









**THE MEXICAN AUTOMOTIVE INDUSTRY:**  
CURRENT SITUATION, CHALLENGES AND OPPORTUNITIES

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# MEXICO

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# PRESENTATION

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**A**utomotive production represents one of the most dynamic and competitive industries in Mexico. Thus, Mexico has become an important player in the automotive and auto parts sector at the global level. Over recent decades, Mexico has attracted the attention of the automotive industry's main actors due to its sustained growth in the production of vehicles and auto parts, as well as the strength and growth prospects of its domestic market. Today the Mexican automotive industry is once again at the center of attention on the global stage because it is experiencing a transition from a profile oriented mainly toward manufacturing to one in which innovation and design play a dominant role.

This moment is the result of a long history of good decisions in which the sector's companies have figured out how to very intelligently join the country's free trade strategy and adapt to global economic changes, taking advantage of Mexico's benefits in order to confront these changes. Throughout this history, the presence of large global firms has contributed to developing a production chain that has great potential for connecting to the sector's global chains, as well as to developing human capital, which the sector's main companies have incorporated as an asset to their growth strategies.

This publication offers key information to understand the current state of the Mexican automotive industry and outline its prospects for the medium and long terms, identifying both the challenges it faces and some elements that are important to consider when making decisions and designing strategies to take advantage of the opportunities present in Mexico today.

This work presents a situational analysis that allows for the pinpointing of Mexico within the international arena and the better understanding of the role the country plays in the global industry, in order to later examine more in depth some specific aspects that speak to the maturity of the Mexican automotive sector.

Throughout this document, the industry's main actors in the country are identified and the opportunities for the future, both in terms of exports and investment, are described.

These opportunities, added to the competitive advantages for which the country is recognized worldwide as a suitable destination for the development of global businesses—among them, geo-strategic location, world-class infrastructure, competitive costs, and highly qualified human capital—largely explain why in recent years Mexico has consolidated as an important development hub for the automotive industry and why it remains an attractive destination for investment by the primary companies in the sector at the global level.

Today, vehicles produced in Mexico are sold around the world, auto parts are successfully integrated into the value chains of the global industry, and niches like the premium vehicles segment are strengthened. Additionally, year after year the country increases its participation in engineering, design, and research and development activities and joins the search for alternatives to confront the challenges facing the industry at the global level, such as the substitution of fossil fuels.

This publication aims to encourage this trend, offering useful information for all actors involved in the development of the Mexican automotive sector.

— *Francisco N. González Díaz*  
CEO  
*ProMéxico*

**F**or the Mexican Association of the Automotive Industry (AMIA), institution that represents the sector business dedicated to manufacture, import and commercialization of new light vehicles in México, is a pleasure to participate in this publication, particularly in a moment like this, when the automotive industry can congratulate itself for achievements that were unimaginable just a few years ago.

If in 2009 we found ourselves looking for alternatives of solution to a grave global financial crisis, today we have a totally different situation in front of us, in which the challenges have nothing to do with a crisis, but with the way to consolidate the growth of our sector and strengthen the areas that currently present an incipient development level.

We must recognize the relevance that the automotive industry has acquired as a growth engine of the country's economy. This sector provides more than 3% of the national gross domestic product (GDP) and 18% of the manufacturing GDP, generating currencies above 52 billion dollars per year, and it is responsible for around 900,000 direct jobs in the whole country. With these indicators, Mexico is the seventh producer and fourth exporter of light vehicles on a global level.

Additionally, the automotive sector has received the higher proportion of direct foreign investment in Mexico in the last six years; 21 billion dollars have been invested in the automotive industry resulting in the start of operations of six new vehicle and motor assembling plants, the production capacity expansion of five plants already in the country, and the attraction of a bigger number of direct suppliers around the new developments.

This publication could not have happened in a better moment. Since more than 18 months ago, vehicle sales in the intern market have reported a sustained growth, and the production and exports have reached levels without precedents in our sector's history —one that started 90 years ago with the arrival of the first assembler to Mexico.

Without a doubt, Mexican automotive industry is going through a good moment, but this forces us to not let our guard down and stay more alert than ever. In light of the changes that are happening on a global level, and the speed in which they happen, we cannot lose sight of the areas of opportunity in the automotive industry.

Some of the manufacturing installations announced on the last years have not started operations yet, and we are already on the threshold of the so called fourth industrial revolution. We are witnesses of very important changes in the consumption habits of the new generations, the way they move and the use they give to vehicles. This adds to the urgent need for the industry to offer more efficient and environmentally friendly vehicles.

In AMIA we firmly believe that if Mexico positioned itself as one of the most important platforms for manufacturing and export of motor vehicles in the world, we can consolidate our country as one of the leading research, development and innovation centers in automotive tech. This is the main challenge for our sector. To face it we must promote a bigger and more efficient entailment with academic institutions and research centers to generate the human capital required to respond to the new realities and demands of the national and international markets, and on the other hand, with the support of the public sector, generate the changes needed to take advantage of the opportunities and capacities that Mexico offers in a context of growing competition on a global level.

In this regard, we join this important enterprise by ProMéxico, which will allow us know ourselves better as a sector, promote a better knowledge about the place Mexican automotive industry holds on a global level, and identify the areas in which we must pay more attention to consolidate the automotive sector in Mexico.

— *Eduardo Solís*  
*Executive President*  
*Mexican Association of the Automotive Industry*

**W**hen we talk about the heavy vehicle manufacturing automotive industry, we are telling a story of success within the North American Free Trade Agreement (NAFTA). Ten years ago, Mexico produced 17% of the heavy vehicles in the region, today the country produces 35% of them and the industry has consolidated itself as a pillar of national economy.

With 11 plants in eight states of the country, the companies that integrate the National Association of Manufacturers of Buses, Trucks and Tractors (ANPACT) are responsible for 25,000 direct jobs and generate 5% of the manufacturing gross domestic product (GDP). These companies produce the trucks used to distribute 56% of the load transported in the whole country and carry 83% of the land cargo of the goods commercialized in Mexico. Additionally, they assemble the buses on which more than 98% of the land passengers in the country are transported.

The road has not been easy, but the commitment with quality and competitiveness has allowed the industry to deliver results without precedents in matter of production and exports. Only in 2015, the production of heavy vehicles grew 13% respect 2014, reaching a total 190,978 produced units, while the exports grew 27% compared to 2014.

During 2015, Mexico consolidated its protagonist role in the world's heavy vehicle industry; the country exported 92,985 fifth wheel trucks, with a total value of over 8.5 billion dollars, becoming the largest exporter of this kind of vehicles in the world.

While these numbers are very encouraging, in ANPACT we are aware that growth entail challenges, and they must be faced with responsibility. That is why we set ourselves the goal to consolidate as leaders in America reaching a production of 300,000 units per year by 2030.

To achieve this goal we need to assume a permanent commitment with sustainability, innovation and technological development, to produce more trucks, each time safer, more efficient and environmentally friendly.

Starting from the premise that a more professional carrier produces more competitive companies, and that more competitive companies favor the industry growth, ANPACT has undertaken a Program for Federal Auto Transport Professionalization, which starts to show its first results.

On this topic, we have boosted renovation schemes for vehicular fleet, with the propose that the roads along the country are safer and our children breath air each time cleaner.

Today, we join this publication from ProMéxico, with the conviction that it has useful information to identify the specific challenges posed to the industry for the next few years and the mechanisms we count on to face them.

We all want motor transport to be more efficient, modern, clean, effective and of course, a better business. The big challenge is to grow steadily, innovating and taking care of the environment.

— *Miguel H. Elizalde Lizárraga*

*Executive President*

*National Association of Manufacturers of Buses, Trucks and Tractors*

**T**he auto parts industry in Mexico keeps a sustained growth tendency. In the last five years, the sector has reached record figures as in production (82 billion dollars per year) as in exports (65 billion dollars per year). Currently, Mexico is the sixth largest producer and the expectation is that the country will advance several positions.

This growth is the result of a combination of factors, among them, the opening of new manufacturing plants, the country's geographic location and the industry growth in the United States, the main destination for Mexican auto parts exports.

Based on the light cars manufacturing forecasts in the North American Free Trade Agreement (NAFTA) region, we can anticipate that for 2020, the auto parts production in Mexico will reach a value of 100 billion dollars, which will set us in the fourth place in production globally, behind China, the United States and Japan, and surpassing countries like South Korea and Germany.

We must be prepared to reach these figures and strengthen those factors that influence the most the growth of our production and facilitate our international trade.

In this sense, the automotive and auto parts industries coordination with different Federal Government entities is a fundamental element, since it will allow us to face the current challenges on items such as human talent development, customs infrastructure, ports and roads, logistics and strengthening of intern market for new cars.

In the National Auto Parts Industry (INA) we have the firm commitment to keep the joint work with the different actors participating in the sector, to add efforts and generate better conditions for the growth and development of everyone. That is why we are pleased to participate in this publication by ProMéxico, which will contribute to a better understanding of the automotive and auto parts industries in Mexico and of the challenges and opportunities that they will face in the medium and long terms.

— *Oscar R. Albín*  
*Executive President*  
*National Auto Parts Industry*

# PROLOGUE

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**B**y 2020 the Mexican automotive industry is expected to produce nearly five million light vehicles for 13 brands in more than 30 production facilities. In recent years the country has shifted from its maquiladora-style manufacturing to becoming a powerhouse in the global automotive industry, creating opportunities for both local and international suppliers and service providers support the industry's rapid development.

After decades in which low commodity prices coincided with periods of growth in industrialized economies, the world is coming to grips with the current reality of low economic growth, low commodity prices, and volatility in the global financial markets. Commodity prices are starting to rise, but uncertainty continues to put a break in emerging markets, while affecting the world's largest economies. According to the International Monetary Fund (IMF), the uneven recovery of the global economy is expected to result in global growth rates of 3.4% and 3.6% in 2016 and 2017, with Mexico forecasted to grow 2.6% and 2.9%, after recording a 1.4-2.5% in the previous three years. While Mexico's economic development was impacted by the global economic climate, the country transformed its economy through a wave of far reaching reforms designed to structurally enhance the competitiveness of the country's manufacturing industries.

Mexico is nowadays the seventh largest car producer in the market and the second exporter to the United States. In 2015, the country manufactured 3.4 million units of light vehicles, 39.9% more than Brazil. Automotive OEM's are investing more than 27 billion dollars in Mexico, which will add 1.7 million light vehicles to its production capacity. Companies are pouring in, attracted by the country's cost-competitive workforce, geographic advantages and preferential access to many of the world's main markets, as well as its political and economic stability. Just between 2010 and 2015, Mexico received a combined investment of more than 22 billion dollars, focused on the construction of new plants and expansion projects.

Today, 80% of Mexico's light vehicle production is exported, with 86% of exports going to Canada and the United States. Growth, however, is largely driven by exports to markets outside the North American Free Trade Agreement (NAFTA) region turning Mexico into a true global player. The country's geographic position presents a unique opportunity to do business with both Asian and European countries, not to mention its closeness to the second biggest economy in the world, the United States. Furthermore, the country developed a globally-competitive logistics infrastructure in order to export vehicles to other international markets. Overall, the Mexican automotive industry represents 3.2% of the national gross domestic product (GDP) and 18.3% of the manufacturing GDP, generates more than 870,000 direct jobs, and represents 20% of the North American vehicle production. Mercedes-Benz, Infiniti, BMW, Toyota, Kia, and Audi will be the latest entrants to the market, with the last two pegged to start production in 2016.

The country is undergoing a transformation from low-cost, low-tech vehicles into high-tech, premium ones, which brings more high value-added activity in the medium and long term. With more than 100,000 engineers graduating university per year, Mexico is developing a skilled workforce, qualified for advanced manufacturing operations of any kind. However, rapidly evolving demand with changing technology and quality standards means the supply chain is struggling to keep up with the growth required by the OEMs.

Of course, this means new business opportunities for those who wish to invest and fill in the gap in this booming industry. Interested investors may want to consider ventures in raw materials,

as well as tool design, production, and repair activities. Currently, these assets are imported, which ultimately diminishes the country's original competitiveness.

While local suppliers are striving to obtain the financial, technological and operational expertise required to effectively integrate into the manufacturing platforms, leading international suppliers are rapidly expanding their manufacturing footprint in Mexico to take advantage of the opportunities in the market. To incentivize the creation of a stronger supply chain, the government also created the ProAuto program, specifically designed to support Mexican companies that want to target the automotive sector. This led to boosting approximately 4,000 SMEs in 2015, with the goal of doubling its impact by the end of 2016. The long-term success of the Mexican automotive industry will be closely related to the supply chain's ability to scale-up rapidly, meet and exceed OEM standards, and creating a strong incentive for the world's leading light vehicle manufacturers to support the development of the Mexican supplier base.

After the global financial crisis of 2008 and 2009, Mexico suffered a substantial drop in its internal light vehicle sales. By 2015, the country surpassed its historic sales record with more than 1.4 million units sold, a sales figure that is destined to grow in the coming years given the market's capacity to absorb up to 2 million units annually. To capitalize on this potential, Mexico needs to increase its light vehicle financing from 60% to 70-80%, and expand access to car ownership among the country's upwardly mobile society. In addition, by boosting the growth of the premium and luxury segments, new hybrid and full-electric technologies could freely compete in a price-oriented economy, fostering the development of the appropriate infrastructure to support these vehicles.

The automotive industry is now a fundamental segment in Mexico's economic development. Increasing competition, transformative technological developments, and access to new markets are destined to reshape the Mexican automotive industry over the coming decade.

— *Mexico Automotive Review*

# INTRODUCTION

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**A**ccess to clear, timely and reliable information is essential to decision-making in the international business world. To be able to plan properly and successfully implement strategies, we must first have a good idea of the current situation of a given industry and clarity on the direction in which it is headed. It is for this reason that ProMéxico has published this report, to help the reader identify and seize international business opportunities in Mexico's automotive industry.

Chapter 1 starts off with a general description of the automotive industry, while Chapter 2 puts it into international context with the most relevant, up-to-date data and indicators on production, sales, consumption and main actors, among other topics. This chapter also sums up main trends in the sector and outlines best practices and the direction the automotive manufacturing business is likely to take in the future.

Having put the industry into a global perspective, Chapter 3 goes on to provide a current overview of Mexico's automotive industry in terms of production, the domestic market, international trade and foreign direct investment, revealing its importance to Mexico and its solid positioning on the international arena. Reference is made to the main actors established in Mexico, exposing which companies have placed their confidence in the country and paved the way forward in the domestic industry. These are companies that would make excellent prospective international business partners via their supply chains. In addition to employment statistics for the domestic automotive industry and an assessment of the proficiency and experience of its workforce, this chapter includes a rundown of the domestic automotive industry's organizational infrastructure to represent, protect and drive its interests, which serves to illustrate the maturity of the nation's auto manufacturing business environment. The analysis on specific aspects of the domestic industry stand out, such as the evolution of Mexico's positioning as an exporter of light vehicles, the shift in Mexican suppliers' share of the United States imports (the main destination of the country's exports) before and after the North American Free Trade Agreement (NAFTA), the attraction of foreign direct investment with the country's increasing openness to international trade, and the new leading role the Mexican manufacturing industry has come to play in the luxury vehicles niche. Together, these studies demonstrate trends in the domestic automotive industry.

Chapter 4 focuses specifically on international business opportunities in the Mexican automotive sector. Concerning exports, opportunities are directed to enterprises of all sizes, from SMEs that can export indirectly via supply chains to larger ones that can use Mexico's character as an export platform. As regards foreign investment, opportunities abound, from the establishment of large assembly plants and Tier 1 suppliers, to the transfer of operations of medium-sized companies that offer highly specialized processes and lacking components in the domestic supply chain, shoring up the solidity of the industry's value chain in the process.

In Chapter 5, we discuss the support mechanisms provided by the Mexican government to see that these business opportunities are materialized, and national and international standards that must be complied with to ensure the success of any venture undertaken in the Mexican and international markets.

