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The Drivers of the Mexican-German Strategic Cooperation for a Global Energy Transition Policy

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This policy paper aims to explain the drivers of the Mexican-German strategic cooperation for a global energy transition policy. Mexico has started its path towards energy transition while countries like Germany have already experience down the road. Therefore, it is convenient to learn from their challenges and opportunities, analyzing the similarities and differences with those countries so that Mexico can move forward more confidently towards its transition. Mexico should continue with the energy reform and private participation in the oil and gas sectors to attract more investment to the country. Strengthening the financial situation of Pemex is a requirement to contemplate new investments in refining. Attracting talent and investments is crucial for the Mexican energy sector' competitiveness. This policy paper analyzes the Mexico-Germany strategic alliance 's benefits; common objectives pursued on a worldwide scale; and opportunities and challenges for Mexico in energy transition. In the end, policy recommendations are provided.

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INTRODUCTION

Germany and Mexico drive history of 138 years of diplomatic relations. Currently, both governments maintain a firm commitment to work on the consolidation of a dynamic political relationship, based on the Mexico-EU Global Agreement and the objectives of the bi-regional dialogue Latin America and the Caribbean-European Union (ALCUE, in Spanish), as well as the Group of 20 (G20).

Mexico and Germany share an interest to strengthen the multilateral system and maintain close collaboration in international forums on issues of common interest, such as democracy, respect for human rights, protection of the environment, the codification of law and federalism.

German-Mexican cooperation has intensified in recent years. Their bilateral energy cooperation is carried out under a strategic alliance with various programs, among them are:

- › Energy development bilateral cooperation.
- › National Program for Energy Management Systems (PRONASGEN).
- › Mexico-Germany Strategic Alliance Program.

Both countries benefit from bilateral energy cooperation since it is important for both countries to share points of view on the main issues on the international agenda. Both countries aim to explore new spaces to strengthen collaboration to face global challenges, particularly in the framework of the G20.

Through this cooperation, Germany also seeks to create entry points for German companies in the growing Mexican renewable energy market. For Mexico, a country with significant renewable energy potential, it is essential to understand the German energy transition process and learn from its processes, successes, and failures.

Energy transition and renewable energy bring social and economic opportunities. Climate change is no longer seen as an environmental issue; it has to be seen as more of a social-economic issue. Several studies have identified that reducing the carbon footprint in energy efficiency generates economic savings of up to 40%.

Energy transition provides access to capital and technology for the electric sector to increase its productivity. Energy development has a social effect on the increase in skilled jobs. The implementation of energy projects has a multiplier effect of demand for manufacturing and construction goods, as well as growth in the demand for housing, food, transportation, and other services that workers will require. However, as well as bringing benefits, energy transition involves a process of constant communication with communities to reverse the growing trend of opposition to projects.

On the other hand, energy transition brings energy policy challenges, such biodiversity, decarbonization of economies, urban transport, and energy efficiency. Those challenges unite and separate Mexico and Germany. Hence, both countries pursue common goals on a global scale as both countries have committed to reducing their emissions.

Both countries agree that energy transition is not a unique challenge; they assume it is a global aim. The strong relationship between Germany and Mexico reveals its decision to collaborate to face global challenges in the search for joint sustainable development.

In 2013, Mexico promoted an energy reform, which opened the energy sector to the private sector, and fostering renewables. This was the starting point of the Mexican energy transition. However, in the Mexican federal government campaign, the elected President of Mexico, Andres Manuel Lopez Obrador, had a very critical message regarding this reform. He promised to reverse it and reverse the release of the price of gasoline. His criticisms were profitable in the campaign among nationalist groups of the population who were against it.

The President-elect of Mexico, Andrés Manuel Lopez Obrador, has made important but doubtful announcements and proposals such as stop importing crude oil, stop exporting oil, the construction of a refinery in Tabasco and the reviewing oil contracts accorded during the current administration once he starts his government this December 2018. Nevertheless, the administration of bids and contracts derived by energy reform does not depend on the federal government. According to the legislation, the administration depends on the National Hydrocarbons Commission (CNH, in Spanish), which is an autonomous body.

