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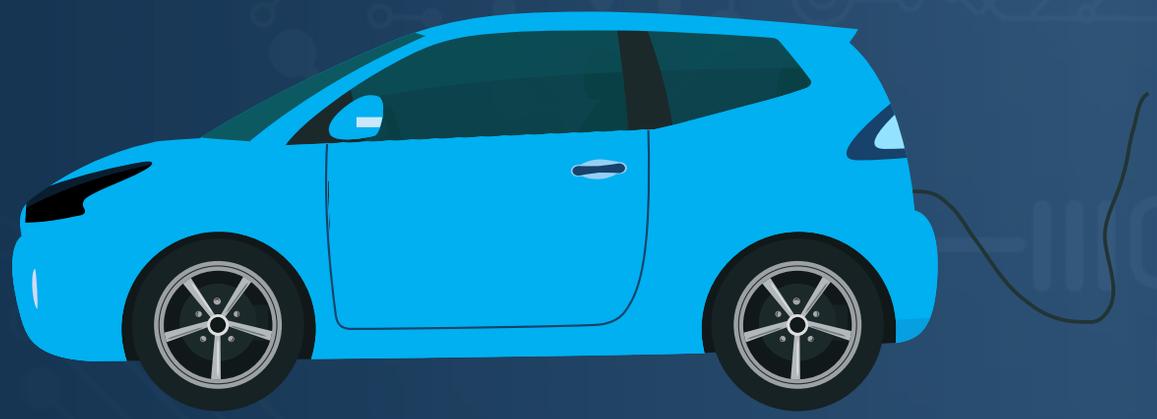
AMIA

PERSPECTIVES ON THE MARKET FOR HYBRID AND ELECTRIC VEHICLES IN MEXICO

Recommendation for a National Electromobility Policy in Mexico

PROJECT PRESENTATION | **PRESENTED TO** → | **2023**

AGENDA



- PROJECT OBJECTIVES
- CONSUMER PERSPECTIVE IN MEXICO
- HYBRID AND ELECTRIC VEHICLE POLICY RECOMMENDATIONS
- IMPACT OF A NATIONAL HYBRID AND ELECTRIC VEHICLE POLICY IN MEXICO

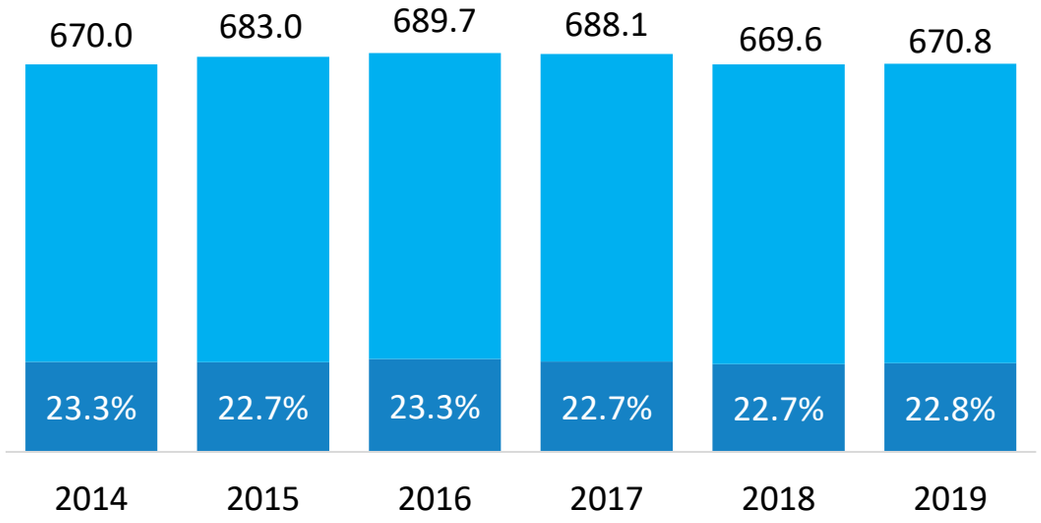
PROJECT OBJECTIVES

OBJECTIVES AND IMPORTANCE OF THE PROJECT

Main Objective

To have a national policy for the adoption of Electromobility that will enable Mexico to reduce greenhouse gas emissions and thus comply with the commitments of the Paris and Glasgow Agreements, generating improvements in health and quality of life of the inhabitants of the country.

Tons of Greenhouse Gas Emissions, Mexico, 2014-2019



Source: WRI

It is extremely important to have a **coordinated strategy with the different players of the ecosystem**, so that the efforts join together and go in the same direction

Mexico's National Determined Contributions (ratified in Egypt's COP 27 in 2022)

Mx 2030

-35%
GHG emissions BAU

-297
CO^2 million tons

Electromobility National Policy

-2,414
million liters of fuel

~$8,624
millions of IEPS subsidy savings

-26.2
CO^2 million tons

2050

Carbon Neutrality

OBJECTIVES AND IMPORTANCE OF THE PROJECT

Main Objective

To have a national policy for the adoption of Electromobility that will enable Mexico to reduce greenhouse gas emissions and thus comply with the commitments of the Paris and Glasgow Agreements, as well as maintaining global industry leadership and strengthening regional supply chains for hybrid and electric vehicle manufacturing