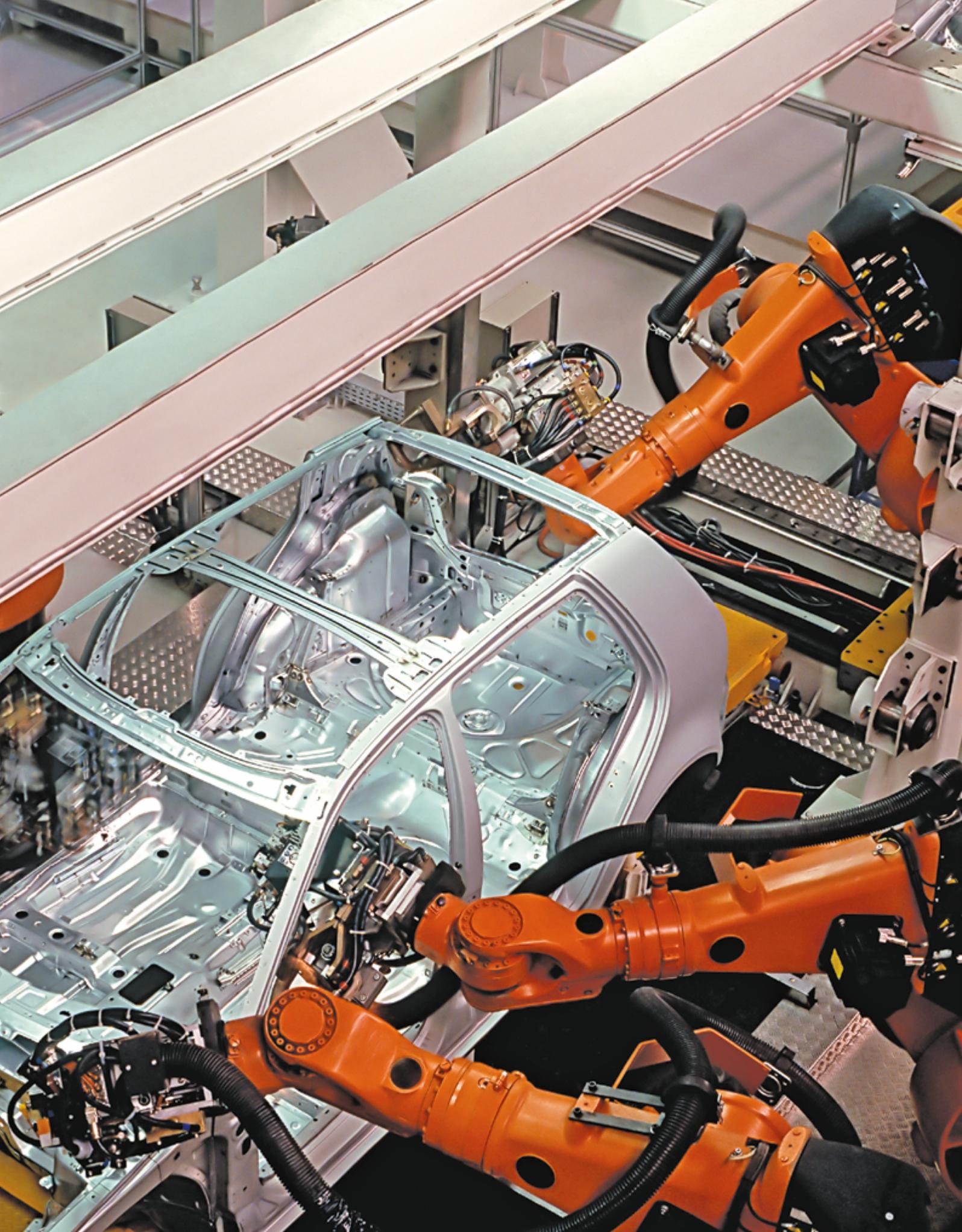
Finally, we take a look at the competitive advantages Mexico has to offer for international business, from infrastructure and manufacturing costs to preferential tariffs in the automotive industry, calculated according to the Rules of Origin set forth in the numerous trade agreements Mexico is signatory to.

A list of Mexico's Tier 1 supply capacities is included at the end of this publication, which presents information on the top 90 auto parts companies with a presence in the Mexican automotive industry.

This work puts within reach of the reader the tools that allow projecting Mexico as an excellent destination for foreign investment, as well as illustrating the export potential, hoping it is useful in the decision making process in international business that propel the future of the domestic automotive industry.

# CHAPTER 1





# INDUSTRY DESCRIPTION

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The automotive industry is comprised of the terminal sector and the auto parts sector. This analysis will focus primarily on the terminal sector and engine manufacturing.

## 1.1 SEGMENTATION PER LINE OF WORK

In the terminal sector, production is generally divided into light and heavy vehicles, but for purposes of this study, we will be using the classifications employed by the Mexican industry.

### *Light vehicles*

Motor vehicles with no more than eight seats (including the driver's seat) used to transport passengers.

### *Light commercial vehicles*

Motor vehicles used to transport goods and people. Pick-ups, SUVs, minivans and panel trucks all fall into this category.

### *Heavy vehicles*

Vehicles weighing over seven tons that are used to transport goods.

### *Buses*

Vehicles with a capacity of over seven tons that are used to transport more than eight passengers.

Internationally, vehicles are classified into:

- Passenger automobiles
- Commercial vehicles (includes light commercial vehicles, heavy trucks and buses)

**FIGURE 1. GLOBAL KEY INDICATORS, 2015**

Light vehicles production  
1,497.9 billion dollars<sup>1</sup>  
Units produced  
86.9 million vehicles<sup>2</sup>



Heavy vehicles production  
251.7 billion dollars<sup>1</sup>  
Units produced  
3.7 million vehicles<sup>2</sup>

**PRODUCTION BY REGION 2015<sup>1</sup>**

		
Asia-Pacific	47%	42.7%
European Union	33.6%	12.6%
America	10.5%	28%
Rest of the world	8.9%	16.7%

**LEADING COMPANIES IN TERMS OF GLOBAL SALES<sup>3</sup>**

	
268,566 million dollars	247,702 million dollars
	
172,279 million dollars	162,163 million dollars
	 

**FIGURE 2. MEXICO'S KEY INDICATORS, 2015**



Producer of vehicles globally<sup>5</sup>  
3.6 million vehicles<sup>4</sup>



21 of the major vehicle manufacturers in the world have presence in 14 Mexican states<sup>9</sup>



Producer of light vehicles<sup>4</sup>  
3.4 million vehicles<sup>6</sup>



More than 300 Tier 1 suppliers to the terminal industry<sup>5</sup>



Exporter of light vehicles<sup>7</sup>  
2.8 million vehicles<sup>7</sup>



The terminal industry is responsible for 81,927 jobs<sup>10</sup>



Producer of heavy vehicles<sup>4</sup>  
191,000 vehicles<sup>5</sup>



Automotive and auto parts industries participation:  
National GDP<sup>10</sup>: 3%  
Manufacturing GDP<sup>10</sup>: 18%  
Foreign Direct Investment<sup>8</sup>(FDI): 20%  
Total exports<sup>9</sup>: 27%

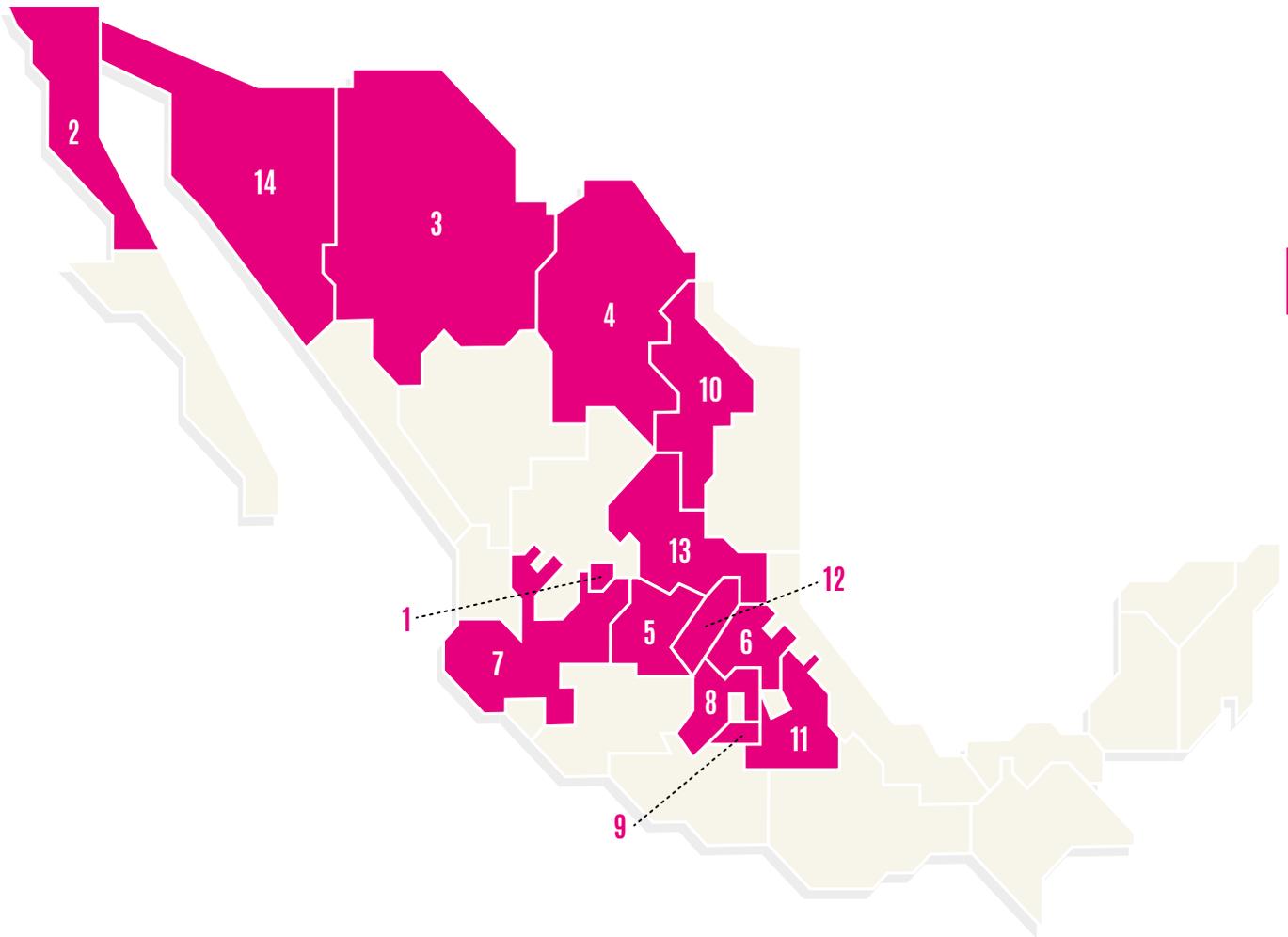


Exporter of heavy vehicles<sup>5</sup>  
156,900 vehicles

Sources: ProMéxico based on data from <sup>1</sup>MarketLine, estimates <sup>2</sup>OICA <sup>3</sup>Fortune Global 500, 2015 <sup>4</sup>OICA <sup>5</sup>ANPACT <sup>6</sup>AMIA <sup>7</sup>Global Trade Atlas and AMIA <sup>8</sup>Ministry of Economy <sup>9</sup>ProMéxico <sup>10</sup>INEGI

### STATES WITH VEHICLE PRODUCTION

- |                    |                     |
|--------------------|---------------------|
| 1. Aguascalientes  | 8. Estado de México |
| 2. Baja California | 9. Morelos          |
| 3. Chihuahua       | 10. Nuevo León      |
| 4. Coahuila        | 11. Puebla          |
| 5. Guanajuato      | 12. Querétaro       |
| 6. Hidalgo         | 13. San Luis Potosí |
| 7. Jalisco         | 14. Sonora          |



CHAPTER 2



# GLOBAL OUTLOOK

In 2015, China held on to its position as the world's leading manufacturer of motor vehicles, followed by the United States and Japan.

Based on the 40-country ranking compiled by the International Organization of Motor Vehicle Manufacturers (OICA), Mexico remained in seventh place among the main global producers in 2015, surpassing countries like Brazil, Spain, Canada, France, Russia, the UK and Belgium.

**TABLE 1. MAIN PRODUCING COUNTRIES, 2011-2015**

(millions of units)

#	2011	2012	2013	2014	2015
1	China-18.8	China-19.2	China-22.1	China-23.8	China-24.5
2	USA-8.6	USA-10.3	USA-11.0	USA-11.7	USA- 12.1
3	Japan-8.3	Japan-9.9	Japan-9.6	Japan-9.8	Japan-9.3
4	Germany-6.3	Germany-5.6	Germany-5.7	Germany-5.9	Germany-6.0
5	South Korea-4.6	South Korea-4.5	South Korea-4.5	South Korea-4.5	South Korea-4.5
6	India-3.9	India-4.1	India-3.9	India-3.8	India-4.1
7	<b>Brazil-3.4</b>	<b>Brazil-3.3</b>	<b>Brazil-3.7</b>	<b>Mexico-3.4</b>	<b>Mexico-3.6</b>
8	<b>Mexico-2.7</b>	<b>Mexico-3.0</b>	<b>Mexico-3.0</b>	Brazil-3.1	Spain-2.7
9	Spain-2.3	Thailand-2.4	Thailand-2.5	Spain-2.4	Brazil-2.4
10	France-2.2	Canada-2.4	Canada-2.4	Canada-2.4	Canada-2.3

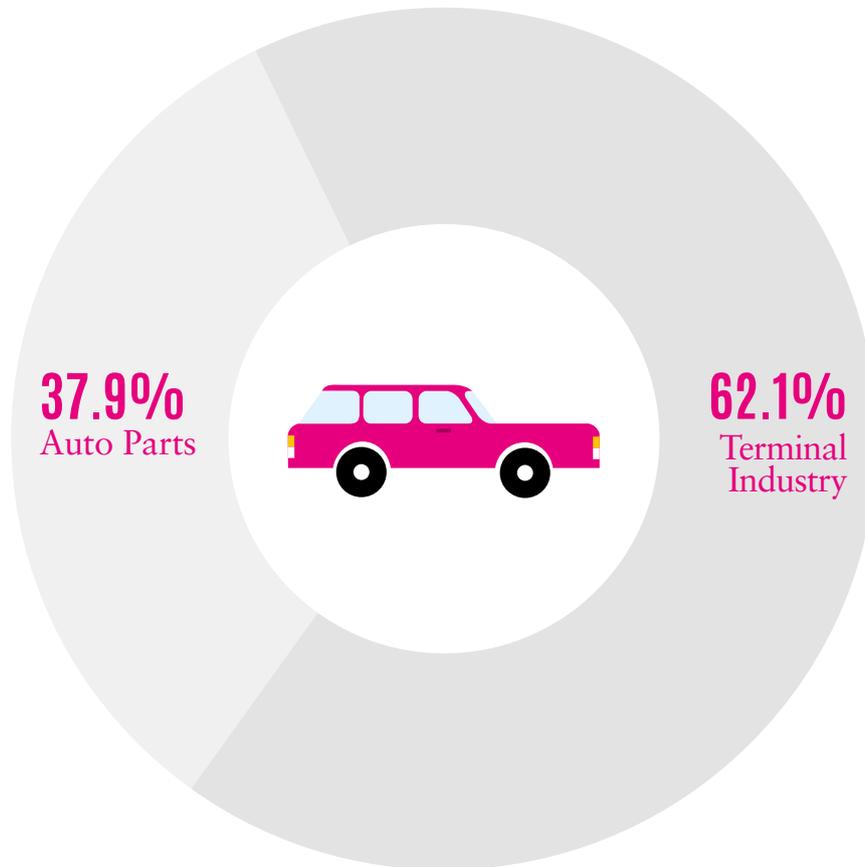
Source: ProMéxico with data from OICA, AMIA and ANPACT

In 2015, Mexico was once again ranked the world's seventh-most-important automobile producer. As for other countries at the top of the list, worthy of mention was the drop in Brazil's production due to the shrinking of the domestic market and the growth of Spain's auto industry.