To date, and derived from energy reform: 107 contracts have been signed, of which 30 percent are for shallow water, 25 percent for deep water and 45 percent for terrestrial fields. It is estimated that 100,000 USD will be expected at the end of this year with clean energy auctions and two more oil auctions. The government cannot support this significant investment.

With 107 oil contracts and committed investments more than 100 billion dollars for the next two decades, all the participants of the energy sector industry spread the uncertainty feeling.

On the other hand, the proposals by Lopez Obrador to stop crude oil imports and to eliminate oil exports could be harmful to the credit rating of both Petroleos Mexicanos (Pemex) and the country. Thus, it could be suggested to continue the energy reform and foster private investment in oil and gas to make the sector more competitive and attract more investment.

Into this context, Mexico must continue its path towards energy transition, towards a sustainable economy through renewable energy, energy efficiency, and sustainable development. Therefore, the country will gain economic, social and environmental benefits.

With new legislation, government policies, and actions, and with strategic cooperation partners such as Germany, Mexico seeks to turn challenges into opportunities based on shared objectives and values. This document aims to explain the drivers of the Mexican-German strategic cooperation for a global energy transition policy.

MEXICO-GERMANY: STRATEGIC ALLIANCE FOR A GLOBAL ENERGY TRANSITION POLICY

Relations between Mexico and Germany began in the colonial period. It started with the arrival of German religious and technicians to Mexican territory, and this was consolidated up to the nineteenth century.

The contribution of Alexander von Humboldt, who promoted Germany's interest in Mexican botany, mining, geography, and economics, played a fundamental role in the development of initial bilateral cooperation. The commercial links between the two countries were strengthened with trade agreements. On January 23, 1879, both nations established diplomatic relations.

Nowadays, both countries maintain a firm commitment to work on the consolidation of a dynamic political relationship, maintaining close collaboration in international scenarios of common interest such as democracy, respect for human rights, environmental protection, as well as energy and sustainability.

Bilateral cooperation for energy development between Mexico and Germany began in 2005. It started with a technical assistance program on renewable energies. In 2009, the GIZ established the "Sustainable Energy Program" (PES, in Spanish). This program incorporated the energy efficiency and sustainability construction concepts. Germany established this program with Mexico to provide support and technical assistance to consolidate its route towards a low emission future and to direct efforts to achieve its goals of reducing greenhouse gas emissions. The technical assistance components are mainly focused on three main lines:

- › renewable energy.
- › energy efficiency.
- › technological development and training.

Eight sectors were considered in the construction of this political framework:

- › farming.
- › sustainable cities and waste management.
- › commercial building.
- › residence building.
- › financial.
- › generation and distribution.
- › industry.
- › transportation.

National Program for Energy Management Systems (PRONASGEN, in Spanish)

Since the end of 2014, the National Commission for the Efficient Use of Energy (Conuee, in Spanish) has been implementing the PRONASGEN. This program aims to support and improve the energy performance of companies through the implementation of management systems. The aim of this is the establishment of technical and managerial measures to raise their competitiveness through the sustainable use of energy. This program seeks to support

energy users of all sectors in the implementation of Energy Management Systems (ISO 50001).

This program also created the strategy Learning Networks, in which its participants are allowed to achieve a common goal through the exchange of experiences through meetings, courses, workshops, seminars, webinars, and technical support.

Mexico-Germany Strategic Alliance Program

In April 2016, the German Federal Minister of Economy and Energy and the Mexican Secretary of Energy signed a bilateral energy alliance. Both countries agreed to cooperate in the following priority areas:

- › liberalization of electricity markets.
- › integration of variable renewable energies to the supply system and electrical networks.
- › energy efficiency in the sector.
- › transparency in the oil and natural gas industry.

The objective of this program is to support the expansion of renewable energies and the diffusion of efficient energy technologies. This program aims to contribute both to protect the climate and reduce competition for increasingly scarce energy resources. In the long term, the security of supply in Germany will also be increased. Both countries are successfully collaborating in the liberalization of electricity markets, the diffusion of efficient energy technologies, the development of renewable energies and transparency in the oil and natural gas industry.