Importance of the Automotive Industry in the Economy, Mexico, 2014-2019

7th Global Vehicle Manufacturer in 2021

1st Dollar Generator in 2022 - $98,667 US billion

Exports Record in 2022 – $165,200 US billion

Automotive Industry GDP: **$322 billion** 2014 to 2021

17% of FDI from 2014 to 2021

Nearly 1 million jobs linked to the automotive sector

Source: INEGI, AMIA

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Source: Frost & Sullivan

CONSUMER PERSPECTIVE IN MEXICO

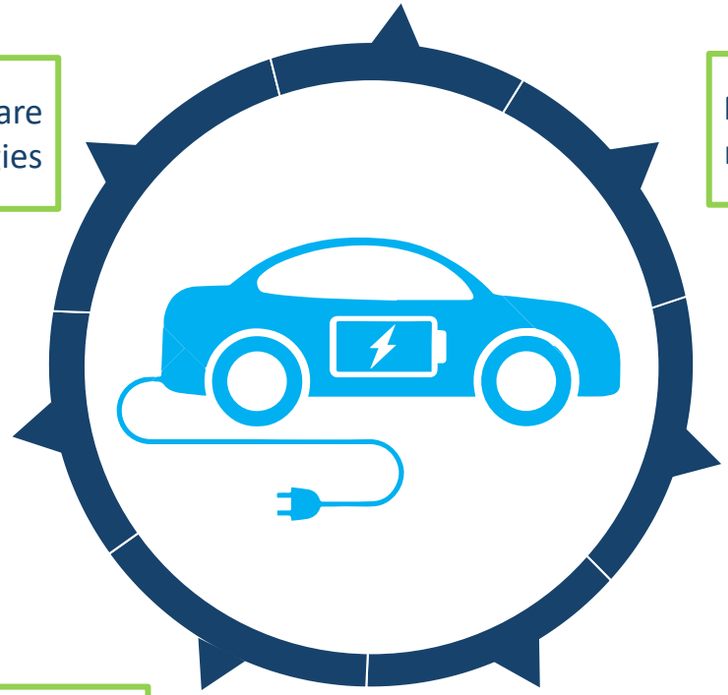
HYBRID AND ELECTRIC VEHICLES CONSUMERS' PERCEPTION IN MEXICO

Hybrid and Electric Vehicles Consumers' Perception, Mexico, 2022

Price and range anxiety are the main reasons why more consumers **do not adopt** hybrid and electrical **technologies**

Fuel savings and care for the environment are the main benefits of these technologies

Non-monetary benefits like avoid vehicle use restrictions are **highly valued by consumers**



Home charging is mostly used versus public charging (AC). **There is willingness to pay for public fast charging stations**

For BEV owners **it is necessary to have more than one car at home** for longer road trips

Most EV consumers **do not plan to buy ICE** vehicles anymore

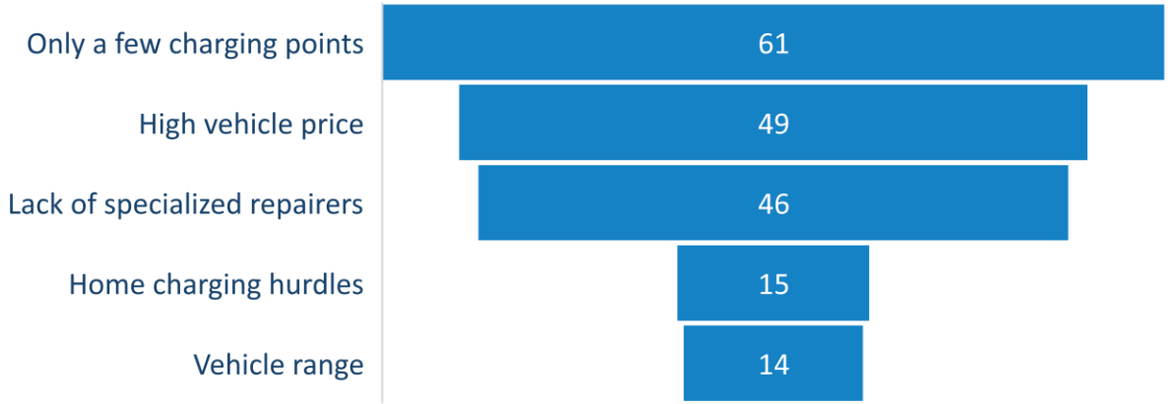
A **significant decrease in the range of BEVs** is perceived using air conditioning and other factors