## 2.1 PRODUCTION

The manufacture of automobiles accounts for some 62.1% of the industry's total production, with auto parts making up the remaining 37.9%.

**FIGURE 3. SHARE OF TERMINAL AND AUTO PARTS SECTORS  
IN THE AUTOMOTIVE INDUSTRY PRODUCTION, 2015**



Source: ProMéxico with data from IHS

### *Light vehicles*

The production value of light vehicles in 2015 was 1,498 billion dollars with a total of 86.9 million produced units, which translates into a value growth of 6.7% compared to the previous year.

Light vehicle production is expected to grow at an average annual rate of 1.9% in the 2015-2020 period, reaching 105.9 million units and an estimated worth of 1,649 billion dollars by 2020.



### Heavy vehicles

In 2015, the heavy vehicles segment manufactured 3.7 million units valued at 252 billion dollars, which translates into growth of 9.1% in terms of value, compared to 2014.

It is projected that the value of heavy vehicle production will grow at an average annual rate of 2.2% in the 2015-2020 period to stand at 280 billion dollars by 2020.

### Engines

Car makers around the world are starting to delegate the manufacture of more and more some auto parts and components to Tier 1 companies. Nevertheless certain processes and components are still manufactured by the terminal enterprises continues to manufacture certain processes and components, engines being a prime example of this.

There are currently 9,567 companies engaged in this activity, including Toyota, Volkswagen, GM, Ford, Daimler, Cummins Inc. and Detroit Diesel among others. This number is expected to increase 12.8% to stand at 10,796 in 2020.

Original equipment manufacturers (OEMs) are the biggest international consumers of engines with a 44.6% market share, followed by the aftermarket with 26.4%, exports to other plants (international trade) with 18.0% and engine rebuilding with 11.0%.

In the aftermarket, production is linked to engine and vehicle replacement cycles, and accidents that cause engine replacement. The largest consumer of rebuilt engines is generally the heavy vehicles sector, although consumption is growing in the light vehicle segment.

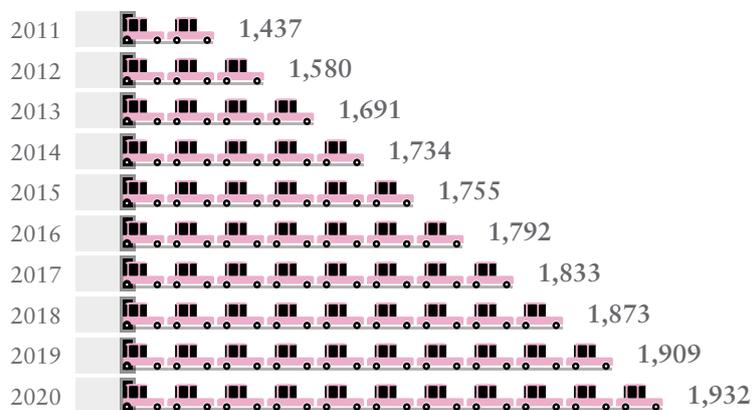
The greatest challenges engine manufacturers currently face are environmental regulations imposed by the governments of developed countries and consumer demand for more energy-efficient vehicles.

## 2.2 CONSUMPTION

Light vehicle sales increased 1.2% to 1,755 billion dollars between 2014 and 2015.

This figure is expected to reach 1,932 billion dollars by 2020, translating into average annual growth of 1.9% in the 2015-2020 period.

**GRAPH 1. GLOBAL CONSUMPTION OF LIGHT VEHICLES, 2011-2020**  
(billion dollars)



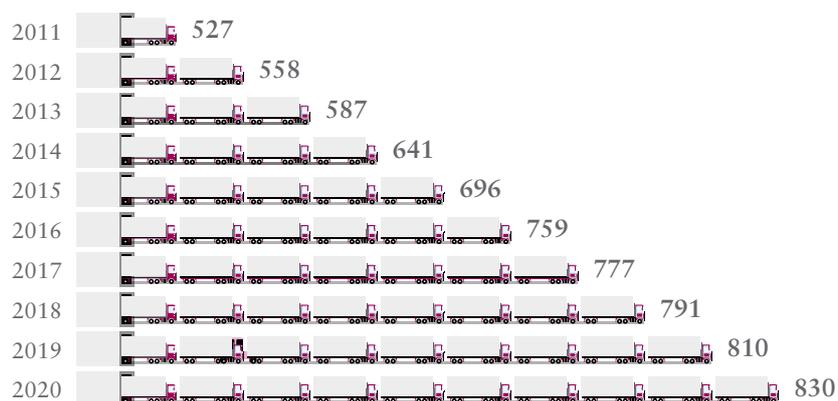
Source: ProMéxico with data from MarketLine

In 2015, heavy vehicle sales were valued at 696 billion dollars, a growth of 8.5% compared to the consumption observed in 2014.

This segment is expected to post average annual growth of 6% between 2015 and 2020 to stand at 830 billion dollars by the end of the period.

## GRAPH 2. GLOBAL CONSUMPTION OF HEAVY VEHICLES, 2011-2020

(billion dollars)



Source: ProMéxico with data from MarketLine

Regarding the international motor market, it is calculated that sales were of 280 billion dollars, which represents a decrease of 3.9% to 280 billion dollars compared to the previous year.

It is estimated sales in this segment will post average annual growth of 1.4% between 2015 and 2020 to stand at 297 billion dollars by 2020. Likewise, the market for replacement engines (the aftermarket) is expected to grow over the coming years due to the expanding vehicle fleets of emerging countries.

## GRAPH 3. ENGINE CONSUMPTION, 2011-2020

(billion dollars)



Source: ProMéxico with data from IBIS World

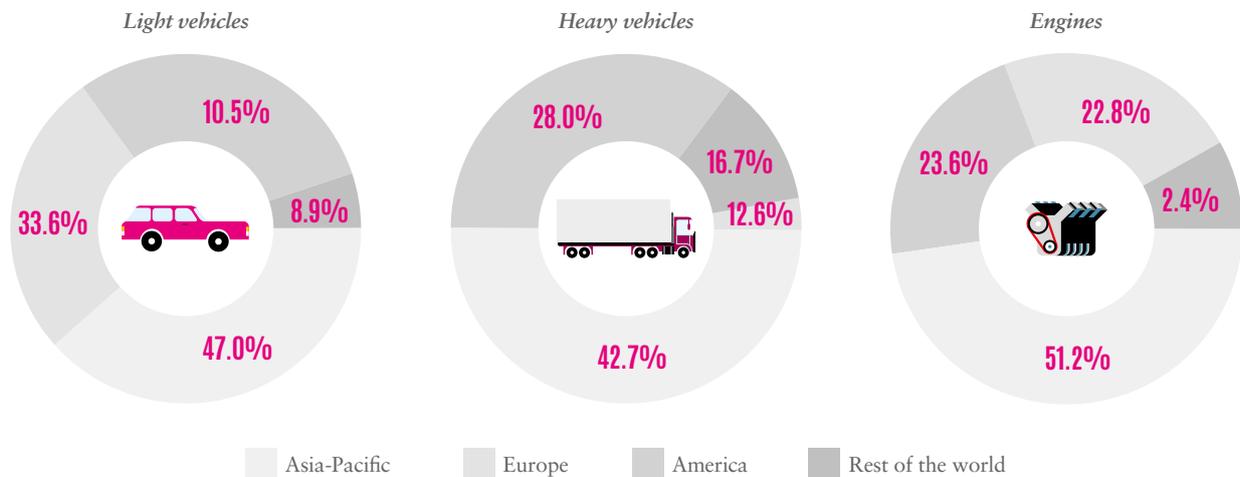
## 2.3 GEOGRAPHIC DISTRIBUTION

In the light vehicle segment, the main region for vehicle sells was the Asia-Pacific, which accounted for 47.0% of total sales in 2015, followed by Europe with 33.6%, America with 10.5%, and the rest of the world with 8.9%.

The Asia-Pacific region also consumed the most heavy vehicles in the period, with a 42.7% share of international sales, followed by America with 28.0%, the rest of the world with 16.7%, and Europe with 12.6%.

In terms of engine consumption, the Asia-Pacific region once again led the way with a 51.2% market share, followed by America with 23.6%, Europe with 22.8%, and the rest of the world with 2.4%. Since engine production and sales are linked to global production of light and heavy vehicles, it is only natural that countries like China and the United States are their main destinations.

GRAPH 4. GEOGRAPHIC DISTRIBUTION OF SALES BY SEGMENT, 2015



Source: ProMéxico with data from MarketLine and IBIS World

## 2.4 TRENDS IN THE SECTOR

### *Strategic alliances*

Since the early Nineties, the auto industry has gone through a wide reconfiguring process regarding assembly plants. Recently, this process has been characterized by a growing number of strategic alliances among leading carmakers.

In general, these alliances have sought to create economies of scale in the design process, manufacture and marketing of new car models and in some cases they allow companies to penetrate new markets more easily, cases in point being the alliances between Renault and Nissan and Renault-Nissan and Daimler in countries like Mexico (Aguascalientes), Russia (Toliatti) and China (Hubei).

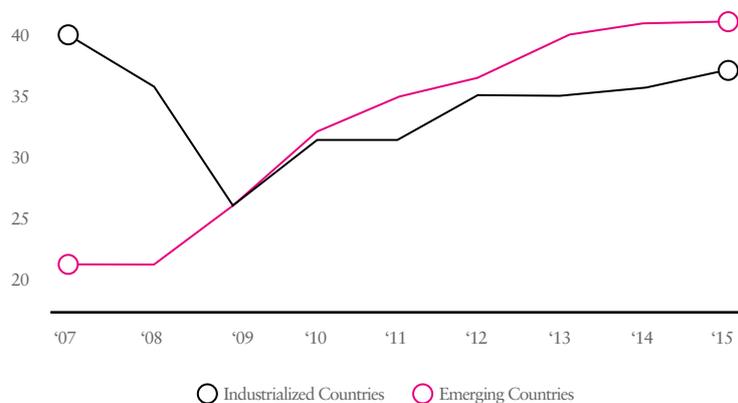
Proof of Mexico's importance as an international production platform was the announcement by Renault-Nissan and Daimler AG alliance back in 2014 of plans to produce 300,000 Infiniti and Mercedes-Benz vehicles in Aguascalientes. Design aspects will remain independent, but these carmakers will share platforms so as to exploit economies of scale.

### *A greater share of the production market for emerging countries*

Car-making countries have been affected by more competitive costs on the international market, with countries like Canada and France, which have long car-making traditions, seeing their production levels drop, while emerging countries like China, India, Brazil and Korea have reported substantial growth in recent years in terms of unit production. Mexico's auto industry is expected to continue contributing to the production of emerging countries based on recent announcements of new investment in the sector.

**GRAPH 5. VEHICLE PRODUCTION, 2007-2015**

(million units)



Source: ProMéxico with data from OICA

The strategy adopted by assembly companies has been to transfer their economic versions (high production volume) to emerging countries where manufacturing costs are more competitive, while continuing to assemble their luxury vehicles (lower production volumes, but larger profit margins) in their countries of origin. Consequently, the assembly of luxury vehicles has become an indicator of the maturity of the auto industry in producer countries.

### *Environmentally-friendly and energy-efficient vehicles*

This trend has been accentuated by the ever-expanding domestic markets of emerging countries, where growing per capita GDP has fueled purchases of new vehicles. Several assembly companies have even begun investing in the production of models designed specifically to satisfy the needs of these markets, offering greater mobility at accessible prices, which even leads to using those countries as production platforms to more industrialized nations.

The subsidies and incentives some countries offer consumers of environmentally-friendly vehicles have also had a positive impact on demand. Carmakers continue investing in R&D so they can offer their consumers new, environmentally-friendly technologies and some have even migrated to new fuel trends, such as hydrogen and electricity, which has driven up the cost of materials, technologies and personnel training for engine developers.

### *Diesel engines*

This trend is spearheaded by Germany. The main design feature of diesel engines is that they are smaller and have less capacity compared to gasoline engines, enabling them to deliver power vs consumption curves with greater fuel economy.

Turbochargers and direct injection systems are often used to improve engine power and performance, resulting in the increasing use of four-cylinder diesel engines, which are starting to appear in the automobiles of premium brands such as Mercedes-Benz and Audi.

### *Hybrid automobiles*

A hybrid combines the traditional internal combustion engine and a parallel system based on one or several battery-powered electric motors. Benefits include reduced fuel consumption and lower emissions, especially when driving in cities, where the electric mode can be used almost exclusively, although the two can be combined to increase engine power.

These types of automobiles are currently being developed by Japanese carmakers, mainly Honda and Toyota. Another example is the Ford-Toyota alliance announced in August 2011 for the development of a new pick-up and SUV hybrids. The agreement is intended to promote Toyota's hybrid technologies in the sports vehicle and SUV segments, in which Ford has wide experience.

### *Electric automobiles*

Despite their technological restrictions, these zero-emission vehicles have found a market niche over the last two years due to their fuel economy and clean technology. They are gaining popularity, especially in Europe, where charging stations and road tax exemptions are already available in cities like London and Paris.

The main disadvantage of these vehicles is their limited autonomy (the distance they can travel before needing to be recharged), which makes them unsuitable for long journeys. That said, they have found a wide market among urban users and the industry is working on the development of new generations of quick-charging, extended-autonomy batteries.

### *Hydrogen-powered automobiles*

Because it is such a cheap, readily available fuel, we will likely be seeing more cars that run on hydrogen in the future, despite its drawbacks, especially as far as storage is concerned. Manufacturers continue to conduct research into new hydrogen-powered vehicles, especially in countries like Norway and the United States, specifically in the State of California, where efforts have been made to build infrastructure.

Mazda, for instance, has launched its RX8 model, an automobile equipped with an engine powered by both hydrogen and gasoline.

In 2014, Toyota announced that it was planning on producing hydrogen vehicles. These were launched in Japan in April and sales will continue in the United States and Europe. To date, 100 service centers have been set up in four major

Japanese cities and an extensive network of hydrogen charging stations is expected to be available by 2030.

### *Autonomous automobiles*

Self-driving cars use GPS, radar and computer vision technologies to “sense” their environment and interpret the information they receive, such as driving patterns, obstacles and traffic signs.

According to international experts, the production and sale of such vehicles will depend on several factors, ranging from the development of technology and regulations and the availability of infrastructure to accessibility in terms of price and the creation and development of a consumer niche.

Companies involved in these efforts include:

- Google
- Audi (in collaboration with Stanford University)
- Mercedes-Benz
- Tesla
- Continental
- Apple
- Toyota

Although several carmakers and technology companies have announced that they are embarking on projects of this type, it will probably be another 20 years or so before self-driving automobiles are mass produced. The main obstacles to their manufacture are of a technological nature, compounded by the legal and regulatory complexities of their adoption by the general public.

### *Mergers and acquisitions in the auto parts sector*

Mergers and acquisitions in the terminal and auto parts sectors have elicited mixed reactions from industry experts and leaders. Some companies have preferred to distance themselves from expensive brands and focus on the development of their more traditional lines (as was the case of Ford with Jaguar and GM with Hummer and Pontiac in the wake of the 2009 crisis), while others have opted to form large alliances (like Nissan-Renault), enter into mergers or make acquisitions (like Fiat and Chrysler, for example). The same trend can be seen in the auto parts industry, this being a sector that provides more technologically advanced and more efficient products and processes for carmakers.

This explains why several Tier 1 and Tier 2 companies have begun exploring other areas of the market with acquisition strategies that generate greater added value for their lines of business. And while mergers and acquisitions don't always have happy endings, they can reduce technology costs and the time it takes to enter a new market niche, and even attract and create fresh talent.

