maintaining affordable energy access for all. Additionally, the plan prioritizes emission reduction by promoting clean energy sources to combat climate change. It also addresses rural areas by improving the efficiency of wood usage, aiming to reduce health risks associated with traditional practices.

Notable measures include maintaining energy prices, strengthening CFE and Pemex, and accelerating the shift to renewables, such as solar, wind, green hydrogen, and geothermal energy. The plan also calls for building six photovoltaic plants, expanding the electrical grid in Baja California Sur, and promoting distributed energy generation, allowing communities to produce their own electricity for personal use and sell surplus power. This plan reflects a broader strategy to transition Mexico toward a more sustainable, independent energy future.

Here is a summary of the 10 measures proposed by Sheinbaum's government to achieve her energy reform objectives:

1. **Avoid substantial increases in energy prices:** Gasoline, diesel, and electricity rates will not rise in real terms.
2. **Strengthen Pemex and CFE:** Both companies will remain key public enterprises, moving away from privatizations.
3. **Maintain oil production:** Oil production will be capped at 1.8 million barrels per day, with the rest of the energy demand being met through renewables.
4. **Create sustainable plan for Pemex:** Pemex will focus on long-term sustainability, participating in lithium extraction and renewable energy projects.
5. **Require CFE to retain 54% of electricity generation:** The state utility will guarantee energy transmission and distribution capacity, with clear rules for private participation.
6. **Promote energy efficiency:** Energy-efficient programs will be supported for all sectors.
7. **Advance electromobility:** The adoption of electric transport in both public and private sectors will be accelerated.
8. **Support energy transition:** Renewable energy projects, such as solar, wind, hydroelectric, geothermal, and green hydrogen power will be prioritized.
9. **Revitalize petrochemicals:** The national petrochemical industry and boost fertilizer production.
10. **Electrify rural communities:** Remote areas, especially those under 2,500 inhabitants, will have access to electricity and reduce dependence on firewood.[69]

Critics argue that Sheinbaum's energy plan prioritizes state-owned enterprises such as Pemex and CFE over the private sector, which could limit innovation and competition, especially in renewable energy development.[70] Regulatory uncertainty is also a concern, as unclear legal frameworks and potential policy shifts may discourage foreign investment, essential for achieving renewable energy targets.[71] The plan's limited private sector involvement raises doubts about the feasibility of reaching 45% renewable energy by 2030, as CFE and Pemex may not adequately support the transition to solar, wind, and hydrogen.[72] Additionally, the plan is seen as ambitious but lacking in detail, particularly in terms of how to secure the necessary $35–$40 billion in investment and execute public-private partnerships.[73] Lastly, some environmentalists question its long-term sustainability, given the continued focus on fossil fuels alongside renewables.

Congress is currently reviewing constitutional amendments aimed at strengthening CFE and Pemex, positioning them as central players in Mexico's energy transition. These reforms prioritize energy sovereignty and public service over profit-driven objectives, aiming to restore CFE's dominant role in electricity generation. The success of these reforms depends on the outcome of ongoing legislative negotiations. If approved, secondary laws governing energy markets will be amended to align with the new constitutional framework. This will involve reworking contracts and conditions for private companies, particularly in renewable energy projects. Sheinbaum's administration aims to fully implement the reforms by 2025.[74]

Part IV: Energy Reform's Challenges and Possibilities in Mexico

Given the partial progress and challenges of Mexico's energy reforms, it is important to analyze the approach used by the Mexican government with respect to its prioritization of national sovereignty in managing energy resources. This analysis should consider the balance between sovereignty and market openness, the impact of government control on Pemex and CFE's operational efficiency, and the potential trade-offs between state-driven energy policies and international obligations under trade agreements such as the USMCA. Additionally, the long-term sustainability of the energy strategy, especially regarding the transition to cleaner energy sources, is key for Mexico's energy independence and environmental goals.

The emerging differences between Mexico and the U.S. regarding the management of energy resources are framed within the pursuit of energy sovereignty, which is oriented toward taking actions based on society's right to decide on issues, such as climate impact, types of energy sources, and the organization of their use.[75] Thus, policies based on the concept of energy sovereignty should consider strategies that connect energy supply generation with community needs.[76] From this perspective, the challenge is to promote the development of new energy sources, such as solar, while simultaneously establishing a policy that prioritizes energy sovereignty.