Source: Frost & Sullivan

HYBRID AND ELECTRIC VEHICLES CONSUMERS' PERCEPTION IN MEXICO

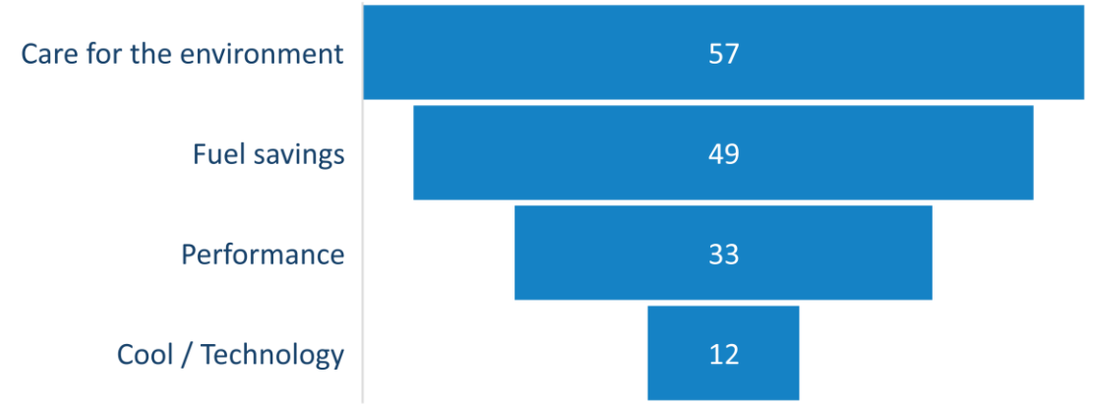
Potential Buyers' Perception, Mexico, 2023

EV Drawbacks



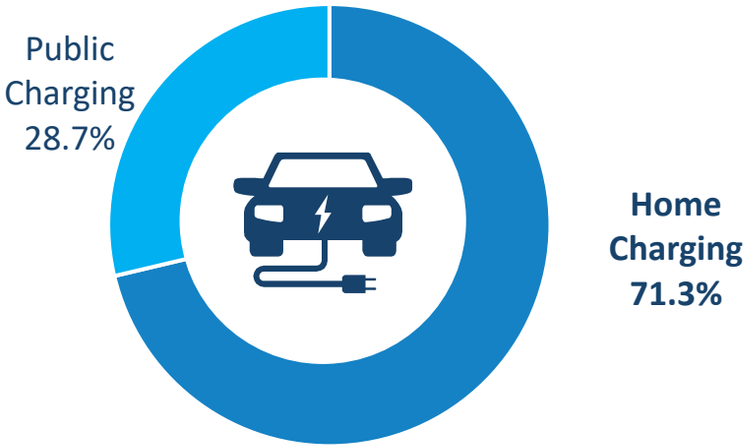
Current Owners' Perception, Mexico, 2023

EV Benefits



If vehicle price was the same for EV and ICE…

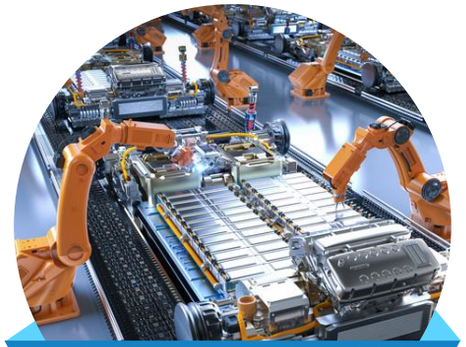
Type of Charging Utilization Percentage, México, 2023



HYBRID AND ELECTRIC VEHICLE POLICY RECOMMENDATIONS

STRATEGIC PILLARS OF A NATIONAL POLICY OF ELECTROMOBILITY

Strategic Pillars of a National Policy of Electromobility, Mexico, 2023



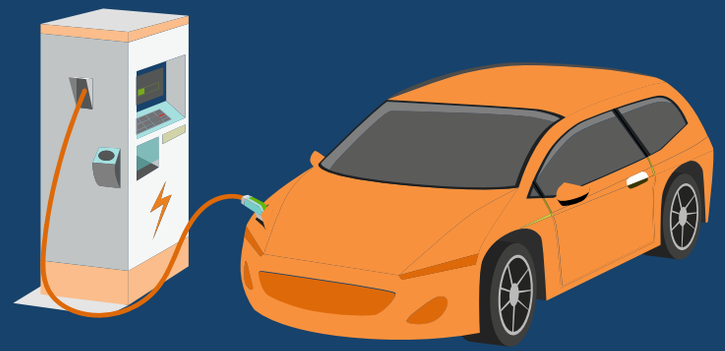
Hybrid and Electric Vehicle Manufacturing

Hybrid and Electric Vehicle Market

EV Charging Infrastructure

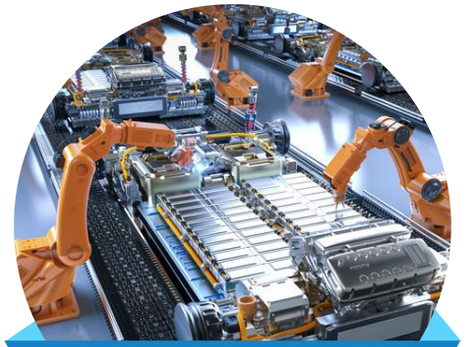
Main Objectives of an Electromobility Policy, Mexico, 2023

1. To reduce greenhouse gas emissions
2. To contribute to meeting international climate change targets
3. To generate a positive impact on public health and quality of life of Mexico's inhabitants
4. To maintain Mexico's leadership in the global and regional automotive industry
4. To increase the number and quality of jobs generated by the automotive sector in Mexico
5. To strengthen the regional supply chain by contributing to China's import substitution, in support of objectives along with the United States and Canada
6. To enhance local industry's ability to access the benefits of the Inflation Reduction Act (IRA) in the US, as well as other benefits associated with the electric vehicle industry in the region