In time, as consumer demand for vehicles equipped with better technology increases, this trend will become more pronounced, with auto parts companies acquiring other companies of the same level and technology, or merging with competitors to take on other suppliers.

In 2015, the value of mergers and acquisitions in the automotive and auto parts sectors increased 60% compared to 2014 to approximately 62.1 billion dollars—their highest historic value. The auto parts sector accounted for 32.9 billion dollars of this figure, that is, 53% of the total value of all mergers and acquisitions registered. On average, these transactions were valued at 388 million dollars.

To cite some examples:

In August 2015, Grupo Antolin completed the acquisition of the interiors business unit of the Canadian company Magna International for approximately 525 million dollars. The transaction included 36 plants in Europe, North America and Asia, and 10% of Magna's workforce.

That same month, Robert Bosch of Germany announced the acquisition of the Californian company Seo Inc, which develops lithium batteries for electric cars. According to Seo sources, the company is developing batteries using specialized polymers that could increase the autonomy of electric cars.

In September 2014, the German company ZF Friedrichshafen announced plans to acquire the American company TRW for an estimated 12.4 billion dollars, forming part of the company via a new division that goes by the name of *Active and Passive Safety Technology*. According to information from both companies, the integration process will take three to five years to complete.

ZF Friedrichshafen came in at number nine and TRW Automotive was ranked number 12 on the list of the top 100 Tier 1 auto parts companies published by Automotive News in its 2015 issue.

### *Production platforms shared with Tier 1 companies*

Carmakers are beginning to join forces for the development of new vehicles and technologies that meet the demands of today consumption trends. Joint projects with Tier 1 companies for the production of engines, transmissions, powertrain and connectivity systems and other basic components are already underway.

As a result, some production platforms have begun to benefit from each company's experience in specific technologies. Some examples include:

- The six-speed transmissions developed by Ford Transmissions and Getrag, a German company specializing in transmissions. In 2010, the alliance announced an investment of 500 million dollars for the production of transmissions in Irapuato, Guanajuato. These are designed for small and medium models, like the Renault Megane and Scenic, and the Ford Fiesta model sold on the NAFTA market.
- The transmissions, torque converters and differential axles produced in the United States, Germany and Mexico by Fiat-Chrysler Automobile and ZF Friedrichshafen.

## *Specialization and R&D clusters in the auto industry: Eastern Europe case study*

A concentration of companies in a given industry creates opportunities for a country to set up or improve supply chains in that sector.

In the specific case of the automotive industry, clusters create economies of scale, helping reduce costs and foster cooperation, the transferal of technology and business relations between companies on a national and international level.

Cooperation between carmakers, auto parts companies, distributors, universities, service companies and research centers, and the availability of talent are key to the development of international projects in the short and long terms.

The most noteworthy success cases are to be found in cities that are internationally recognized as automotive development centers, such as Detroit in the United States, the German region of Bavaria and the West Midlands in the United Kingdom. In recent years, Eastern Europe has begun attracting projects due to the specialization of the industry in these countries.

The European Union is currently deemed one of the world's larger vehicle producers and invests heavily in R&D, while the strategy adopted by the region's auto industry has been to focus on innovative new products and components that will help position it in the long term.

Eastern European countries have taken advantage of this situation and are a prime example of how important business relations are in the ever-expanding and increasingly interconnected global auto industry. They also have the ideal conditions to attract new projects:

- Manufacturing aspects: low-cost structures, readily available talent, geographic proximity to countries that are home to traditional poles of innovation (for example, Germany, France, and Italy among others) specializing in the manufacture of components and luxury vehicles.
- Market aspects: share borders with dynamic, relevant markets (European Union and Asian countries) that consume high-value, innovative products.
- Technological aspects: investment by luxury carmakers, presence of R&D centers, creation of networks, bodies and associations to promote interaction between clusters.

According to the experts, the specialization of Eastern Europe's automotive industry can be divided into three phases:

**1. Start:** During the first half of the Nineties, Eastern Europe began receiving substantial flows of foreign direct investment, due primarily to market demand by countries in the region, which proceeded to build production infrastructure of a high standard. During this phase, regional production focused on vehicles classed as very basic by the experts. Nonetheless, the domestic markets of many of these countries posted lower-than-expected sales, prompting carmakers to change their strategy, which brings us to the second phase in the industry's development.

**2. Growth:** With sales coming in below expectations and idle capacity at production plants boasting state of the art machinery, equipment and processes, carmakers began focusing on manufacturing components and auto parts with more added value, that served as inputs for other plants in the European Union. For example, in 1999 Volkswagen invested in the production of its Touareg SUV at its Bratislava plant in Slovakia and around the same time, Porsche began manufacturing its Cayenne SUV in Bratislava, although the final assembly process takes place in Germany.

**3. Consolidation:** Several Eastern European countries joined the European Union in 2004, which allowed for the drawing up and harmonization of public policies designed to increase the production of vehicles and specialty parts and components, mainly in the Czech Republic, Poland, Slovakia and Hungary.

Many of the region's emerging nations subsequently joined the European Union's supply chain, giving them access to large, sophisticated markets via investments by multinationals like VW, BMW, Peugeot, Audi, Porsche and leading Tier 1 suppliers. As a result of these investments, several Tier 1 companies began getting involved in production activities and R&D processes and services, forcing carmakers to invest in and forge ties with the domestic industries of these countries.

By 2010, Eastern Europe had 212 R&D centers, 85 of which were in Slovenia, followed by Slovakia with 36, Croatia with 24 and Hungary with 20. The region's main R&D centers are shown below.

**TABLE 2. MAIN R&D CENTERS IN EASTERN EUROPE**

SLOVAKIA	
Johnson Controls Engineering Centre in Trenčín	<a href="http://www.jci.com">www.jci.com</a>
Institute of Technology of Slovak Academy of Sciences in Bratislava	<a href="http://www.ti.sav.sk">www.ti.sav.sk</a>
HUNGARY	
Audi Hungaria Motor Kft. in Győr	<a href="http://www.audi.com">www.audi.com</a>
Advanced Vehicles and Vehicle Control Knowledge Centre Budapest University of Technology and Economics	<a href="http://portal.bme.hu">http://portal.bme.hu</a> <a href="http://www.ejtt.bme.hu">www.ejtt.bme.hu</a>
SLOVENIA	
University of Ljubljana, Faculty of Mechanical Engineering	<a href="http://www.fs.uni-lj.si">www.fs.uni-lj.si</a>
Hidria Institute for Ignition Systems and Electronics	<a href="http://www.hidria.com">www.hidria.com</a>
ROMANIA	
Continental Automotive Romania SRL in Iasi	<a href="http://www.conti-online.com">www.conti-online.com</a>
Renault Technologie Roumanie (RTR) in Bucharest	<a href="http://www.renault.com">www.renault.com</a>
BULGARIA	
ZMD Eastern Europe EOOD in Varna	<a href="http://www.zmdi.com">www.zmdi.com</a>
TREMOL SMD Ltd. in Veliko Tarnovo	<a href="http://www.tremol.bg">www.tremol.bg</a>
CROATIA	
Brodarski Institut d.o.o. Zagreb	<a href="http://www.hrbi.hr">www.hrbi.hr</a>
AVL-AST d.o.o. Zagreb	<a href="http://www.avl.com">www.avl.com</a>

Source: ProMéxico with information from AutoClusters (ACSEE)

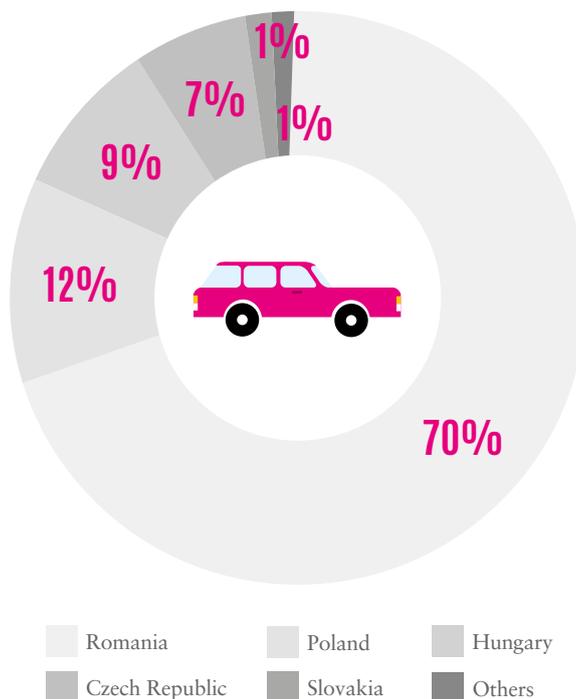
It is interesting to note that the production volumes of most of these countries are not high by international standards and that most do not have national carmakers. In fact, the total number of vehicles produced by the Czech Republic, Hungary, Poland, Romania, Slovakia and Slovenia in 2015 only surpassed Mexico's production by 414,000 units.

In other words, the region's current importance does not lie in the production side of the business, but in the presence of design and R&D companies.

From 2010 through October 2015, Eastern Europe received 45 investment projects for the design, development, testing and research of components for the automotive and auto parts industry.

The main receptor of these projects was Romania, which received 2.104 billion dollars in investment in the period —69.8% of the total foreign direct investment received by the entire region. Poland was next with 12.2%, followed by Hungary with 9.2% and the Czech Republic with 7.2%

**GRAPH 6. FDI IN R&D PROJECTS IN EASTERN EUROPE, 2010-2015**

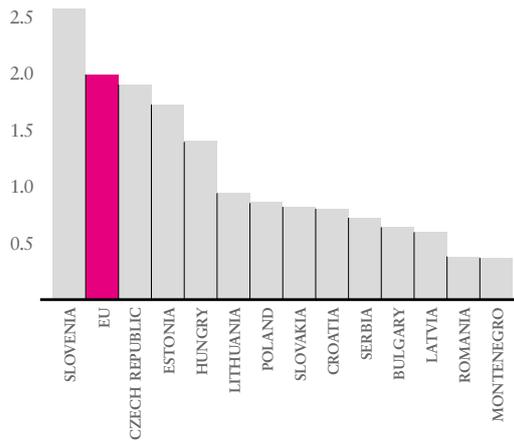


Source: ProMéxico with information from FDI Markets

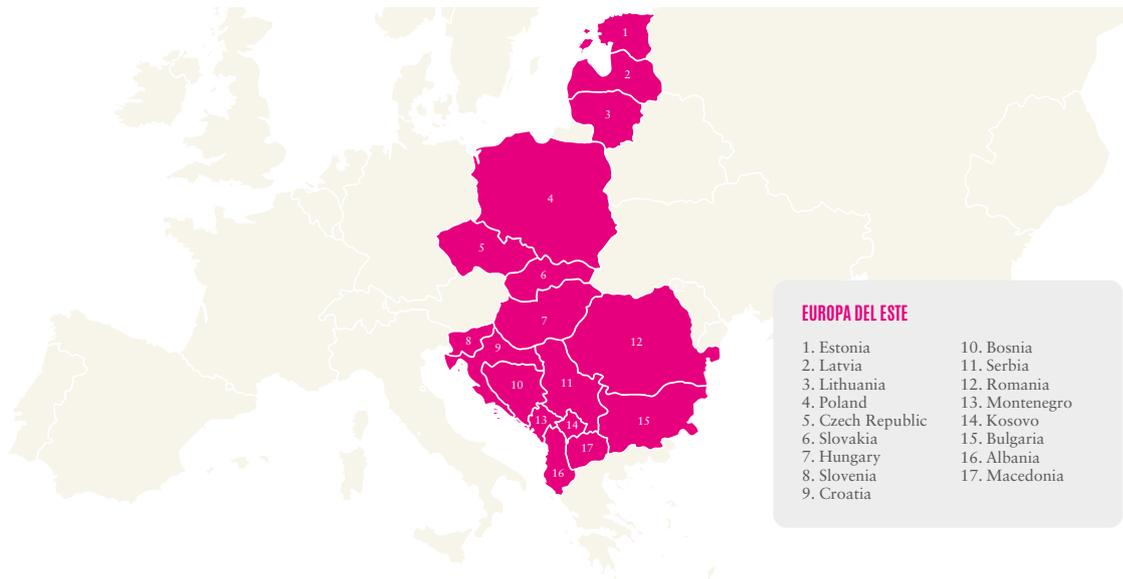
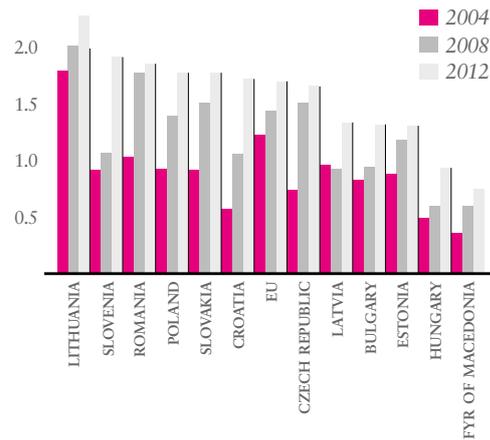
In the 2014-2020 period, the European Commission plans to double resources to promote cooperation on R&D projects in the auto industry. These funds will be channeled mainly into the development of environmentally-friendly vehicles, safety and technological infrastructure.

## FIGURE 4. INVESTMENT, RESEARCH AND HIGH-TECHNOLOGY INDUSTRIES IN EASTERN EUROPE

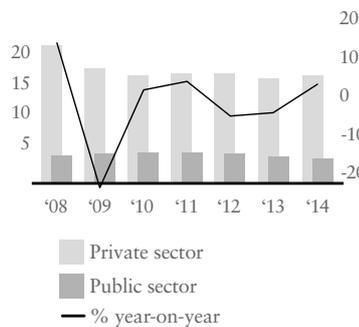
Research & development spending  
Gross domestic expenditure on R&D as a % of GDP, 2013



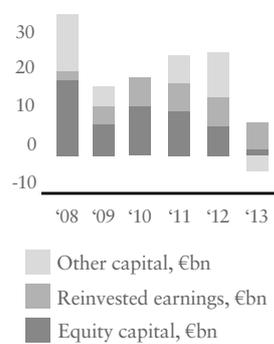
Science and technology graduates  
Tertiary graduates in science and technology per 1,000 inhabitants aged 20-29



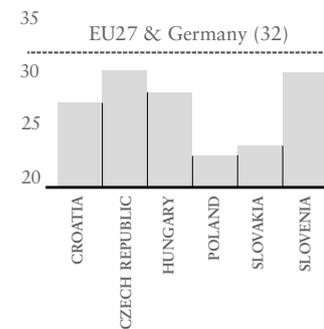
Private and public investment in Central and Eastern Europe (CEE)\*  
% of GDP



Foreign direct investment net inflow (CEE)\*  
€bn



Share of high-tech manufacturing and knowledge intensive services in small and medium sized enterprises sector, 2013(%)



Source: ProMéxico based on information from Financial Times generated with data from Eurostat

Thus, Eastern European countries offering specialized manufacturing processes for the automotive and auto parts industry have come to form a major manufacturing hub that acts as a magnet for added-value projects. The following are just a few examples of companies that have invested in the region's dynamic industry:

- In 2015, Jaguar Land Rover confirmed investment of 1.5 billion dollars in a new plant in Nitra, Slovakia, which will expand the company's existing production capacity in the United Kingdom, China, India and Brazil. It should be noted that manufacturers of luxury or premium vehicles account for almost 43% of the terminal industry in Slovakia.
- Audi's plant in Gyor, Hungary came on line in 1998 and currently produces the Audi TT Coupe, Audi TT Roadster, Audi A3 Sedan and Audi A3 Cabriolet.
- Mercedes-Benz also manufactures its B- and CLA-class models at its plant in Kecskemet, Hungary, which began operating in 2012.