In this context, the goal of achieving energy sovereignty should consider the need to meet energy demands for both consumption and industrial production. Regarding hydrocarbons, natural gas accounts for approximately 70% of hydrocarbon consumption in Mexico's industrial sector, with even higher percentages in export-related industries such as metal products, machinery, and equipment.[77] Therefore, the energy generation strategy should be based on significant increases in production to meet the consumption and growth dynamics of the country's industrial sector.

Additionally, a key issue in the debate over changes in energy reform is technology transfer in the oil sector, particularly in the case of Mexico and other developing oil-producing economies.[78] These industries face challenges in adopting technological innovations, especially to increase oil production in deep waters. To achieve this, Pemex would require financial resources and technology to capitalize on existing reserves.

In Mexico, the electric sector currently operates under a strategy that seeks to prioritize the CFE in the production and distribution of electricity. However, this policy of energy sovereignty has raised concerns due to its potential impact on competition in energy generation. There are fears that by eliminating the rule of dispatching the cheapest electricity and restricting open access to transmission networks, the reform could increase energy production costs, generate uncertainty, and reduce private investment.[79] Therefore, it is important to consider various aspects, such as household welfare, the environment, and the reduction of subsidies, when implementing this strategy of greater control in energy production and distribution.[80]

Reforms, Investment, and Productive Expansion

The growth of the energy sector in Mexico faces obstacles that require significant investment. The 2014 energy reform changed the sector's market participation, but the CFE remains the main supplier, providing 87% of the energy supply.[81] Congestion in the electric transmission network is a problem due to limited investment, which has led to an increase in electricity prices.[82] Since the wholesale electricity market has not significantly increased its participation, substantial amounts of investment are essential to expand the generation, transmission, and distribution of energy.

In this regard, the need for private investment has been emphasized, both in oil and natural gas extraction activities as well as in electricity generation. However, the current context of investment in these activities is characterized by a concentration of public investment from Pemex and the CFE, which strains Mexico's public finances and leaves private investment playing a marginal role.[83] As previously mentioned, the reforms are taking place in the context of a growing gap between the supply and demand for energy and an increase in imports; thus, investments are key to boosting the growth of the energy sector.

Changes in Energy Sector Reforms and Energy Self-Sufficiency

The energy self-sufficiency strategy is fundamentally based on the argument of reducing dependence on energy imports from abroad. Additionally, it incorporates the objective of mitigating the effects of energy production on climate change. Thus, the concept is rooted in values, such as distributive justice and social welfare, and it seeks to generate the capacity for self-determination. The importance of self-sufficiency lies in the fact that energy is a fundamental input that modern economies require for productive functioning and consumer uses as well as to protect their economies and social welfare from external shocks. Therefore, the characteristics of how energy is generated, distributed, and used are relevant topics for the economic development of a country.[84]

It is important to note that generating the necessary investment for the development of the energy sector today depends on reducing costs related to differences in energy market regulation. For this reason, governments seek to establish regulatory cooperation and energy integration trade agreements within the context of the USMCA. However, these objectives seem to contradict the concept of energy sovereignty, which implies democratic control over the energy industries. This presents a dilemma, as energy sovereignty may limit investment and production, while international cooperation may promote them but at the expense of national autonomy.[85]

In this context, given the globalization of productive and commercial activities, the pursuit of energy sovereignty creates a contradiction between market regulation developed through international treaties and the goals of national states. Since there is no global regulator for the conditions of energy production and commercialization, the possibility of reconciling globalization with the nation-state is likely to be based on the development of complementary regulatory mechanisms.

Therefore, the synchronization of regulations requires negotiations between involved countries to determine which common objectives fall under the supervision of state authorities. It is worth noting that the negotiations should involve concessions from participants, so that both national objectives and the economic interdependence of participating countries are considered. Since USMCA members are also part of the World Trade Organization (WTO), they are governed by normative systems that should serve as the basis for reconciling national interests.

In this perspective, cooperative determination based on regulatory equivalence in trade agreements can create starting points to reconcile globalization with the nation-state and democracy. Since WTO members are required to receive “national treatment” if they demonstrate the equivalence in their own regulatory regimes, regulatory cooperation agreements can induce successive stages of mutual adjustment. Over time, this could result in a global regime despite the absence of a truly global foundational agreement.

In the most favorable case, the extension of equivalence sector by sector would not only preserve the essence of national democratic accountability amid globalization but also, by regularizing rigorous reciprocal review — and with it, the possibility of challenging normative means and ends — could make oversight more responsive and inclusive. Globalization under these terms could therefore enhance the country's energy development within the context of national sovereignty.

