AMIA

FROST & SULLIVAN

RECOMMENDATIONS FOR A NATIONAL ELECTROMOBILITY POLICY

Mexican Automotive Industry Association (AMIA)

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1 Executive Summary

Introduction

Toward the end of the 20th century interest in electromobility and the development of mobility alternatives to internal combustion engines (ICE) saw a resurgence. This renewed interest is associated with the environmental impact of ICE vehicles, the projected shortage of fossil fuel reserves and new progressive regulations aimed at reducing emissions.

Many developed countries, like some developing ones, are implementing stimulus programs for the purchase of hybrid and electric vehicles. These stimuli may be financial in nature, with a direct effect on the vehicle's market price. Other stimuli are indirect or non-financial (non-tax) incentives, such as parking benefits, preferential lanes, access to restricted low-emission vehicle zones, or toll exemptions. This latter set of initiatives has a cultural effect in stimulating the visibility of this type of vehicle and should complement economic stimuli since they play a relevant role in the decision-making process to purchase vehicles with electric technologies.

Market and Manufacturing Analysis of Hybrid and Electric Vehicles in Mexico

As is the case across the globe, the Mexican transportation sector is responsible for about 25% of the total carbon emissions in the country. In this context, the transition to electromobility becomes a viable and efficient alternative for reducing the sector's CO_2 emissions, with the aim of improving air quality and meeting the international CO_2 emissions reduction commitments Mexico has subscribed to. In November 2022, the Mexican government signed a new commitment at the Climate Summit in Egypt (COP27), in which it committed to reducing greenhouse gas (GHG) emissions up to 35 percent by 2030 and becoming a carbon-neutral country by 2050. This means Mexico should stop emitting approximately 297 million tons of carbon by 2030.

The existing legal framework is a set of hardly versatile initiatives, laws, and regulations, which, in isolation and with limited objectives and scope, may at some point support the transition to electromobility in the country. The structure and content of the current regulatory framework do not clearly express the conditions and rules of the game and are generally unfocused. There are still many gaps in regulations and secondary rules for each specific sector, and there is a lack of vision in the medium and long terms. In this context, the development in legal matters is still at different levels of progress. While progress in electricity commercialization is important, the implementation of rules of operation and secondary regulations is still uncertain for domestic and foreign investors.

Similarly, for consumers, incentives and financing are still limited and there is much to do. The same happens in the cultural aspect, where the use of hybrid and electric vehicles still fails to significantly achieve collective interest, mainly due to the consumers' lack of information regarding new technologies and their economic and environmental benefits. It is also essential to develop programs and mechanisms to encourage the fleet renewal of commercial vehicles, substituting ICEs with hybrid and electric ones. As these vehicles penetrate the market, business models for charging infrastructure will also benefit, becoming attractive to public-private associations and companies for investing in the sector.

Regarding hybrid and electric vehicle manufacturing, the ideal regulatory framework should involve a promotion and incentive scheme, and regulations that allow companies to invest in new production plants or in the conversion of current facilities. The availability of basic infrastructure (water, clean energy) is expected to promote the development of industry, satisfying the local market and maintaining (or increasing) Mexico's position as a leading global vehicle manufacturer.

Certain competitive advantages position Mexico in an unbeatable situation with high potential for developing hybrid and electric vehicle manufacturing. However, the magnitude of the changes required for the rapid transformation of the automotive industry requires the impetus and a joint strategy between governments (federal, state and local) and industry to attract large investments that can transform the manufacturing plant. Most global vehicle manufacturers have committed to stopping ICE vehicle production between 2030 and 2050, in a total shift toward clean energy technologies. That is why, if Mexico wants to maintain its lead in the global automotive industry, it must develop a strategy that considers supplying energy coming from renewable sources, since the industry's main global interest is to be carbon neutral throughout its production cycle.

Undoubtedly, the Mexican market for hybrid and electric vehicles has established itself as the largest in Latin America (LATAM). However, it is still far from its full potential because there is still a significant pricing difference when compared to ICE (especially battery electric vehicles [BEVs]).

Charging Infrastructure in Mexico

According to Frost & Sullivan, in Mexico there are currently about 1,336 public or semi-public charging stations, with a total of 3,206 connectors: an average of 2.4 connectors per station. Although Mexico is the country with the highest amount of charging points in Latin America (in 2022), there is still a significant need to increase the number of charging stations to achieve greater electric vehicle adoption.