## 2.5 GLOBAL INDUSTRY LEADERS

In 2015, Volkswagen celebrated its second year running as the carmaker with the highest sales in the industry (268 billion dollars), followed by Toyota (248 billion dollars), Daimler (172 billion dollars) and Exor (162 billion dollars).

**TABLE 3. LEADING AUTOMOTIVE COMPANIES IN TERMS OF INTERNATIONAL SALES, 2011-2015**

Company	2011 (billion dollars)	Company	2012 (billion dollars)	Company	2013 (billion dollars)	Company	2014 (billion dollars)	Company	2015 (billion dollars)
Toyota	222	Toyota	235	Toyota	266	Volkswagen	261	Volkswagen	268
Volkswagen	168	Volkswagen	221	Volkswagen	248	Toyota	256	Toyota	248
GM	135	GM	150	GM	152	Daimler	157	Daimler	172
Daimler	129	Daimler	148	Daimler	147	GM	155	Exor	162
Ford	129	Ford	136	Ford	142	Ford	147	GM	152

*Source: ProMéxico with data from Fortune Global 500 2014, 2013, 2012, 2011 y 2010*

### *Volkswagen*

Ranked among the world's leading carmakers, the Volkswagen Group is headquartered in Wolfsburg, Germany and has 100 production plants: 50 in Europe (28 in Germany), 17 in Eastern Europe, four in North America (one in the United States and three in Mexico), nine in South America (six in Brazil and three in Argentina), three in South Africa and 17 in the Asia-Pacific region (12 in China, four in India and one in Thailand).

The group employs 592,586 people worldwide and has 12 brands: Volkswagen, Audi, Skoda, Seat, Porsche, Bentley, Bugatti, Lamborghini, Ducati (motorcycles), Scania, MAN and Volkswagen Commercial Vehicles, each of which operates as an independent entity.

In 2015, the company was once again ranked number eight on Fortune magazine's Global 500 list of the top corporations in the world in terms of revenues and number one in Germany.

### *Toyota*

In terms of production, Toyota is the world's largest carmaker, engaged in the design, manufacture and sale of light vehicles, minivans and trucks.

Toyota has over 50 auto works in 27 countries. In the automobile segment, its business is divided into conventional and hybrid vehicles, its most popular hybrid being the Prius. The company's brands include Toyota, Lexus, Hino and Daihatsu. In Japan, it markets its luxury vehicles under the Crown and Century brands.

In 2015, the company was ranked number nine on the Global 500 list and is currently Japan's largest corporation, employing 344,109 people worldwide.

### *Daimler*

Headquartered in Stuttgart, Germany, Daimler is comprised of the Mercedes-Benz Cars, Daimler Trucks, Mercedes-Benz Vans, Daimler Buses and Daimler Financial Services divisions, through which Daimler AG specializes in the design, manufacture and marketing of premium and heavy vehicles on global markets.

The group has plants in 19 countries and over 8,500 dealerships around the world, although its greatest revenue generator is Mercedes-Benz Cars, one of the world's largest manufacturers of luxury vehicles. Daimler AG has 280,000 employees.

In 2015, the company climbed three places to number 17 on the Global 500 list and was ranked Germany's second-largest corporation.

### *The Exor Group (Fiat-Chrysler Automobile FCA)*

Created in January 2014 when Fiat S.p.A. of Italy acquired the American carmaker Chrysler, the Exor Group is legally headquartered in the Low Countries, but for tax purposes, its domicile is the United Kingdom. The company changed its logotype to unify both brands under a new image.

Exor manufactures and sells automobiles under the Abarth, Alfa Romeo, Chrysler, Dodge, Fiat, Fiat Professional, Jeep, Lancia, Ram and SRT brands, while its luxury brands include Ferrari and Maserati. It also operates auto parts companies like Magnetti Marelli, Teksid and Comau, and continues to market Chrysler vehicles under the Mopar brand.

In 2014, the company had 228,690 employees worldwide. That year, approximately 55% of its revenues came from its operations in North America (Canada, the United States and Mexico).

Ranked number 19 on Fortune magazine's 2015 Global 500 list, the Exor Group is Italy's largest corporation.

### *General Motors (GM)*

Based in Detroit, Michigan, this American company is engaged in the design, development, manufacture and sale of automobiles and has a presence in 31 countries. In North America, GM markets the Buick, Cadillac, Chevrolet and GMC brands, while its extra-regional brands include Opel, GMC, Vauxhall, Buick, Cadillac, Isuzu, Holden, Chevrolet and Daewoo.

General Motors held on to its number 21 ranking on the Global 500 list in 2015 and is currently rated America's seventh-largest corporation.

### Ford

One of the largest carmakers in its native America and the world, Ford is headquartered in Auburn Hills, Michigan, and specializes in the design, manufacture and distribution of automobiles. It has over 65 plants and employs some 171,000 people worldwide. In addition to its Ford and Lincoln brands, it sells Motorcraft auto parts as part of its strategic alliance with Fiat S.p.A. of Italy.

Ford was ranked number 27 on the 2015 Global 500 list and is America's tenth-largest corporation.

### Nissan

Founded in 1933, this Japanese carmaker has manufacturing operations in 20 countries and a 161,513-strong workforce. Its brands include Nissan, Infiniti, Nissan Forklift and Nissan Marine.

In 2015, Nissan jumped two positions on the Global 500 list to number 59 compared to its previous year's ranking and is currently Japan's fourth-largest corporation.

### Renault

This French carmaker has a strong presence in Europe and employs over 127,086 people worldwide. The company has 35 production plants, four distribution centers for parts and accessories, three centers that are used as logistics platforms and one center for the preparation of parts and vehicles. Its brands include Renault, Dacia and Renault Samsung Motors.

In 2015, Renault was ranked number 191 on the Global 500 list and number 14 in its native France.

### Nissan-Renault Alliance

This alliance was created in 1999 as a means of expanding and creating new international projects and ventures.

**TABLE 4. GOALS OF THE NISSAN-RENAULT ALLIANCE**

Situation in 2011	Situation in 2014	2016 Target
Sold 8 million units	Sold 8.5 million units.	Sales of 10 million units
Revenues allocated to R&D: 8.4%	Average revenues allocated to R&D: 7.9%.	Average revenues allocated to R&D: 9%

*Source: ProMéxico with information from the company*

To achieve the goals it had set itself, in April 2014 the alliance's members began converging their engineering, manufacturing and supply chain, purchases and human resources areas.

Renault holds a 43.4% share in Nissan, while Nissan has a 15% interest in Renault, a setup that, according to both companies, creates a "win-win" situation.

The alliance's manufacturing plants and R&D centers are distributed as follows:

**TABLE 5. NISSAN-RENAULT MANUFACTURING PLANTS AND R&D CENTERS**

Region/ Country	R&D Centers	Design Centers	Manufacturing Plants	Educational Centers
Japan	7	-	14	1
United States	2	1	3	-
Europe	1	1	3	-
Asia	4	1	14	-
Mexico, Latin America and The Caribbean	-	-	3	-
Africa	-	-	3	-
Oceania	-	-	1	-

*Source: ProMéxico with information from the company, 2013*

In 2010, Daimler AG announced a cooperation agreement with the Nissan-Renault alliance as a means of boosting its international sales. Under the agreement, the alliance has a 3.1% stock interest in Daimler, while Daimler acquired 3.1% stakes in both Renault and Nissan.

On emerging markets:

- Nissan uses the Renault plant in Curitiba to maintain a presence on the Brazilian market.
- Renault, Nissan and Lada models are manufactured at the AvtoVAZ plant in Togliatti, Russia.
- The companies share a platform in India for the manufacture of the Nissan Micra-Renault Pulse and Nissan Sunny-Renault Scala.
- And are planning a joint investment in a plant in Dongfeng, China.

In 2013, Mexico was the alliance's eight-most-important market, with a 27.4% share. Today it holds a 26.9% share of this market and seventh position on the ranking, outcompeting the United Kingdom and Italy and coming in below China, United States, Russia, France, Japan and Brazil.

# CHAPTER 3





# THE INDUSTRY IN MEXICO

## 3.1 PRODUCTION

In 2015, Mexico held onto its position as the world's seventh-largest vehicle producer and the leading producer in Latin America. Production and exports of light and heavy vehicles that year touched a new historic high with a production of 3.6 million units and 2.9 million units, respectively.

Audi and Kia Motors announced the startup of their new plants in 2016, which will manufacture an estimated 450,000 additional vehicles, putting Mexico firmly on track to becoming the world's sixth-largest producer this year, and that's not taking into account the new project announced by Volkswagen for the manufacture of the Tiguan model in Puebla.

Mexico's terminal and auto parts industry represented 3% of total GDP and 18% of manufacturing GDP in the reference period, illustrating its importance to the domestic economy.

Some of the factors that have helped consolidate the industry in Mexico include: the excellent recovery the country has made from the economic crisis, its attractive export activity, investment flows in the sector and the broadening of its production capacities. Today, Mexico boasts one of the most dynamic and competitive auto industries in the world.

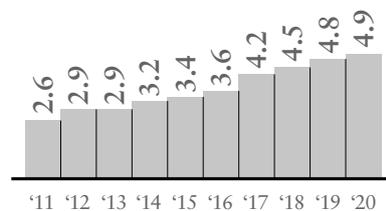
### *Light vehicles*

Mexico produced 3.4 million light vehicles in 2015, which represents growth of 5.6% compared to 2014.

This trend is expected to continue, with production reaching 4.9 million units by 2020.

**GRAPH 7. LIGHT VEHICLE PRODUCTION, 2011-2020**

(million units)



Sources: ProMéxico with data from AMIA (2011-2015) and IHS (2016-2020)

The terminal industry for light vehicles has a total of 20 production complexes in 14 Mexican states, where activities range from the assembly of vehicles and engines to armor-plating, die-casting and stamping. Mexico currently produces over 48 light car and truck models, 16 of which are manufactured exclusively for the United States market.

FIGURE 5. SOME LIGHT VEHICLES MANUFACTURED IN MEXICO



March



Sentra



Tiida



Tsuru



Versa



Note



Frontier



NV200  
largo



Others:  
Double cab pick-up  
Double cab diesel pick-up  
Large pick-up  
Large diesel pick-up  
Large chassis  
Large diesel chassis  
Estacas large



Crew cab



Journey



Fiat 500



RAM 1500



RAM 2500



2013 & 1994



RAM 3500



RAM 4000  
RAM 4000 Diesel



Promaster



Q30  
QX30  
2017



Aveo



Avalanche



Captiva



GMC Sierra



Silverado 1500  
2500  
3500  
2007



Sonic



Trax



Equinox  
2017



Q5





Beetle Cabrio  
  
1999



Jetta  
Jetta TDI  




New Jetta  
New Jetta TDI



  
Golf  
2015



Sportwagen



Tiguan  
2017



CRV



Fit  




HR-V



Tacoma



Yaris  
Scion ia



Corolla  
2019



Mazda 2



Mazda 3



CLA 2018



  
Fusion  
2010



  
MKZ



  
Fiesta



C-Max  
2018



Forte



Río



3 Series  
2019



Innovation has resulted in better products that give Mexico’s auto industry a competitive edge on both the domestic and international markets.

For example, two of the engine models manufactured exclusively in Mexico were rated among the “Top 10 Engines of 2015” by Ward’s Automotive:

- Volkswagen’s 1.8 L TSI Turbocharged engine is assembled at the company’s plant in Silao, Guanajuato, and used in its Jetta, Beetle and Passat models.
- The 6.2 L Supercharged OHV Hemi V-8 is assembled in Saltillo and fitted on Dodge Charger SRT Hellcat models.

Another example is the Honda Fit EXL. Assembled exclusively in Mexico, in Celaya, Guanajuato, this model featured on Ward’s Automotive list of the *Top 10 Vehicles of 2015 with the Best Interiors*.

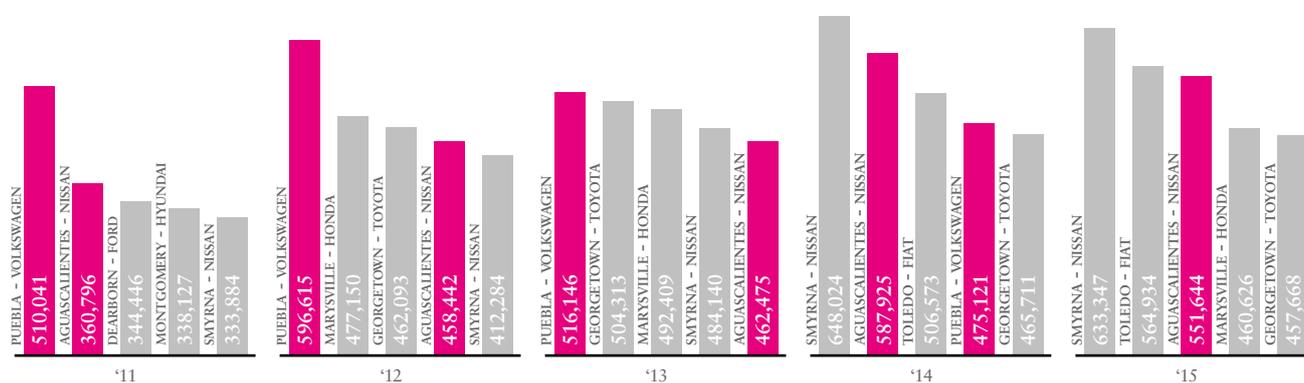
Nominated in the same category were the Chevrolet Trax, produced in San Luis Potosí, Mexico, and the Honda CR-V, manufactured in East Liberty, Ohio, United States; Alliston, Ontario, Canada; and El Salto, Jalisco, Mexico.

At the 2015 Detroit Auto Show, the Golf GTI won *North American Car of the Year*, outdoing the Ford Mustang and the Hyundai Genesis.

Mexico offers carmakers manufacturing capacity, design and production services of the highest standard and access to some of the world’s largest markets:

- In 2015, Nissan Aguascalientes was ranked the third-largest producer in North America.
- Once an exporter of basic manufactured goods, Mexico is now a force for innovation, boasting more than 30 auto design centers.
- Mexico’s growing importance in the auto industry has been consolidated by investment in projects like the manufacture of the new “Made in Mexico” models: Ford Fusion, Lincoln MKZ, Nissan Note, Chevrolet Trax, the Fiat 500, the Volkswagen Beetle and Audi Q5, among others.
- Recent announcements of investment by Audi, BMW, Mercedes-Benz and Infiniti have established Mexico as a major manufacturer of luxury automobiles.

**GRAPH 8. TOP FIVE CARMAKERS IN NORTH AMERICA**  
(NAFTA Automotive Production Plants)



Source: ProMéxico with information from Automotive News

### Heavy vehicles

In Mexico, the terminal industry for heavy vehicles has developed enormously, with manufacturers engaged in the assembly, stamping and production of bodywork for a wide range of models to meet domestic and export demand. Ten heavy vehicle and two manufacturers of engines for these types of vehicles currently have production facilities in eight Mexican states.