MEXICO AND GERMANY BENEFIT FROM BILATERAL COOPERATION

Germany's benefits

Mexico has become an essential cooperative partner for Germany in global forums. Mexico plays an active role in the UNFCCC. In 2010, Germany promoted the establishment of the Green Climate Fund at the COP in Cancun. (This fund seeks to support developing countries in their climate adaptation and emissions mitigation activities). During the German presidency of the G20, Germany asked Mexico to co-chair the energy and climate working groups. Mexico and Germany jointly published a voluntary peer review of fossil subsidies in 2017 as a step towards the stated goal of the G20 to “eliminate inefficient subsidies to fossil fuels.”

Both countries exchange best practices to create learning opportunities on issues such as the liberalization of the energy market, the integration of variable sources of renewable energy and transparency in the fossil fuel sector. Through this dynamic, Germany seeks to create entry points for German companies to the growing Mexican markets for renewable energy and energy efficiency.

Mexico has become the largest Latin American destination for German development cooperation regarding energy, accounting for 612 million dollars (31%) between 2012 and 2016. The bilateral climate cooperation between Germany and Mexico was formalized in 2010 through the Mexico-Germany Climate Change Alliance, in which Germany seeks to support Mexico in achieving its emission reduction targets. This bilateral climate cooperation was recently expanded to share social and economic benefits of renewable energy to plan an effective global climate action.

Benefits for Mexico

Mexico is a country with significant renewable energy potential. Hence, it is essential to understand the successful process of the Energiewende, the German energy transition model. The Energiewende is still under construction and, like Mexico, faces important challenges, but Germany can already boast notable achievements in favor of sustainability. The Energiewende is a process that has taken many years to be implemented, and that has been characterized by its constant improvements due to the multiple challenges it has faced.

The development of the Energiewende and the resulting experience should be an example for Mexico, not only on the path towards a greener economy but in the care of the environment and in combatting climate change. Mexico can learn about how Germany fosters enormous renewable potential to assure a sustainable future.

As Mexico is beginning on its path towards energy transition, it is useful to learn about successes and errors, analyzing the similarities and differences to contextualize its work towards the transition model.

The German experience is a crucial reference for the promotion of energy efficiency and renewable energy and thus combatting climate change. On the other hand, knowledge of the German experience also contributes to understanding how to improve the local scope of energy management. It is also essential for Mexico to understand the social and economic opportunities derived from its energy transition.

COMMON OBJECTIVES PURSUED BY MEXICO AND GERMANY ON A GLOBAL SCALE

As a pioneer country with a joint strategy regarding renewable energy and energy efficiency, Germany has successfully included in its implementation both civil society and the entire government to achieve its goals. Germany has set a goal for the transition to reduce emissions of GHG by 40 percent by 2020 to accomplish this; renewable energy generation will be 80 percent by 2050.

The German government introduced additional measures in a national consultation action plan for the fulfillment of the ambitious targets for the introduction of renewable energies (35% in 2020, 80% in 2050) and energy efficiency. The plan included the creation of platforms to promote dialogue on electricity markets, energy efficiency and electricity grids with stakeholders.

Mexico has only just begun its path towards energy transition while countries like Germany started a long time ago. Therefore, it is convenient to learn from their successes, mistakes, challenges, and opportunities in analyzing the similarities and differences with those countries so that Mexico can move forward more confidently towards its transition.

Mexico committed to reducing 22% of its emissions by 2030 and 50% by 2050. The principal axes to achieve these goals are an increase in clean energy generation (25% in 2018, 35% in 2024), where it is expected that 50% of the additional capacity of clean energies come from solar and wind systems. The Energy Secretariat, as head of the sector, established an advisory council that includes thematic working groups open to any interested party, such as production, consumption, energy efficiency and storage.

As for Mexico, other measures taken by the Government to achieve energy transition are the elimination of subsidies to fossil fuels, the establishment of a tax on carbon emissions, the creation of electricity auctions and clean energy certificates. Also, Mexico commits its support to finance scientific projects against climate change.