STRATEGIC PILLARS OF A NATIONAL POLICY OF ELECTROMOBILITY

Strategic Pillars of a National Policy of Electromobility, Mexico, 2023



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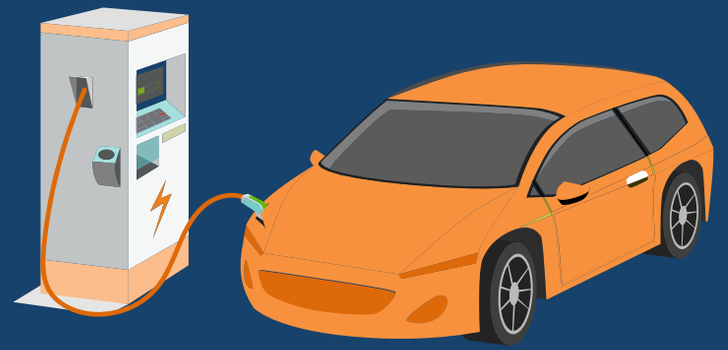


POLICY RECOMMENDATIONS FOR EACH PILLAR

Hybrid and Electric Vehicle National Policy: Suggested Policy recommendations, Mexico, 2023		
Manufacturing	**Market / Consumer**	**Infrastructure**
Availability of clean energy to meet environmental commitments	Initially VAT reduction for hybrid and electric vehicles, and subsequently by emission level	Fiscal and administrative incentives: permits and agility CFE, ISR, VAT
Clear rules for lithium access - Public-private partnerships	ISR deductibility for consumers and higher for companies	INEGI – Charging station census
Administrative incentives: procedures, international trade, batteries	Tax credits for companies investing in EVs and charging infrastructure	NOM - charging standards
Tax incentives for new plants or conversion to manufacture hybrid and electric vehicles	Low interest rates and lease schemes for hybrid and electric vehicles	Availability of clean energy, or administrative incentives for private generation (solar panels)
Joint work for re-skilling of human capital: university programs, plant technicians	NOM 163 publication	Preferential electricity rates for businesses installing charging infrastructure
Development of ZEV manufacturing hubs with infrastructure: water, roads, renewable energy, 5G	Highway toll discounts	NOM requiring EV chargers at petrol stations, connectivity between cities (fast charging)
Local supply chain development	Parking meter payment exemption	Regulation for new buildings: housing, shops, etc
Joint strategy to take advantage of IRA and Chips Act in the US	Government fleets electrification	Electricity charging recommendations or regulation
Strategies to improve time and cost on logistics	NOMs – Ranges and terminology, connectors, safe conversions, security	Temporary import duty exemption from charging stations
	Accurate information channels to consumers, mechanics and emergency services	Joint strategy to add efforts and resources

Source: Frost & Sullivan

IMPLEMENTATION ROADMAP – MANUFACTURING PILLAR

Hybrid and Electric Vehicle National Policy: Suggested Policy Recommendations – Manufacturing Pillar, Mexico, 2023-2040

Policy Recommendations Manufacturing / Industry Pillar

2023	2024	2025	2026	2027	2028	2029	2030	2035	2040
Joint Industrial Promotion Strategy	Tax Incentives for H and EV Manufacturing Plants Supply Chain Local Development H and EV Manufacturing Hubs Development						Incentives Evaluation and Redesign	Incentives Evaluation and Redesign	
Administrative Incentives									
Renewable Energies Availability									
Collaboration on Human Capital Development									
Eliminating Administrative and Infrastructure Bottlenecks Improving Logistics and Road Safety									

Source: Frost & Sullivan

RECOMMENDATIONS EXAMPLE – MANUFACTURING PILLAR

Hybrid and Electric Vehicle National Policy: Suggested Policy Recommendations – Manufacturing Pillar, México, 2024-2030

Policy Recommendations Manufacturing / Industry Pillar

Fiscal Incentives for Hybrid and Electric Vehicle Manufacturing

Period	2024-2030 Periodic review and policy redesign until 2040 (as needed)
Defining Authorities	Presidency Office, SE, SHCP, State Governments, Deputy Chamber
Executing Authorities	SHCP, State Governments
Objective	1. To encourage installation of hybrid and electric vehicle manufacturing plants and their components 2. To create more jobs related to the hybrid and electric vehicle industry 3. To contribute to the integration of regional supply chains 4. To generate a positive cost-benefit effect for the economy and population in Mexico
Content	• Temporary tax credits for construction of new plants or conversion of existing plants from internal combustion engine vehicles to manufacture hybrid and electric vehicles and/or their components • Temporary ISR deductions for construction of new plants or conversion of existing manufacturing plants from internal combustion engine vehicles to hybrid and electric vehicles • Increased tax credits or deductions to companies setting up hybrid and electric vehicle research and development centers • Benefits linked to technology commitment and availability of models for the local market • Support for transitioning from manufacturing of internal combustion-engine vehicles to hybrid and electric vehicles

Source: Frost & Sullivan

IMPLEMENTATION ROADMAP – CONSUMER PILLAR

Hybrid and Electric Vehicle National Policy: Suggested Policy Recommendations – Consumer Pillar, Mexico, 2023-2040