**TABLE 6. HEAVY VEHICLE PRODUCERS ESTABLISHED IN MEXICO**

					
	Trucks: Model 500 1524 /15.1 Ton and Model 500 1018/10.4 Ton	Trucks: Model ELF 600		Trucks: GF 900, 3600 y 6000	Trucks: HD65
Chassis for passenger vehicles: Models Linner and Runner		Chassis for passenger vehicles: Model ELF 600 BUS	Chasis for passenger: Models K420B4X2NB and K38084X2NB		HD78 Chassis

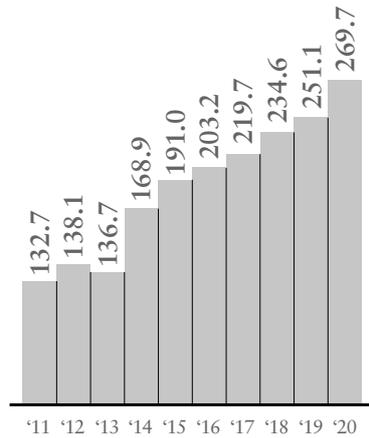
				
Trucks: Model M	Trucks: Model 4300 y 4400	Trucks: Models T370, L-700 and T800	Trucks: Models 8.150 and 9.150	
Tractor trucks: Cascadia, Models C,F and G	Tractor trucks: Prostar and Model 9200	Tractor trucks: Models T800 and T660		
Construction: Model M	Construction: Model 7600	Construction: Models T460 and T800		
Buses: Boxer, Torino and Model MBO			Buses: Lion's Coach R07-464, Lion's Top Coach R08-464 and Model A82.18.410	Buses: Volvo 8300, 9700 y 9700 US/CAN
	Chasis pasaje: Models 4700, 3000, 3100, 3300			

Source: ProMéxico with information from Monografía del sector automotriz, Ministry of Economy, July 2011

Grupo Man Latin America acquired VW Camiones y Autobuses in 2010 and proceeded to integrate Man and VW's Mexican operations.

In 2015, Mexico manufactured 191,000 heavy vehicles, positioning it as the world's fifth-largest producer in this niche.

**GRAPH 9. HEAVY VEHICLE PRODUCTION, 2011-2020**  
(thousand units)

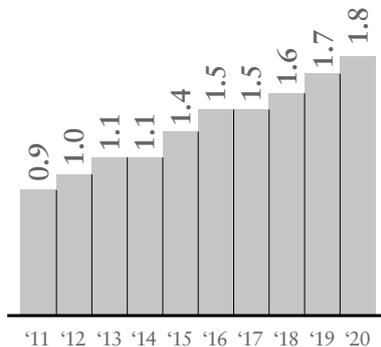


Source: ProMéxico with data from INEGI (2011-2015) and growth rates from Business Monitor (2016-2020)

## 3.2 CONSUMPTION

In 2015, over 1.4 million light vehicles were sold in Mexico, which translates into growth of 19.0% compared to 2014. Sales are expected to grow at an average annual rate of 7.3% between 2015 and 2020 to end the period at 1.8 million units.

**GRAPH 10. SALES OF LIGHT VEHICLES IN MEXICO, 2011-2020**  
(million units)



Source: ProMéxico with data from AMIA (2011-2015) and Business Monitor (2015-2020)

Nissan accounted for 26% of Mexican sales of light vehicles in 2015, followed by General Motors with a 19% market share, Volkswagen 16%, Fiat Chrysler Automobiles (FCA) 8%, Ford 6%, Toyota 6%, Honda 5% and Mazda 4%. Together, these brands made up 91% of total light vehicle sales in the period. Mexico was also one of the Latin American countries to post the highest growth in this segment, with sales up 19.0% compared to 2014. This reveals the country's enormous potential, although sales are still a long way from the volumes seen on markets like Brazil.

**TABLE 7. SALES OF LIGHT VEHICLES IN LATIN AMERICA, 2011-2015**

Country	2011	2012	2013	2014	2015	% annual growth 2014/2015
Brazil	3,425,739	3,634,115	3,579,903	3,333,479	2,480,529	-25.6%
Mexico	905,886	987,747	1,063,363	1,135,409	1,351,648	19.0%
Argentina	883,351	830,058	963,917	613,848	613,267	-0.1%
Chile	334,052	338,826	378,240	337,594	282,232	-16.4%
Colombia	210,053	184,817	294,362	326,023	283,267	-13.1%

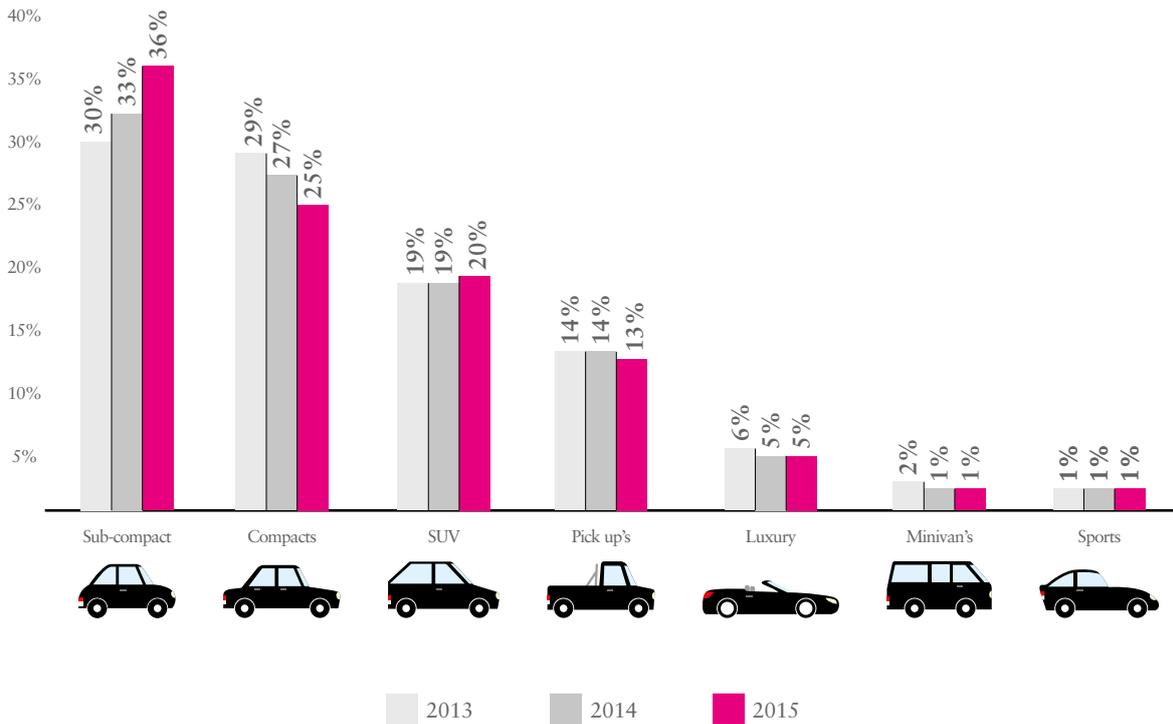
*Source: ProMéxico with data from ADEFA, ANFAVEA, ANAC, Econometría S.A. and AMIA*

The luxury or premium segment has been singled out as being of particular importance to production and sales, both in Mexico and on the international market. Companies like Ford estimate that demand for premium vehicles will grow 39% by 2017, with the United States and China accounting for 50% of the segment's global market. In terms of production, Mexico will play a significant role in exports to both emerging and mature markets of luxury vehicles like the Lincoln MKZ and the Audi Q5, which are currently manufactured in the country, and Mercedes-Benz, Infiniti and BMW models that are soon to be produced here.

Meanwhile, the Mexican market for luxury vehicles is expanding and competition is rife. In 2015, luxury brands sold 65,800 units, which translates into average annual growth of 15.9% in the 2011-2015 period.

Compact and sub-compact automobiles continue to represent the largest percentage of light vehicle sales in Mexico. Together, they made up 60% of the market in 2015, followed by SUVs with 20%, pick-ups with 13%, luxury vehicles with 5%, minivans 1% and sports cars 1%.

**GRAPH 11. MARKET SHARE OF LIGHT VEHICLES BY SEGMENT, 2013-2015**

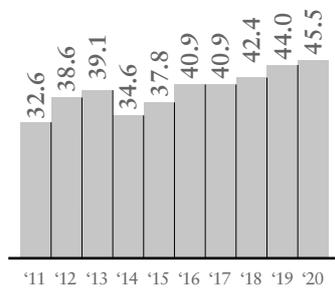


Source: ProMéxico with data from AMIA

In 2015, sales of heavy vehicles increased 9.3% compared to 2014, with 37,826 units sold.

**GRAPH 12. HEAVY VEHICLE SALES IN MEXICO, 2011-2020**

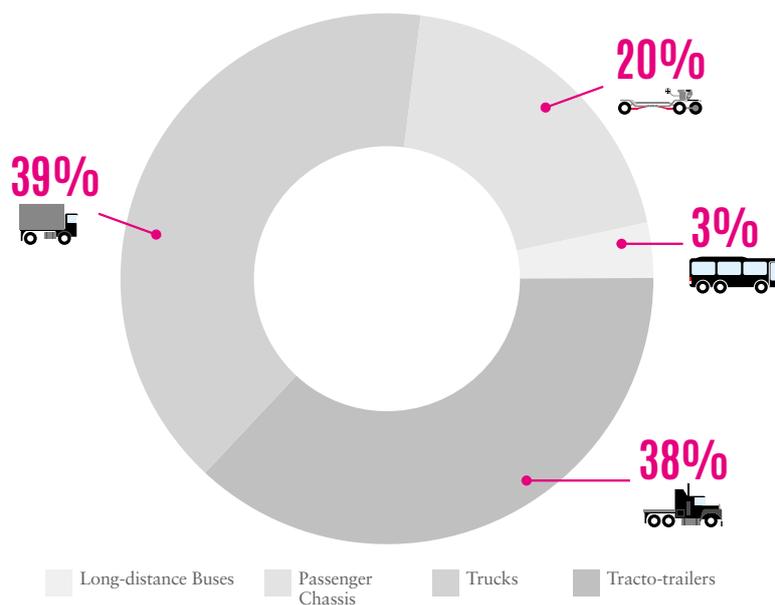
(thousand units)



Source: ProMéxico with data from ANPACT (2011-2015) and Business Monitor (2016-2020)

The segment to post the highest sales in 2015 was trucks (39%), followed by tractor-trailers (38%), chassis (20%) and intercity buses (3%).

GRAPH 13. HEAVY VEHICLES SALES BY SEGMENT, 2015



Source: ProMéxico with data from AMDA

### 3.3 INTERNATIONAL TRADE

In 2015, the automobile sector accounted for 27% of Mexico’s exports in terms of value.

#### *Light vehicles*

Mexico was ranked the world’s fourth-largest exporter of light vehicles in the period. The segment has over 100 export destinations, positioning Mexico as a leading global operations and logistics center. Although the United States remains the country’s main export market, the Latin American and other markets have upped their share of Mexican exports.

In 2015, eight out of every 100 light vehicles made in Mexico were exported to Latin America, mainly Brazil, Colombia, Argentina, Chile and Peru. Exports to Argentina and Chile increased the most in the period, posting annual growth of 53.2% and 41.0%, respectively.

Exports to China have also increased in recent years, with the country climbing from Mexico’s seventh to its sixth most-important export destination between 2013 and 2015. To the extent that per capita income has increased in China, so has demand for quality, high-tech vehicles.

This has benefited Mexican exports because the models manufactured here meet the stringent quality standards of countries like the United States, Japan and Germany, among others. The most popular light vehicles Mexico exports to China include the

Cadillac SRX, which accounts for almost 50% of sales, followed by the Dodge Journey with 36% and the Volkswagen Beetle with 14%.

This, combined with the growth of the United States market, which is the main destination of Mexican exports, fueled a new export record of 2.8 million units for the auto industry, translating into growth of 4.4% compared to 2014. Mexico is expected to post another export record in 2016 in the light vehicle segment, due primarily to the opening of new plants by Audi and Kia.

**TABLE 8. MEXICAN EXPORTS OF LIGHT VEHICLES, 2015**

Destination	Units 2015	% share
North America	2,283,502	82.7%
<i>United States</i>	1,993,162	72.2%
<i>Canada</i>	290,340	10.5%
Latin America	225,538	8.2%
Europe	145,263	5.3%
Asia	79,902	2.9%
Africa	2,319	0.1%
Others	22,372	0.8%
<b>Total</b>	<b>2,758,896</b>	<b>100%</b>

*Source: ProMéxico with data from AMIA*

### ***NAFTA and Mexico's Share of the United States Auto Market***

Given that the United States is the main destination of exports of Mexican-made vehicles, ProMéxico analyzed the United States imports and how Mexico's share of these—and that of other countries/zones—has changed since the coming into effect of NAFTA.

The ProMéxico study is based on the “Foreign Investment in México” report compiled by the Economic Commission for Latin America and the Caribbean (ECLAC) in 2000 and focuses on the terminal and auto parts industry. What it found is that:

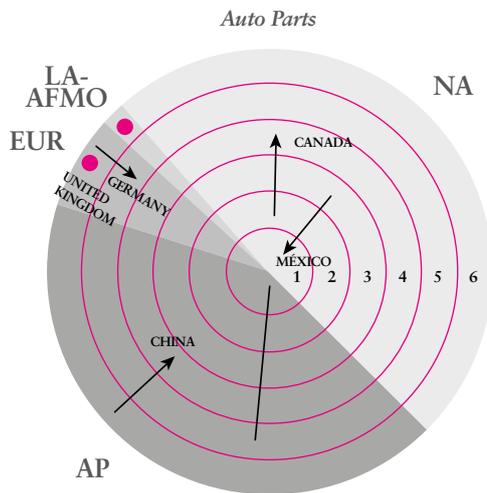
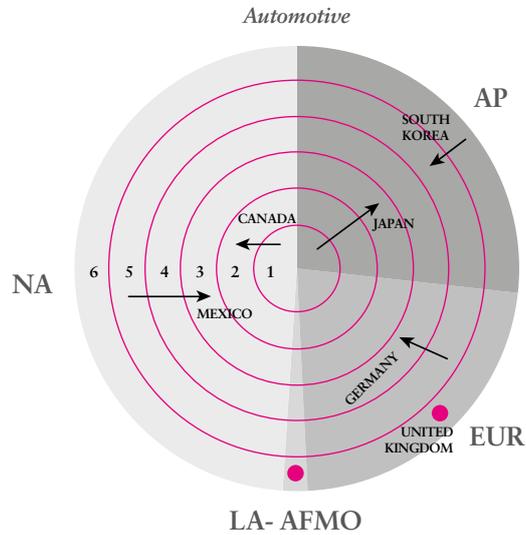
1. Mexico's share of the United States vehicle imports increased from 10% in 1995 to 26% in 2015, positioning the country ahead of Canada and Japan as the main supplier of the United States.
2. Mexico's share of the United States market for auto parts also increased, from 23% in 1995 to 35% in 2015, consolidating the country ahead of Canada and Japan as the United States' main supplier of auto parts.
3. Growth in Mexico's share of the United States imports can be attributed mainly to NAFTA, investments by carmakers established in Mexico and the quality of the vehicles manufactured here.