Mexico demonstrates its energy transition commitment through a multilateral agenda and its Intended Nationally Determined Contributions (INDC) to the 2030 Agenda. That INDC highlight the importance of biodiversity protection and the fight against climate change as instruments for sustainable development. Also, Mexico is on the road to energy transition through the carbon market and the carbon price set.

Carbon market in Mexico

In the second half of 2018, Mexico will formally enter the carbon market with a pilot phase aimed at reducing GHG emissions through the purchase of Clean Energy Certificates (CEL, in Spanish). This phase is scheduled to start in August and will last three years.

Although the Mexican carbon market will formally start in 2021, along with the entry into force of the Paris Agreement, work to achieve it continues, as well as international announcements, where Mexico takes a leading role. The carbon market will operate from the Mexican Stock Exchange and will involve nearly 500 industries.

Mexico and the carbon price set

Mexico supports the carbon price initiative as a useful measure to reduce GHG emissions and promote the use of cleaner fuels. The transition to a low carbon economy is everyone's responsibility: governments, agencies, companies and civil society.

The economic justification is clear: establishing a real carbon price will reduce consumption and encourage economic agents to invest in more processes that are efficient and baskets of cleaner and more sustainable energies.

In the face of current issues of sustainability, such as climate change, green bonds, and energy efficiency, it is necessary to set a price for carbon emissions both locally and internationally. Mexico is not exempt from this possibility.

SOCIO-ECONOMIC OPPORTUNITIES FOR MEXICO IN ENERGY TRANSITION AND THE RENEWABLES

For Mexico, energy reform and the Energy Transition Law opened a critical window of opportunity for the incorporation of cleaner technologies into the sector. In the case of renewables, the country's natural resources can be used strategically to foster, through electricity, economic and social development, reducing its environmental impact. It can strengthen national energy security because of reducing the import of fossil fuels.

Mexico is facing this technology due to energy transition. This change will require investment and long-term decisions. In the end, the challenge is towards a huge social transition in the use of energy.

Energy transition in Mexico has many perspectives, such as changing political priorities, environmental effects such as climate change, and local development. The new Mexican legislation allows a transition to renewable energies, migrating from centralized systems to a new arrangement of the energy system in which the user can be an electricity generator. It also allows massive investment in energy projects.

It is expected that energy projects generate an increase in national participation; this would have positive social and economic implications. In technological terms, the level of the participants in the projects would increase by the mere fact of "learning by doing." It is necessary to support these efforts with similar policies to foster quality job creation.

From the economic point of view, with greater national participation, the projects would require investment, together with the advantage that the national component would be more significant and the industry and the local production chains would be supported. Thanks to the reform, Mexico will have access to capital and technology so that the electricity sector can increase its productivity. The social effects derived of energy projects are the increase in skilled jobs, the demand for manufacturing and construction goods and the demand for housing, food, transportation, etc. services, which will be required for such projects. However, a rethinking of the social part is necessary to reverse the growing trend of opposition to plans.

On the other hand, the energy transition in Mexico is showing that high-level experts, professionals, and technicians are required. The country needs professionals with the knowledge and skills to face the significant challenges of the energy sector and those it will meet soon. Professionals are needed for both engineering and in the design of economic policies and prices, among other areas.

As a result of these requirements, in 2014, the government created the Strategic Program for the Training of Human Resources in Energy (SENER-SEP-CONACYT, in Spanish). This program establishes that "Mexico needs to train a minimum of 135,000 high-level experts, professionals and technicians. in different specialties in the next four years, to cover the direct demand of the sector. As well as new mechanisms that contribute to adequately connect the supply and demand of human resources, which becomes a challenge for education, science and Mexican technology and its institutions."

CHALLENGES OF ENERGY POLICY IN MEXICO

Biodiversity challenge

Mexico has a particular interest in the conservation of biodiversity in the face of climate change. Mexico is a big agricultural country; the agricultural sector manages crops of global relevance such as corn, tomatoes, and chili. Energy transition needs to include biodiversity in the planning and implementation of each energy project. It is essential to recognize the importance of knowledge, social participation and sustainable innovation in the process to integrate the conservation and sustainable use of biodiversity into sectoral and intersectoral plans and energy policies.