Policy Recommendations Market / Consumer Pillar

	2023	2024	2025	2026	2027	2028	2029	2030	2035	2040
NOMs – Terminology, ranges										
NOM Battery Disposal										
NOM Emissions										
ISR deductibility for consumers and higher for companies										
Incentives Evaluation and Redesign										
Incentives Evaluation and Redesign										
VAT Reduction for Hybrid and Electric Vehicles										
Incentives Evaluation and Redesign										
Incentives Evaluation and Redesign										
Tax credits for companies investing in EVs and charging infrastructure										
Incentives Evaluation and Redesign										
Incentives Evaluation and Redesign										
Low interest rates and lease schemes for hybrid and electric vehicles										
Highway toll discounts										
Parking meter payment exemption										
Accurate information channels to consumers, mechanics and emergency services										
Government fleets electrification										

Source: Frost & Sullivan

RECOMMENDATIONS EXAMPLE – CONSUMER PILLAR

Hybrid and Electric Vehicle National Policy: Suggested Policy Recommendations – Consumer Pillar, Mexico, 2023-2040

Policy Recommendations Market / Consumer Pillar

ISR deductibility for consumers and higher for companies

Period	2024-2030 Periodic review and policy redesign until 2040 (as needed)
Defining Authorities	Presidency Office, SHCP, Deputy Chamber
Executing Authorities	SHCP
Objective	1. To reduce transportation sector emission levels 2. To incentivize hybrid and electric vehicle adoption in the local market
Content	• Increase the number of people that can have access to cleaner technologies • Increase the number of companies that want to electrify fleets to reduce emissions • Increase deductibility cap to $500,000 for companies

Implementation Roadmap ISR Deductibility, México, 2024-2040

	2024 - 2030	2029	2030 - 2035	2034	2035 - 2040
Deductibility Consumers	100%	Incentives Evaluation and Redesign	100%	Incentives Evaluation and Redesign	100%
Deductibility Companies	Up to $500,000		Up to $600,000		Up to $700,000

Source: Frost & Sullivan

RECOMMENDATIONS EXAMPLE – CONSUMER PILLAR

Hybrid and Electric Vehicle National Policy: Suggested Policy Recommendations – Consumer Pillar, Mexico, 2023-2040

Policy Recommendations Market / Consumer Pillar

Temporary VAT Reduction for Hybrid and Electric Vehicles

Period	2024-2030 Periodic review and policy redesign until 2040 (as needed)
Defining Authorities	Presidency Office, SHCP, Deputy Chamber
Executing Authorities	SCHP
Objective	1. To reduce transportation sector emission levels 2. Promote the development of public charging infrastructure in Mexico
Content	• Initially all technologies should be included • Incentive analysis and revision every 3-4 years • Subsequently according to emission levels, with reduction rates from 6 to 16 percent, considering that the VAT rate remains at 16 percent along the study period

Implementation Roadmap VAT Deductibility, México, 2024-2040

	2024 - 2030	2029	2030 - 2035	2034	2035 - 2040
BEV	4%	Incentives Evaluation and Redesign	4%	Incentives Evaluation and Redesign	4%
PHEV	4%		4%		8%
HEV	4%		8%		12%

Source: Frost & Sullivan

IMPLEMENTATION ROADMAP – CHARGING INFRASTRUCTURE PILLAR

Hybrid and Electric Vehicle National Policy: Suggested Policy Recommendations – Charging Infrastructure Pillar, Mexico, 2023-2040

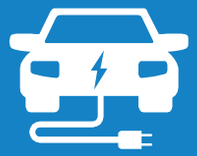
Policy Recommendations Charging Infrastructure

2023	2024	2025	2026	2027	2028	2029	2030	2035	2040
Joint strategy planning and deployment		NOM Chargers, connectors							
INEGI Census		Charging Infrastructure INEGI Census Update Yearly							
		Fiscal and Administrative Incentives Import Duty Reduction for Charging Stations					Incentives Evaluation and Redesign		
		Renewable Energy Availability for Public Charging Infrastructure							
	Electricity charging regulation								
	New Buildings Regulation								
		Preferential electricity rates for businesses installing charging infrastructure				Incentives Evaluation and Redesign		Incentives Evaluation and Redesign	

Source: Frost & Sullivan

RECOMMENDATION EXAMPLE – CHARGING INFRASTRUCTURE PILLAR

Hybrid and Electric Vehicle National Policy: Suggested Policy Recommendations – Charging Infrastructure Pillar, Mexico, 2023-2040



Policy Recommendations Charging Infrastructure

Fiscal and administrative incentives for Charging Infrastructure Deployment

Period	2024 – 2030 Periodic review and policy redesign until 2040 (as needed)
Defining Authorities	Presidency Office, SHCP, Deputy Chamber, CFE, CRE, SE
Executing Authorities	SCHP, CFE
Objective	1. To promote the development of public charging infrastructure in Mexico 2. To incentivize electric vehicle adoption in the local market
Content	**Administrative Incentives:** • Agility of permits and feasibility studies by CFE • Renewable energy permits: CRE • Increase of photovoltaic power generation capacity (solar panels) for individuals to up to 1MW **Fiscal Incentives:** • Reduction or elimination of VAT for chargers for a period of 3-4 years • ISR deductibility for consumers and companies that install charging infrastructure • Import duty exemptions for charging equipment • Use of existing FOTEASE fund that has available resources • Expedite permits and feasibility studies by CFE for charging infrastructure installation • Mapping of areas where electricity infrastructure is viable to facilitate processes and permits for charging infrastructure installation