Conclusion

The Mexican economy experienced a period of high hydrocarbon production and became a significant oil exporter. However, since 2005, oil production began a downward trend, primarily due to the depletion of operating oil fields, particularly the Cantarell Field. As a result, both the volume and value of oil exports saw a decline in their growth rate. Likewise, natural gas production has decreased since 2010 due to the depletion of proven reserves. To counter the stagnation of the energy sector, a petroleum reform was pursued to reduce state regulation and open the oil market to private national and foreign investors.[86]

In turn, electricity production in Mexico has shown slow growth over the past decade, with delays in the production of energy from high-tech renewable sources such as wind and solar power. The energy reform launched in 2014 aimed to shift the monopolistic market toward one more open to investors in the electricity sector, resulting in transformations in the structure of investment, costs, and prices.

However, in a context of stagnating energy production in Mexico, the López Obrador administration promoted changes and additions to the hydrocarbons and electricity laws to grant greater market power to state-owned energy companies. Changes to certain articles of the laws governing these activities have implications for the state's participation in the production and distribution of hydrocarbons, prioritizing the management and participation of state-owned companies. This has led to questions about Mexico's participation and commitments under the USMCA framework. As the new provisions are implemented, they further emphasize the importance of establishing a state-owned company for lithium control and production, which has implications for the lithium battery supply chain in North America.

Thus, the recent López Obrador administration pursued an energy policy that represented a shift from the strategy of opening the energy sector to private capital, endorsed by previous administrations, toward consolidating the role of the state as the regulator and participant in the production and distribution of Mexico's main energy sources. López Obrador's approach to energy sovereignty was rooted in national control over energy resources, particularly oil and electricity. He advocated reducing dependence on foreign energy imports by strengthening state-owned enterprises. Under his administration, energy sovereignty was tied to national security, economic independence, and social justice. His vision was one where Mexico ensures energy

supply primarily through public, rather than private, investment, and safeguard strategic resources such as lithium from foreign exploitation.

In contrast, the global energy sovereignty approach defines energy sovereignty more broadly as the right of nations or communities to control their own energy systems in a way that aligns with their development goals, prioritizing sustainable energy systems and equitable access. Their perspective includes an emphasis on democratization of energy decisions, where local communities have the power to influence how energy is produced, consumed, and distributed. Moreover, the USMCA encourages foreign private investment in energy sectors, particularly in renewables and hydrocarbons. López Obrador's strategy, in contrast, was to limit private participation and strengthen state-owned enterprises such as PEMEX and CFE, which conflicts with USMCA provisions that protect investor rights and promote competition.

In addition, the reforms in Mexico's energy-producing sectors, aimed at prioritizing state-owned companies to ensure energy sovereignty, pose challenges and have implications for compliance with the USMCA provisions in several aspects. Regarding the regulation of foreign investment, Chapter 14 establishes mechanisms for the protection of foreign investors, which could be used to resolve disputes over potential USMCA violations. Additionally, Chapter 22 states that government enterprises and monopolies are required to adhere to the principle of nondiscrimination to avoid negative effects on trade and investment by companies. Finally, Chapter 28 requires member countries to ensure regulatory practices that facilitate trade, investment, and economic growth. Therefore, the current energy sovereignty policy appears to contradict the spirit of the USMCA, an agreement signed by Mexico.

The pursuit of energy sector self-sufficiency faces significant challenges in achieving this goal. Particularly, the growth of the energy sector requires substantial investment and technology adoption. If a strategy based on energy sovereignty were to be implemented, it would undoubtedly bring benefits in terms of price management and the reduction of the international impacts of energy trade on the country's supply. However, one of the disadvantages of adopting an energy self-sufficiency policy based solely on market control by state monopolies is the potential of facing disputes and controversies with other USMCA member countries regarding stipulations on the discriminatory treatment of private companies in the energy sector, both in hydrocarbons and electricity generation activities. This could generate uncertainty about investment and technology flows to the sector, potentially reducing the country's energy production and productivity and diminishing its ability to supply the domestic market competitively.

Current President Claudia Sheinbaum's energy reforms, building on the policies of those of López Obrador, face several key challenges. Private sector concerns center on the emphasis given to state-owned enterprises such as CFE and Pemex, which critics argue could limit innovation and private investment, particularly in renewable energy. Regulatory uncertainty further discourages investors, as unclear frameworks create risks for future policy changes favoring state control. Financial and infrastructure

hurdles also arise, with ambitious targets, but lacking clear strategies for funding and partnerships.

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