Social challenge

Regarding energy security, Mexico in its energy transition should use clean energy projects to reduce dependence on imported fuels. Also, energy efficiency must promote changes in the consumption habits of Mexican households, driven by information, technological changes and regulations that force the consumption of more efficient equipment.

On the other hand, the energy transition needs to consider the relevance of social work in the planning and development of projects. All opinions and needs of the communities are essential. In the case of Mexico, the ejidos and peasant groups own more than 60-70 percent of the areas where renewable resources are located. The idea is that the communities know the benefits that they could obtain and that they become partners and promoters of the projects, not opponents of them.

In the implementation of energy projects, it is essential to know different participants to establish a common goal. It is necessary to have adequate communication based on trust and cohesion among the members of the communities, including governments, companies, and civil society. This communication needs to show aims, concerns, expectations, and benefits of the project. This communication also needs to start at initial project stages and prevail during all project operations. This will build a positive and stable relationship based on trust, and respect for rights.

In Mexico, some examples of this type of communication can be given, especially those, which involve renewables. Renewables projects bring several kinds of benefits. Hydroelectric projects are one example. The communities must know about benefits such as water supply, flood control, irrigation, tourism, and employment, among others. Hydroelectricity is a project in which the generation of electricity is just one of the objectives. Also, energy transition needs to state that clean energies should not compete with each other but be complementary as each has its possibilities, its niches, and weaknesses.

Policy challenge

Mexico initially proposed an energy transition based on the energy reform, the Use of Renewable Energy Law, the Energy Transition Law and the General Law on Climate Change. Based on this set of policies, Mexico has established the ambitious goal of generating 35 percent of electricity with clean energy by 2024.

The Electricity Industry Law includes a broad definition of clean energies and incorporates not only renewable energies but also a nuclear power, efficient cogeneration and thermal fuels with carbon capture and storage.

The Electricity Industry Law incorporates the inclusion of the term clean energies, extending beyond the use of renewable energies, the feasibility of generating electricity with power's source such as nuclear energy or that derived from solid waste, in addition to efficient cogeneration and the use of technologies to reduce the emission of carbon dioxide. With this, there is a higher concordance in the scope of the goal of 35 percent of electricity generation through clean energies.

Mexico reinforced the energy reform with the Energy Transition Law with the purpose to increase the installed capacity of renewable energies in the national electricity system. Mexico has the potential for a clean generation, such as geothermal, hydraulics, wind, solar, the use of biomass or biogas, as well as the promotion of cogeneration and distributed generation systems, to contribute to the matrix of energy diversification and the mitigation of greenhouse gases (GHG).

Energy policy under a new Mexican federal government

In the campaign, the elected President of Mexico, Andres Manuel Lopez Obrador, had a very critical message regarding this energy reform. He promised to reverse it and reverse the release of the price of gasoline. His criticisms were profitable in the campaign among nationalist groups of the population who were against it. With 107 oil contracts and committed investments more than 100 billion dollars for the next two decades, all the participants of the energy sector industry spread the uncertainty feeling.

Once elected as President, Lopez Obrador faced a dilemma: cancel or not the energy reform. However, since a few months ago, Lopez Obrador has made it clear that he is not going to cancel the energy reform. He has stated his intention to make contractual revisions, and he has declared important but doubtful announcements and proposals for the energy sector.

The proposal by the government of Lopez Obrador to stop oil crude imports and to eliminate oil exports could be harmful to the credit rating of both Pemex and the country. The Mexican energy sector is very attentive to what may happen with the Lopez Obrador announcements or plans in the sector because it is quite sensitive, and although Pemex is in a situation stable, it is a fragile situation.

Since few months ago, the structure of how the energy sector works has been changed. It can have repercussions in its competitiveness. If the next government decides to privilege the refining of hydrocarbons, Pemex's revenues will decrease, because when exporting it is charged in dollars and when focusing on the domestic market the revenues would be in pesos.