**GRAPH 14. MEXICO'S SHARE OF THE UNITED STATES IMPORTS, 1995-2015**

1	>29.0%
2	Between 23.2% y 29.0%
3	Between 17.4% y 23.2%
4	Between 11.6% y 17.4%
5	Between 5.8% y 11.6%
6	<5.8%
● Countries without change	

**Zone %**

- **Asia-Pacific (AP) 28%**  
Japan  
South Korea
- **NAFTA (NA) 34%**  
Canada  
Mexico
- **Latin America (LA) 0%**  
Brazil  
Argentina
- **Europe (EUR) 23%**  
Germany  
United Kingdom
- **Africa and Middle East (AFME) 1%**  
South Africa  
Egypt



**Zone %**

- **Asia-Pacific (AP) 35.1%**  
China  
Japan
- **NAFTA (NA) 47.2%**  
Mexico  
Canada
- **Latin America (LA) 1.9%**  
Brazil  
Honduras
- **Europe (EUR) 14.7%**  
Germany  
United Kingdom
- **Africa and Middle East (AFMO) 0%**  
South Africa  
Israel

Source: ProMéxico with information from the US Department of Commerce and Global Trade Atlas

The United States imports of light vehicles manufactured in Mexico rose 19% in 2015, from 600,000 to 717,000 units. The main regions of origin of these vehicles were:

**TABLE 9. MEXICAN IMPORTS OF LIGHT VEHICLES, 2011-2015 \***

(units)

Origin	2011	% Part.	Origin	2012	% Part.	Origin	2013	% Part.
Asia	165,866	35.0	Asia	198,192	38.0	Asia	207,473	38.2
NAFTA	164,459	34.7	NAFTA	163,636	31.4	NAFTA	157,276	29.0
European Union	77,727	16.4	European Union	95,588	18.3	European Union	96,122	17.7
Mercosur	65,442	13.8	Mercosur	64,223	12.3	Mercosur	81,600	15.0
<b>Total</b>	<b>473,494</b>	<b>100.0</b>	<b>Total</b>	<b>521,639</b>	<b>100.0</b>	<b>Total</b>	<b>542,471</b>	<b>100.0</b>

Origin	2014	% Part.	Origin	2015	% Part.
Asia	262,141	43.8	Asia	333,894	46.5
NAFTA	156,791	26.1	NAFTA	158,808	22.1
Mercosur	79,464	13.2	Mercosur	104,697	14.6
European Union	62,387	10.5	European Union	74,380	10.4
Not specified	39,381	6.6	Not specified	45,752	6.4
<b>Total</b>	<b>600,614</b>	<b>100.0</b>	<b>Total</b>	<b>717,531</b>	<b>100.0</b>

\* The imports of light vehicles are based on the sales of units of foreign origin  
Source: ProMéxico with data from AMIA

### *Mexico's Positioning as a Light Vehicle Exporter*

The terminal automotive sector in Mexico strengthened its relevance as an exporter of light vehicles worldwide. In 2010, Mexico was ranked the world's fifth-largest exporter of light vehicles, coming in just below Japan, Germany, South Korea and Spain, which exported a mere 311,149 units more.

However, in 2011, Spain started feeling the effects of the economic crisis, while Mexico posted record production and export levels, and began to reap the benefits of a wave of new investments by Japanese carmakers.

This helped close the gap, with Mexico ending 2012 as the world's fourth-largest exporter of light vehicles, while Spain fell to seventh place.

The outlook for Mexico's auto industry is positive, based on announcements of new investments by Audi, BMW, Kia Motors, Mercedes-Benz and Infiniti, and the coming on line of the new Mazda, Honda, Volkswagen and Nissan plants, among others.

Industry analysts project that Mexico will soon be the world's third-largest exporter of light vehicles, based on the number of new projects that have been announced and the closing of the production gap with South Korea, which fell from over 1 million units in 2011 to just 287,000 units by year-end 2015.

The economic recovery of the United States, a possible renegotiation of the Economic Complementation Agreement 55 (ACE 55) and the country's participation in forums like the Asia-Pacific Economic Cooperation (APEC) have created optimism as regards the growth of Mexican exports, as has the startup of the Kia Motors and Audi plants.

However, the economic recovery of certain countries led to a change in their share of global exports between 2013 and 2014. For example, the United States was ranked the world's eighth-largest exporter in 2011, but rose to fifth position in late 2014, displacing France and Canada.

Another country to keep an eye on is Spain, whose export production began to stabilize again in 2014 in the wake of the economic crisis and continued growing in 2015, surpassing the United States in the January-November period to position the country as the world's fifth-largest exporter. Spain's auto industry is expected to return to pre-crisis levels to the extent that demand in the European Union picks up.

**GRAPH 15. MAIN EXPORTERS OF LIGHT VEHICLES, 2011-2015**

(million of units)

CZECH REPUBLIC	1.1	1.0	1.0	1.1	1.2
UNITED KINGDOM	1.2	1.2	1.2	1.2	1.3
FRANCE	1.6	1.4	1.4	1.4	1.5
CANADA	1.9	2.1	2.1	2.1	2.0
UNITED STATES	1.7	1.9	2.1	2.2	2.1
SPAIN	2.2	1.7	2.0	2.2	2.4
MEXICO	2.1	2.4	2.4	2.6	2.8
SOUTH KOREA	3.2	3.2	3.1	3.1	3.0
JAPAN	4.4	4.9	4.9	4.8	4.9
GERMANY	4.8	4.7	4.8	5.0	5.2
	'11	'12	'13	'14	'15

Source: ProMéxico with data from Global Trade Atlas and AMIA

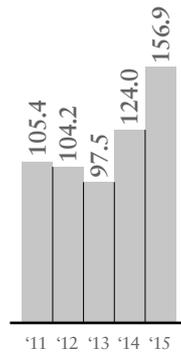
As regards the top three countries in the ranking, Japan's production was affected by the earthquake and tsunami of March 2011, allowing Germany to take the number one spot in light vehicle exports. Japan bounced back to first place in 2012 and 2013, but the tug-of-war continued, with Germany knocking Japan off its throne in 2014 and the January-November period of 2015.

Meanwhile, South Korean carmakers have focused on exports to Asian countries and part of the European Union, using a similar model and producing under competitive conditions that resemble those offered by Mexico. However, in light of increasing demand for light vehicles, Korean carmakers like Hyundai and Kia have begun making an incursion into new markets and expanding their presence in countries like the United States, Brazil and Mexico. As a result, South Korean export levels have remained relatively unchanged.

### *Heavy vehicles*

In 2015, Mexico exported 156,893 heavy vehicles, which translates into growth of 26.5% compared to 2014, positioning the country as the world's fourth-largest exporter in this segment.

**GRAPH 16. HEAVY VEHICLE EXPORTS, 2011-2015**  
(thousand units)



Source: ProMéxico with data from ANPACT

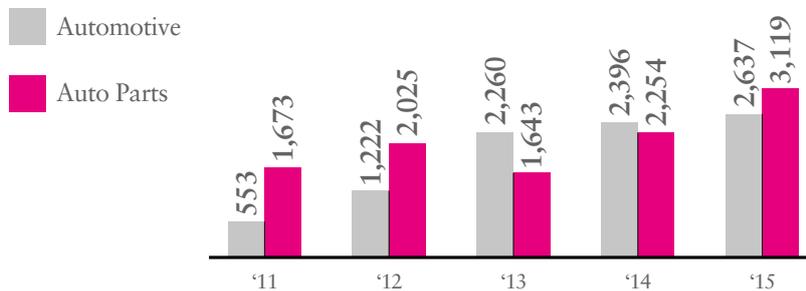
Tractor-trailers represent 59.3% of exports in this segment, followed by freight trucks with 39.5% and intercity buses with 1.2%.

In 2015, Mexico exported more heavy vehicles to the United States than any other country, accounting for 80% of the United States imports in this segment in terms of value.

### 3.4 FOREIGN DIRECT INVESTMENT (FDI)

Mexico's terminal and auto parts sectors attracted 5.8 billion dollars in foreign direct investment in 2015, an amount equivalent to 20% of total foreign direct investment in the country in the period. Of this figure, the terminal sector accounted for 2.7 billion dollars, which is 46% of the (46%), and the auto parts sector (including tires) 3.2 billion dollars (54%). Cumulative foreign direct investment in the terminal and auto parts (including tires) industry stood at 19.8 billion dollars in the 2011-2015 period.

**GRAPH 17. FOREIGN DIRECT INVESTMENT IN THE AUTO INDUSTRY, 2011-2015**  
(million dollars)



Source: ProMéxico with information from the National Registry of Foreign Investments, Ministry of Economy

### *Proven Investment Destination*

The high quality standards of Mexico's automotive manufacturing industry are the main reason some carmakers have chosen the country as a production platform to supply all their markets. Several models sold worldwide are made exclusively at Mexican plants, like the Lincoln MKZ and the Volkswagen Beetle. Some recent investments and projects that have been announced include:

#### *Volkswagen*

In March 2015, Volkswagen announced that it will be investing 1 billion dollars in the expansion of its Puebla plant. The project is geared toward modernizing these facilities and their equipment with a view to producing auto parts for the new Tiguan SUV, scheduled for launch in 2017.

#### *Ford*

In 2015, Ford revealed plans to invest 2.5 billion dollars in Mexico to increase its production capacity of transmissions and engines. These resources will be used to:

- Build a new transmissions plant in Guanajuato with an annual production capacity of up to 800,000 units.
- Expand its Chihuahua plant and build a new engine plant, also in Chihuahua, bringing annual production capacity up to 1 million units.
- Moreover, on April 2016 the company announced a 1.6 billion dollar investment to build a new vehicle facility in San Luis Potosí.

#### *Toyota*

In April 2015, Toyota announced plans to invest 1 billion dollars in a new plant in Guanajuato for the production of its Corolla model. The plant will have a production capacity of 200,000 units a year and will create 2,000 jobs.

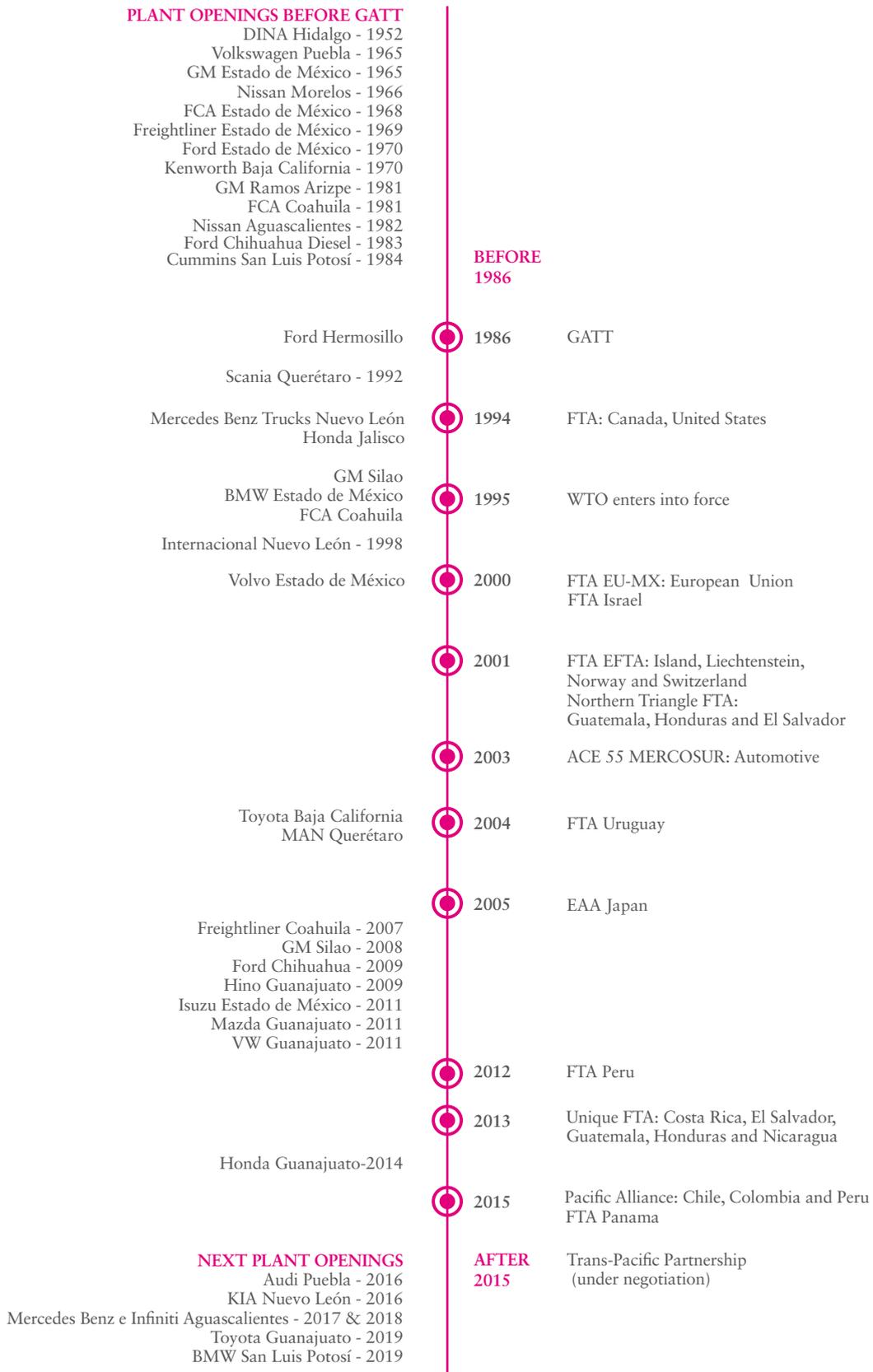
### *Free Trade as an Investment Incentive*

One of the reasons Mexico's automotive industry is so attractive to investors are the country's liberal economic policies.

The strategy of the larger auto companies has been to manufacture their products in Mexico where costs are lower and take advantage of the country's extensive network of free-trade agreements to export to North America, Brazil, Japan, the European Union and, more recently, member countries of the Transpacific Partnership (TPP). These agreements have also translated in lower import duties on inputs, which, added to the other competitive advantages Mexico's auto manufacturing industry offers in terms of quality and experience, is yet other reason these companies have decided to move their operations here.

The following figure shows how the opening of new automotive plants in Mexico has increased as the country has entered into new free trade agreements.

**FIGURE 6. FREE TRADE AGREEMENTS AND NEW AUTO MANUFACTURING PLANTS IN MEXICO**



Source: ProMéxico with information from the companies

After NAFTA came into effect, the number of light vehicles produced in Mexico for the export market almost doubled from 44.7% of total production in 1993 to 83.9% in 1995, after which time it leveled out.

### 3.5 VEHICLE MANUFACTURERS WITH OPERATIONS IN MEXICO

Mexico's terminal and auto parts sectors have benefited from the presence of ten of the world's largest manufacturers of light and heavy vehicles: General Motors, Ford, FCA, Volkswagen, Nissan, Honda, BMW, Toyota, Volvo Trucks and Mercedes-Benz Trucks. Just recently, Audi, BMW, Mercedes-Benz, Infiniti and Kia Motors announced new projects in Mexico, joining the list of light vehicle manufacturers with operations in the country.

Heavy vehicle manufacturers established in Mexico include: Daimler, Kenworth, Hino, Isuzu, Mercedes-Benz, Volvo and Man, among others.