Most stations have alternating current (AC) connectors, i.e., semi-fast charging stations where, on average, an electric vehicle takes about 4 to 5 hours to reach full charge. This means that consumers have a considerable waiting time to travel more than 360 km, which is the average range of EVs currently available in the Mexican market. This is why it is advisable to encourage the installation of direct current (DC) connectors that reduce vehicle charging times. In terms of coverage, charging infrastructure is well-distributed throughout the national territory but it remains insufficient.

Analysis of Current and Potential Hybrid and Electric Vehicles Customers in Mexico

One of the main obstacles for the EV market in Mexico is the effect known as range anxiety. It should be noted that potential consumers of hybrid and electric vehicles do not yet experience these technologies directly, but they do have a significant degree of knowledge about their behavior. That is, they are unfamiliar with day-to-day operation, but they are aware of important factors that current owners of hybrid and electric vehicles already go through, such as the fact that domestic charging is more important than public charging, or that there is not much availability of public charging stations in Mexico.

On the other hand, by surveying all existing and potential consumers of hybrid and electric vehicles about their purchasing preference if said vehicles were priced the same as ICE vehicles, answers lean completely in favor of hybrid and electrical technologies. Only 6.9% of the sample would continue to prefer an ICE vehicle. This shed some light on the effectiveness that incentive schemes (that directly affect vehicle price) could have in the market. These schemes would increase the penetration of hybrid and electric vehicles in Mexico and would contribute significantly to reducing emissions, mitigating climate change, and complying with the EV penetration agreements for electric vehicles signed in Glasgow by the Mexican government in 2021. In essence, although an incentive scheme represents an investment, the benefit is palpable for both the consumer, the Mexican government, and society as a whole.

Suggested Elements for a National Electromobility Plan in Mexico

1.1.1 Objectives for a National Electromobility Plan

At the recent 27th United Nations Climate Change Conference (COP27), in Egypt in November 2022, the Mexican government intensified previous commitments on its climate change mitigation strategy. The key element of these changes is the increase in the GHG emission reduction target from 22% to 35% by 2030. As part of the announced measures to achieve this objective, the Mexican government had previously signed the Glasgow Pact (the result of the COP26 held in the United Kingdom in 2021) in which—within the framework of mitigation measures—it commits to accelerating the adoption of electromobility by setting a target for passenger vehicle sales to be 100% zero-emission by 2040.

In conjunction with the US government, the intermediate goal is to achieve 50 percent of sales of this type of vehicle by 2030.

In this context, having a national electromobility adoption plan or strategy becomes a fundamental axis to achieve these commitments. Although there are very important efforts by different entities of the Mexican government to promote hybrid and electric vehicle adoption, a coordinated strategy with the different players in the ecosystem is of utmost importance for these efforts to come together and go in the same direction. An entity to coordinate, monitor and report on the progress and results of this strategy on a regular basis is also desirable to ensure that the efforts help the main objective, which is to significantly contribute to reducing transportation sector emissions in Mexico.

For consumers—individuals and businesses—there are two fundamental factors in their hybrid and electric vehicle purchasing decision processes:

- The extant price differential between hybrid and electric vehicles and ICE vehicles in the Mexican market
- The availability of charging stations throughout Mexico, especially on highways

Some of the main objectives for this strategy should be:

- Reduce GHG emissions from the transportation sector
- Contribute to meeting international climate change targets
- Generate a positive impact on public health and quality of life in the population

A set of associated objectives would also have a positive impact on the economic and social environment in Mexico, which are:

- Maintain the leadership of the Mexican automotive industry locally, regionally, and globally
- Increase the number and quality of jobs that the automotive sector generates in the Mexican economy
- Strengthen regional supply chain by contributing to the substitution of Chinese imports, in support of regional objectives with the United States and Canada
- Enhance the local industry's ability to access US Inflation Reduction Act (IRA) benefits, as well as other benefits associated with the electromobility vehicle industry in the region