The new federal government plan would also lead to forcing Pemex to import crude, which would imply greater risks due to the exchange rate and an adverse effect on cash flow. The project to stop oil exports would deprive the government of revenues of almost 2 percent of gross domestic product (GDP), forcing it to increase taxes.

POLICY RECOMMENDATIONS AND CONCLUSION

Mexico could consider adopting factors that have been key in the Energiewende:

- › Integration and active participation of all sectors of society (Germany achieved that by 2014 – citizens and cooperatives own 47 percent of the installed capacity of renewable energy).
- › Investment in research and development of renewable energy technologies, mainly solar and wind.
- › Continuous improvement in the manufacture of equipment and elements in renewable energies that has allowed it to reduce its costs to such a degree that it not only satisfies the domestic market but also achieves as much as 60 percent in the exports of these goods. This enables the creation of quality jobs and contributes to the social and economic development of the country.
- › Continuing with the incorporation of Clean Energy Certificates (CEL) as an instrument to encourage higher and faster deployment of clean technologies. The creation of a Clean Energy Certificates market will help to achieve a cost-efficient reduction of externalities and the diversification of energy sources.

In addition, Mexico would consider the following bullets to manage the energy sector under a new federal government:

- › Continuing with the energy reform and private participation in the oil and gas sectors to attract more investment to the country.
- › To develop policies and actions to attract the necessary investments and boost production and growth.
- › Continuing crude oil imports to satisfy the country consume, and continuing oil exports to allow a competitive industry.
- › Continuing with the development and training of expert personnel for the energy sector.
- › Strengthening the financial situation of Pemex is a requirement to contemplate new investments in refining.

Conclusions

With a population of 120 million inhabitants and a transport and industry sector responsible for a large proportion of energy consumption, Mexico is one of the largest energy consumers. Also, it is the tenth largest global producer of oil and natural gas, so that energy consumption in Mexico is based mainly on fossil fuels.

Oil and natural gas production in Mexico has been decreasing. The energy reform was aimed at opening the sector to the market and fostering renewables in its energy mix. However, the country has enormous potential for renewable energy. Mexico has started its energy transition. Within the framework of opening up the oil, natural gas, and electricity markets, it seeks to develop private investment actively.

The President elected Andres Manuel Lopez Obrador's plans have raised concerns among the leading international risk rating agencies, which question the viability of the President elected objectives of stopping oil exports and building a refinery because they can further weaken the national oil company. The proposal by Lopez Obrador to eliminate oil exports is harmful for the credit rating of both Pemex and the country. Thus, it could be suggested to continue the energy reform and to promote private investment in oil and gas to make the sector competitive and attract more investments.

Under this context, Mexico is preparing for its energy transition with a robust strategy through an energy policy with very fixed goals of clean energy generation. The energy reform should continue as it has led to several energy projects, which need to share the value with all stakeholders.

On the other hand, Mexico needs to deal with its biodiversity, social and policy challenges regarding the energy sector. It is very important to make the industrial sector and government aware of the damage to the ecosystem caused by pollutant emissions. This is the basis for the development of public policies around coal that promote economic development, competitiveness, and innovation, and provide a healthy environment for society.

Mexico has many challenges ahead in its energy sector, but with Germany as an ally, Mexico has an energy transition leader to learn from and above all with whom to collaborate in common initiatives within the energy sector. . It is for Mexico to understand the social and economic opportunities derived from its energy transition. The German experience is a crucial reference for the promotion of energy efficiency and renewable energy and thus combatting climate change.

This document aimed to explain the drivers of the Mexican-German strategic cooperation for a global energy transition policy. Mexico has started its path towards energy transition while countries like Germany have already experience on the road. Therefore, it is convenient to learn from their challenges and opportunities, analyzing the similarities and differences with those countries so that Mexico can move forward more confidently towards its transition. The Mexican government wants to attract potential investors for the expansion of energy infrastructure, and develop the exchange of experiences with Germany on key energy issues.

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