Source: Frost & Sullivan

EV MARKET INCENTIVES IN SELECTED COUNTRIES

Main Incentives	Emission Tax	Import Duty Reduction	VAT Reduction / Exemption	Other taxes Reduction / Exemption	Direct Purchasing Subsidy	Infrastructure Charging Incentives	Electricity Preferential Rates	Manufacturing Incentives	EV Sales Penetration
Germany	■			Property Others (BiK)	Federal State Local	Federal State Local	■	■	**29.5%**
Brazil		■		IPVA IPTU		■		■	**2.5%***
Canada					■	■			**9.0%**
China				■	■	■		■	**22.0%**
Costa Rica		■	■	■		■	■		**7.3%**
United States					■	■		■	**6.7%**
Sweden	■			Property	Eliminated on Nov 2022	■			**32.2%**
Mexico		■		Property					**4.8%***
Thailand		■	■	■	■	■		■	**12.0%***

** Includes hybrids (HEV)*

Source: Frost & Sullivan

EV MANUFACTURING INCENTIVES IN SELECTED COUNTRIES

Main Incentives	New Plant Incentives	Fiscal Incentives for Manufacturing	EV R&D Incentives	Battery Manufacturing Incentives	Renewable Energy Availability	Regulatoy Incentives (joint-ventures)	Mining Incentives	Component Import Incentives
Germany	Non exclusive to EV	Non exclusive to EV	Non exclusive to EV	Along with the European Union	Non exclusive to EV			
Brazil		Non exclusive to EV	Non exclusive to EV					
Canada								
China						Non exclusive to EV		
Costa Rica								
United States	Non exclusive to EV							
Sweden								
Mexico		Non exclusive to EV						
Thailand		Non exclusive to EV						

Source: Frost & Sullivan

IMPACT OF A NATIONAL HYBRID AND ELECTRIC VEHICLE POLICY IN MEXICO

HYBRID AND ELECTRIC VEHICLE SALES FORECAST - 2030

Hybrid and Electric Vehicle Market: Scenario Sales Forecast Assumptions, Mexico, 2023

Scenario WITHOUT National EV Policy in 2030
H and EV Penetration: 19.1%

- Current fiscal incentives
- Additional EV incentive programs, mainly qualitative / State level
- Limited vehicle availability in mass segments
- Price difference (10-20%) between electric and internal combustion engine vehicles
- Limited vehicle supply (volume) at a global level
- Charging infrastructure deployment in progress
- Main highway corridors with fast charging infrastructure

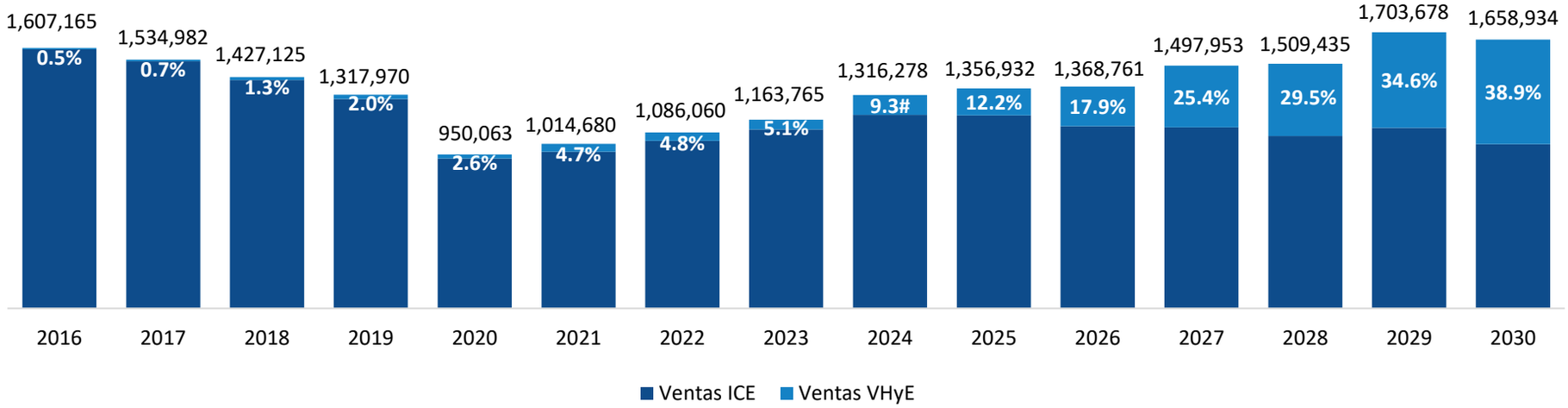
Scenario WITH National EV Policy in 2030
H and EV Penetration : 38.9%

- Additional fiscal Incentives :
  - VAT reduction to 4% for H and EV
  - ISR deductibility for consumers and higher for companies
- Additional EV incentive programs, mainly qualitative / State level
- Wider vehicle availability in mass segments (subcompacts, compacts)
- Similar vehicle pricing for ICE and EV
- Limited vehicle supply (volume) at a global level
- Stronger charging infrastructure deployment
- Main highway corridors with fast charging infrastructure
- VAT Estimated Investment: $384.8 billion pesos between 2024 and 2030