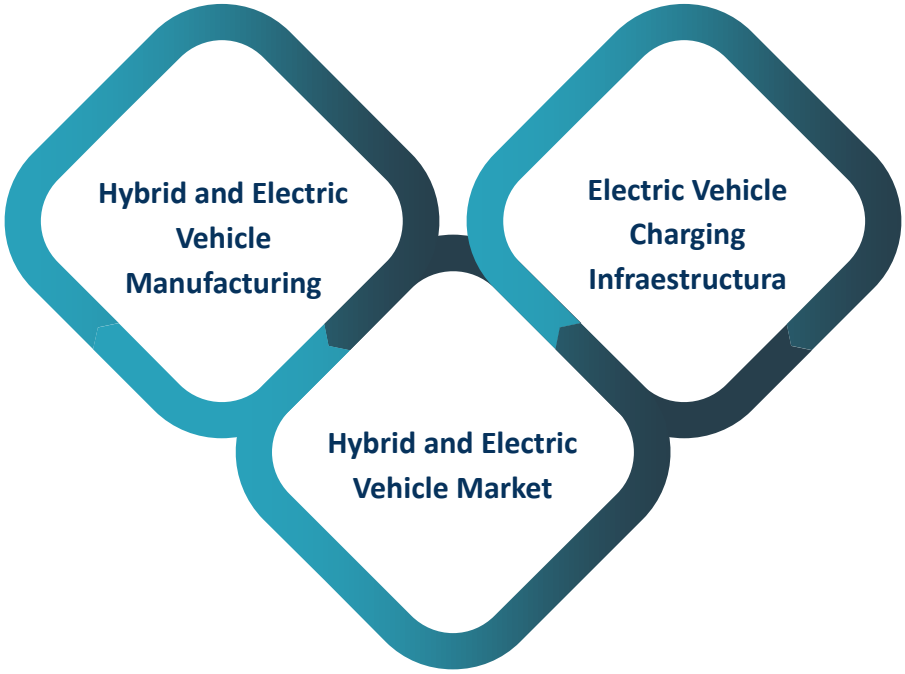
Ideally, this strategy should come from the President of Mexico, so that all entities involved are aligned by the objectives set therein. Electromobility matters in advanced economies have involved commitment and action of different government agencies. Entities involved are related to urban mobility, environment, energy, infrastructure, promotion of industry and investment, employment, and education, to highlight the most relevant.

Furthermore, it is vital that the strategy coordinator have binding powers to regularly monitor and evaluate all entities' efforts and to make sure that each entity involved reports progress and implements actions to achieve the plan's objectives. Otherwise, diverging interests, budgets and objectives can become important but isolated efforts, which could result in bottlenecks limiting or delaying the national strategy's primary objective.

National Electromobility Plan Recommendations

Taking all these factors into consideration, and as shown in Figure 1.6.1, Frost & Sullivan identifies three major areas that the electromobility plan should address:

Figure 1.6.1: National Electromobility Plan Recommendations, Mexico, 2023



Source: Frost & Sullivan

Impact of a National Electromobility Plan on the Hybrid and Electric Vehicle Market in Mexico

Incorporating hybrid and electric vehicles to the vehicle fleet in Mexico can result in a 15.8 million ton reduction in CO_2 emissions between 2016 and 2030, considering a penetration under a natural market growth scenario or business as usual (BAU). If a national policy including an incentive scheme was introduced, savings in CO_2 emissions could reach 26.2 million tons. This means an increase of 65.8%, or an additional 10.4 million tons of CO_2. Considering that Mexico's commitment in its updated National Determined Contributions (NDCs) requires reducing about 281 million tons of CO_2, a comprehensive promotion policy for hybrid and light electric vehicles can contribute approximately 9.3% of Mexico's total commitment to reducing CO_2 emissions.

Frost & Sullivan estimates that, by 2030, sales of hybrid and electric vehicles may reach 316,856 units which would represent a penetration of 19.1 percent of total light vehicle sales in Mexico. As mentioned above, this scenario considers that there is no change in the existing incentive scheme, and that the government does not design and successfully implement any policy to promote the adoption of hybrid and electric vehicles. By adopting a comprehensive policy to promote electromobility, the penetration of said vehicles can increase to 38.9% of total light vehicles sales in Mexico by 2030.

However, in the absence of a policy and strategy for the promotion of hybrid and electric vehicles—including an incentive scheme that directly affects vehicle price and manufacturing—it will be difficult to achieve the emission reduction targets and the international commitments the Mexican government has subscribed to. Similarly, there is a risk that the Mexican automotive industry will lose the leadership role it plays in global vehicle manufacturing.