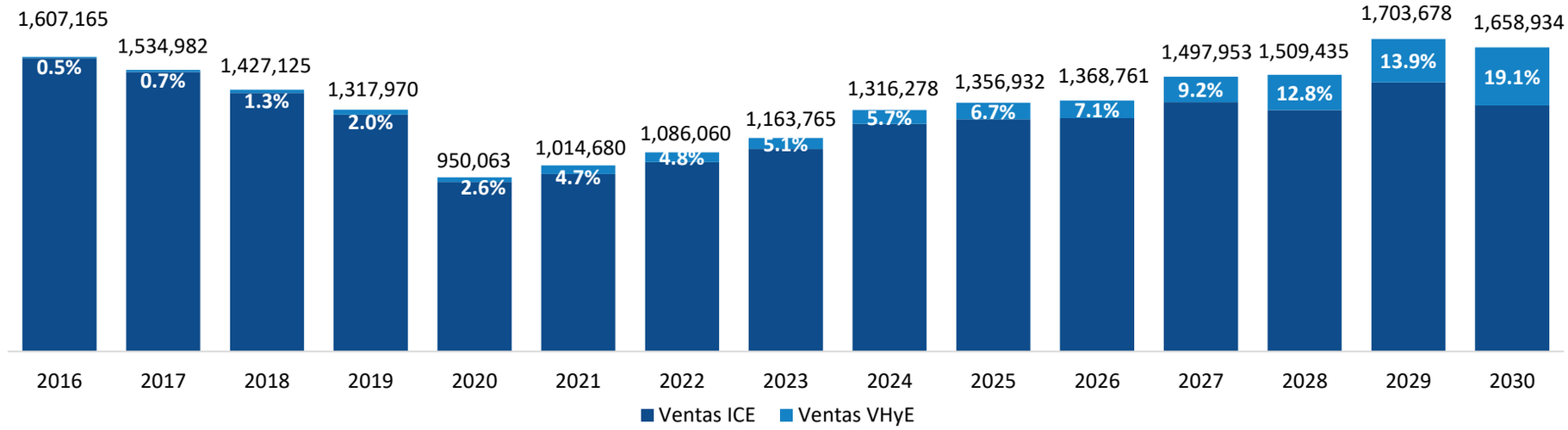
Source: Frost & Sullivan

HYBRID AND ELECTRIC VEHICLE SALES WITH AND WITHOUT A NATIONAL ELECTROMOBILITY POLICY

Hybrid and Electric Vehicle Market : Sales WITH Policy, Mexico, 2016 - 2030



Hybrid and Electric Vehicle Market : Sales WITHOUT Policy, Mexico, 2016 - 2030



H and EV Market Penatration

38.9%

WITH National Electromobility Policy

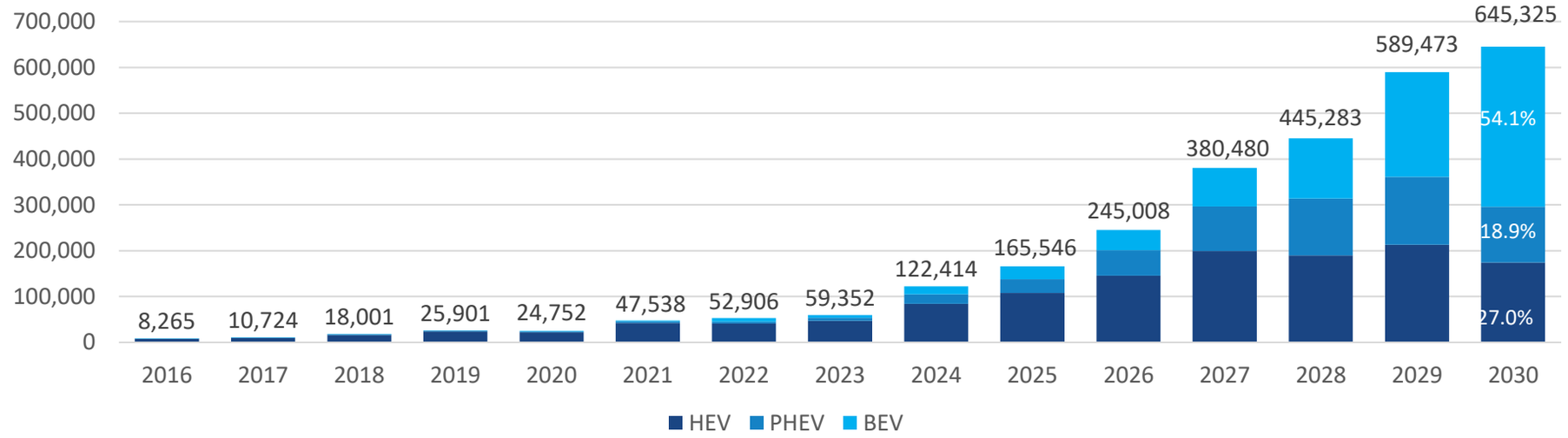
19.1%

Penetration without National Electromobility Policy

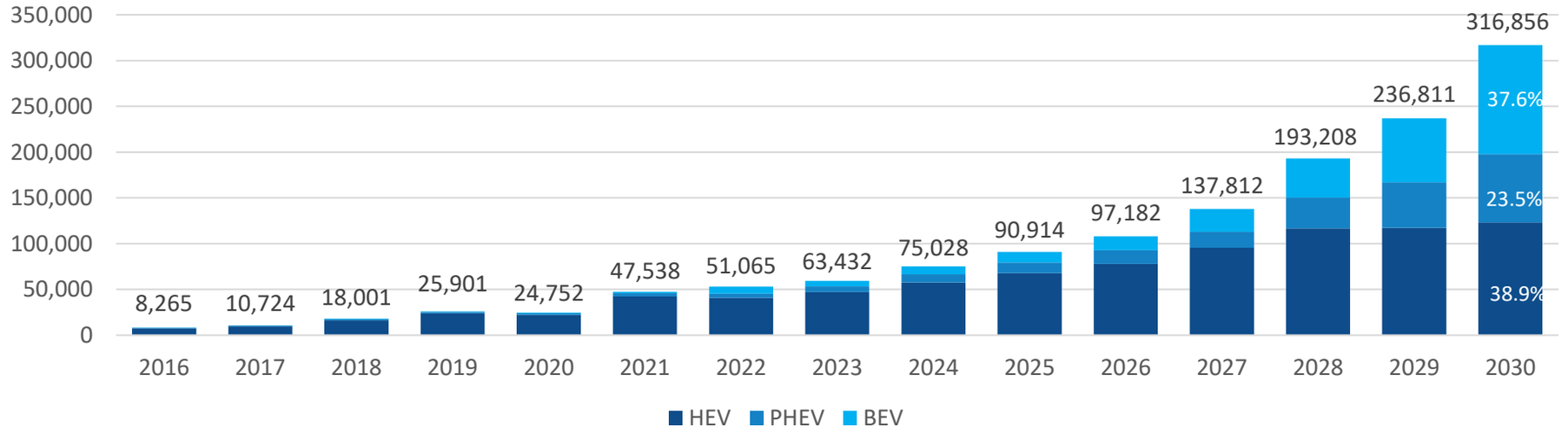
Source: Frost & Sullivan

VEHICLE SALES BY TECHNOLOGY WITH AND WITHOUT A NATIONAL ELECTROMOBILITY POLICY

Hybrid and Electric Vehicle Market : Penetration by Technology WITH Policy, Mexico, 2016 - 2030



Hybrid and Electric Vehicle Market : Penetration by Technology WITH Policy, Mexico, 2016 - 2030



44.1% BEV

WITH National Electromobility Policy - Higher share of zero emission vehicles

37.6% BEV

Source: Frost & Sullivan

IMPACT OF ADOPTING A NATIONAL ELECTROMOBILITY PLAN

CO2 Emission Savings with and without Policy, Mexico, 2016 – 2030 (million tons)

	HEV Emissions	PHEV Emissions	BEV Emissions	ICE Emissions	Emisiones si 100% Ventas fueran de Combustión Interna	Ahorro Total de Emisiones de CO2
Scenario without Policy	11.6	2.1	1.4	672.8	703.7	15.8
Scenario with Policy	16.2	4.9	3.5	653.8	703.7	26.2

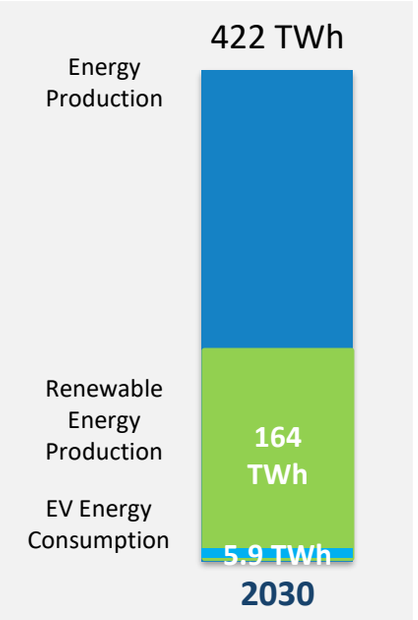
NOx, PM and NMHC Emissions Saved with the Wider Adoption of Hybrid and Electric Vehicles , México, 2020-2030 (tons)

	NOx Emissions Annual Savings	PM Emissions Annual Savings	NMHC Emissions Annual Savings
Scenario without Policy	572.5	35.5	352.3
Scenario with Policy	1,570.4	97.2	966.4

10.4 million

CO^2 can be saved with the implementation of a National Electromobility Policy (additional tons)

Energy Production and EV Energy Consumption, Mexico, 2030



Only 1.4% of energy produced in 2030 would be consumed by EVs

NATIONAL ELECTROMOBILITY PLAN IN MEXICO – KEY TAKE AWAYS

1. **Strategy should begin immediately**, thereby contribute with the reduction of 26.2 million tons of CO^2 to reach commitments of the Paris Agreement in 2030

2. It is very important that there is a **coordinated strategy with the different players of the ecosystem**, so that the efforts join and go in the same direction

3. The strategy must be designed and coordinated by an entity that has a full visibility of action, so that **it has a benefit for the environment, the consumer, society, government and industry**. Ideally coordinated by the Presidency of the Republic to make it binding

4. **A robust consumer and infrastructure incentive scheme will accelerate the transition to Electromobility**

5. The strategy would help coordinate efforts for the automotive industry to have an orderly transition to the manufacture of electric vehicles with **elements that encourage the creation of more and better jobs**