**TABLE 10. VEHICLE MANUFACTURERS ESTABLISHED IN MEXICO, 2015**

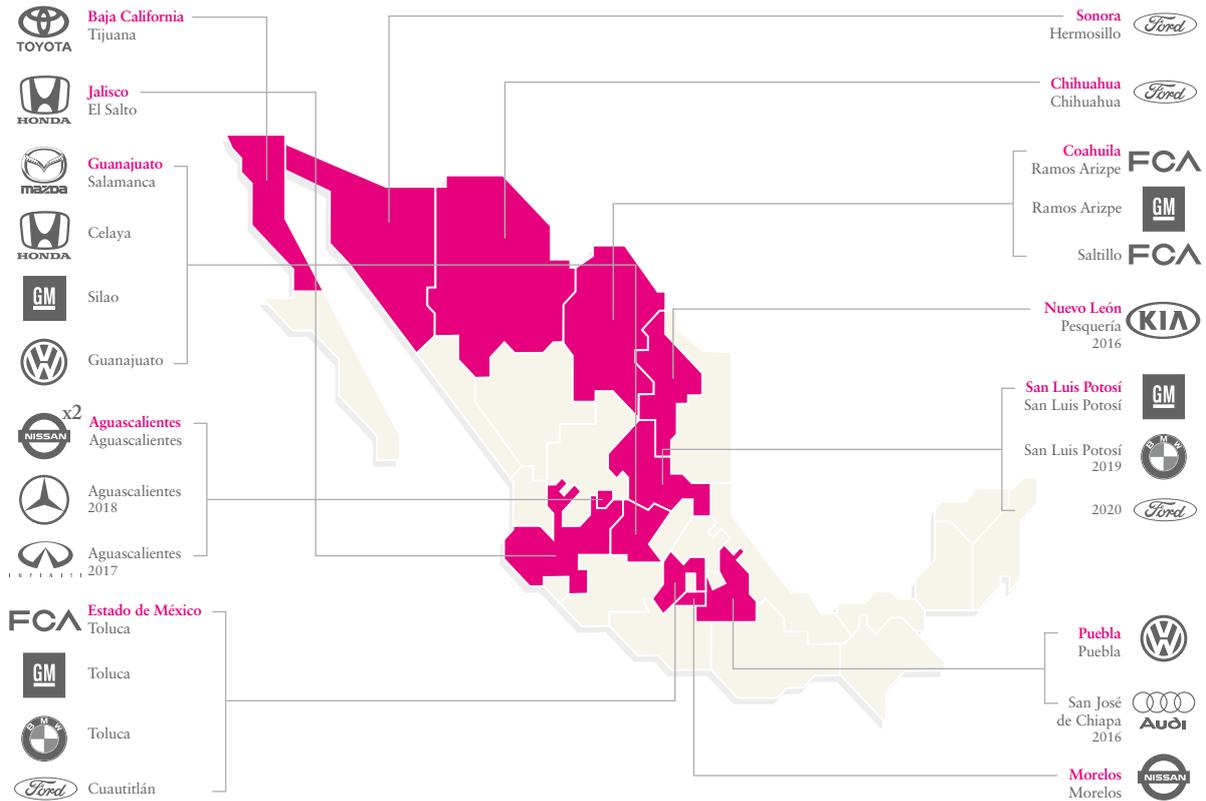
Light vehicles	Heavy vehicles	Engines	Auto parts
General Motors	Daimler (Freightliner y Mercedes-Benz)		
Ford	Scania		
Chrysler / Fiat	Volvo	Cummins	More than 1,000 companies
Nissan	Dina		
Honda	Kenworth		
Toyota	International		
Volkswagen	Volkswagen		
BMW	Man		
Mazda	Hino Motors		
Kia Motors	NeoHyundai	Detroit Diesel	345 Tier 1 suppliers
Audi			
<b>COMING SOON:</b> Mercedes-Benz & Infiniti	Isuzu		

*Sources: ProMéxico with own data and information from the Ministry of Economy*

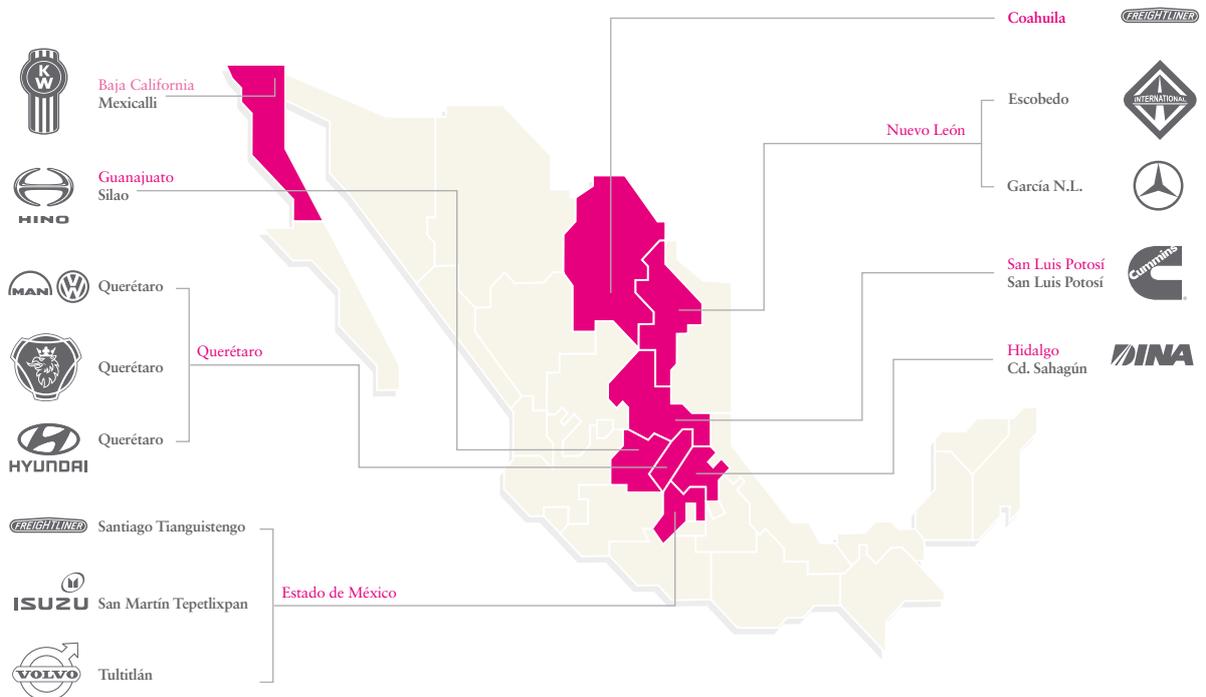
Auto parts suppliers are located in the vicinity of most auto works in Mexico to facilitate compliance with volume and delivery requirements. The main manufacturers of light and heavy vehicles are shown on the following maps.

FIGURE 7. LIGHT AND HEAVY VEHICLE ASSEMBLY PLANTS IN MEXICO, 2015

Light vehicles



Heavy vehicles



Source: ProMéxico

The following companies featured on *Expansión* magazine's 2015 list of the top 500 manufacturers in Mexico's terminal and auto parts industry, ranked by sales:

**TABLE 11. VEHICLE MANUFACTURERS ESTABLISHED IN MEXICO, RANKED BY SALES**

Ranking 2015	Ranking 2014	Company	Sales (million pesos)	Origin	Jobs in Mexico
6	7	General Motors	263,317	United States	15,092
8	9	Fiat Chrysler México	230,000	United States	11,000
11	12	Nissan Mexicana	190,000	Japan	15,000
13	14	Volkswagen de México	162,604	Germany	16,509
14	16	Ford Motor	157,000	United States	8,640
42	39	Johnson Controls México	72,510	United States	26,197
43	49	Honda de México	72,000	Japan	6,116
44	45	Nemak	70,891	Mexico	21,600
46	50	Magna International	67,661	Canada	25,000
65	81	Lear Corporation	44,104	United States	46,600
85	116	Toyota Motor Sales de México	33,000	Japan	N.d.
89	103	Continental Tire de México	32,000	Germany	18,800
90	94	Metalsa	32,000	Mexico	12,000
100	107	Daimler México	29,661	Germany/United States	7,415
104	106	Autoliv México	28,440	Sweden	11,551
106	115	Valeo México	28,157	France	8,500
110	119	PACCAR/Kenworth Mexicana	27,196	United States	2,000
153	159	American Axle Manufacturing de México	16,836	United States	4,500
154	169	Robert Bosch México	16,610	Germany	12,300
167	196	Mazda	15,363	Japan	9,800
181	182	SANLUIS Corporación	12,897	Mexico	5,797
186	224	Industrias Martinrea de México	12,168	Canada	4,300
212	219	Navistar International	10,370	United States	4,200
214	205	Bridgestone de México	10,268	Japan	1,533
228	248	Cummins	7,467	United States	1,600
241	271	Superior Industries de México	8,746	United States	2,500
248	259	BMW de México	8,500	Germany	1,500
263	220	ArvinMeritor de México	7,797	United States	N.d.
283	322	Linamar	6,864	Canada	N.d.
286	404	Hyundai Motor de México	6,750	South Korea	2,500
287	319	Federal Mogul	6,701	United States	800
295	318	KUO Automotriz	5,079	Mexico	3,581
315	347	Katcon	7,800	Mexico	N.d.
364	362	SKF de México	3,679	Sweden	1,410
405	-	Tupy México	3,449	Brazil	N.d.
417	366	JK Tornel	3,704	India	2,000
426	442	Wabtec de México	2,319	United States	N.d.
455	463	Peugeot México	2,500	France	N.d.
469	-	Yorozu Automotive de México	2,314	Japan	475

Source: ProMéxico with information from CNN Expansión 500

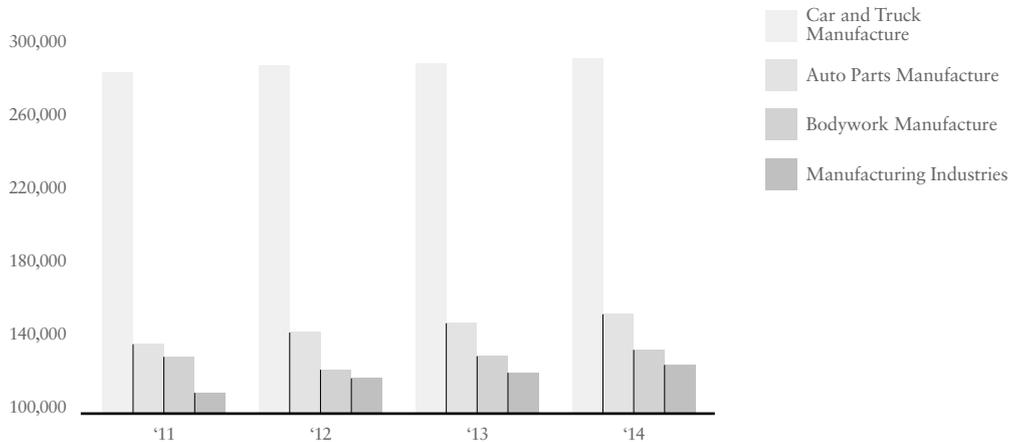
## 3.6 JOBS

As of December 2015, some 875,382 people were directly employed in the automotive industry —81,927 in the manufacture of automobiles and trucks and 793,456 in the auto parts sector.

According to the National Institute of Statistics and Geography (INEGI) estimates, average salaries in the terminal and auto parts industry are higher than in other manufacturing sectors in Mexico —almost triple in the case of the terminal automotive sector. Likewise, salaries in the auto parts sector increased 11.7% between 2011 and 2014. This illustrates an appreciation of the skilled labor and experience of those working in the automotive sector compared to other manufacturing jobs, which, in turn, has created an environment of prosperity in the industry.

**GRAPH 18. AVERAGE SALARIES IN MEXICO'S AUTOMOTIVE AND MANUFACTURING SECTORS, 2011-2014**

(pesos per person, annual salaries)



Source: ProMéxico with data from Labor Inputs, National Accounts, INEGI

## 3.7 ASSOCIATIONS

### *The Mexican Automotive Industry Association (AMIA)*

It was founded in 1951 by manufacturers of light vehicles to reconcile the interests of its affiliates and those of similar institutions, chambers and government agencies. AMIA represents the major light vehicle manufacturers with a presence in Mexico.

### *The National Association of Bus, Truck and Tractor-trailer Producers (ANPACT)*

Created in 1992, this association represents 13 manufacturers of diesel engines and heavy vehicles weighing more than 6.3 tons. Its goal is to promote the development of Mexico's transportation industry. ANPACT represents brands like Dina, Freightliner, Hino, International, Isuzu, Kenworth, Mack, MAN, Mercedes-Benz, Scania, Volkswagen, Volvo, Cummins and Detroit Diesel.

### *The National Auto Parts Industry (INA)*

This organization was founded in 1961 and negotiates the interests of 950 automotive companies with international organizations, government bodies, trade chambers and academic circles.

## 3.8 AUTO ENGINEERING AND DESIGN CENTERS

The establishment of design centers has helped shore up existing capacities in the sector and improved the quality of the products manufactured in Mexico. Some examples of investment in such centers are listed below:

### *General Motors Regional Engineering Center*

Based in Toluca, Estado de México, this center employs 700 engineers in the design and engineering research testing of new GM models.

Nissan Technological Development Center (CDT Nistec). Also based in Toluca, Estado de México, this is one of nine Nissan centers of its type. It employs 366 people, the vast majority of whom are Mexican engineers.

The work of the CDT Nistec focuses on cutting polluting engine emissions by 70%. It has special acoustic chambers as well as others to simulate roads, which can detect the wear of parts and bodywork caused by vibrations, and others that imitate extreme heat and cold to assure the correct functioning of the vehicle's systems and plastics. This center forms part of Nissan's global research and development network, which works closely with similar centers in the United States and Brazil. Mexico contributes with the design of parts and vehicle testing.

### *Chrysler Center for Automotive Research, Development and Engineering Tests*

Mexico City was built to develop and test new Dodge, Chrysler, Jeep, Mitsubishi and Hyundai models. Its areas include vehicle testing, emissions, materials engineering and metrology labs, and engine and transmission dynamometers. It directly employs engineers specializing in process development and validation, and additional personnel depending on project needs.

World-class engineering tests are conducted here, as well as research into environmentally-friendly raw materials, such as alternative fuel technologies and ways of reducing emissions and consumption of oil-derived fuels.

The vehicle testing, research and development area takes up the most space. This is where vehicle development, revision and testing processes are conducted using existing car models and the concept cars of the future. These processes can range from the modification of a simple part to a partial or total change of bodywork, chassis, engine, and transmission.

### *Querétaro State Research and Technical Assistance Center (CIATEQ)*

Located in Querétaro, Querétaro, CIATEQ was built with the assistance of the federal government, represented by the National Council of Science and Technology (CONACYT) and the National Laboratories for Industrial Development (LANFI), the state government of Querétaro and a group of industrialists from the state of Querétaro spearheaded by ICA and SPICER directors.

CIATEQ specializes in technological development projects for the automotive and auto parts industry, from basic engineering to the manufacture of special-purpose machinery and equipment, tools, test banks, control and measuring systems, and the development of prototypes and specialized airport vehicles. Some of the projects CIATEQ has worked on include:

- Wind tunnel for testing car radiators.
- Design and manufacture of thermal cycling test bank for charge air coolers.
- Mechanical design of new ranges of seven farm tractor models.
- Design and manufacture of aluminum tractor mold.
- Rubber profile angle cutting machine.

- Machine for the inspection and laser marking of piston rings.
- Machine for conducting thermal cycling tests on car radiators.
- Device for inspecting the position of headlights.
- Car tire testing machine.
- Powertrain assembly crane.
- Machines for carrying out secondary operations in the manufacture of door seals.
- Boring machine for extruded rubber line.
- Zero-gravity arm for suspension assembly line.
- Analysis and simulation of automobile structures.
- Machines to test truck dashboards (clusters).
- Welding template for car seat structures.
- Seat frame assembly table.
- Measuring and verification devices for car window regulators.
- Redesign of cooling systems, molds and auxiliary elements for the manufacture of aluminum auto parts.
- Design and manufacture of booth for the application of water-based paint.
- Design and construction of a series of machines for carrying out secondary operations in the manufacture of car door seals.

#### *Electronic Vehicle Technology Center (CTEV)*

This initiative arose from an agreement between ITESO and the Guadalajara-based company Soluciones Tecnológicas. CTEV develops and integrates electronic systems for automotive applications in the following areas:

- Testing services and the integration of module testing systems and systems for carmakers and their suppliers.
- Engineering, design and electronic systems integration services.
- Technological research and development in electronic systems.

Users include vehicle manufacturers that export to North America and Europe and their suppliers, manufacturers and designers of electronic components and software for automotive systems, ITESO and other research institutions involved in the design of systems for automobiles, aircraft, ships, electronics and software, especially firmware.

#### *Delphi Technical Center (MTC)*

Located in Ciudad Juárez, Chihuahua, MTC is an engineering center specializing in the design and development of automotive components. It has a payroll of some 3,000 employees, almost half of whom are engineers and technicians. Since it was set up in 1998, MTC has registered approximately 200 patents in the United States, published 35 defensive disclosures and owns eight industrial secrets related to automotive components, systems and applications.

#### *Center for the Development of the Mexican Automotive Industry (CEDIAM)*

Created with the support of numerous corporations, institutions, chambers and government agencies to promote Mexico's auto industry by facilitating access to information. This center integrates consulting, training, technological research and development services geared toward the sector.

CEDIAM employs over 300 researchers and has its own labs and equipment that form part of a national network with a presence in Coahuila, Monterrey, Estado de México, Querétaro, Guanajuato, Jalisco, Puebla, Aguascalientes, Morelos, San Luis Potosí and Sonora.

**Industrial Engineering and Development Center (CIDESI)**

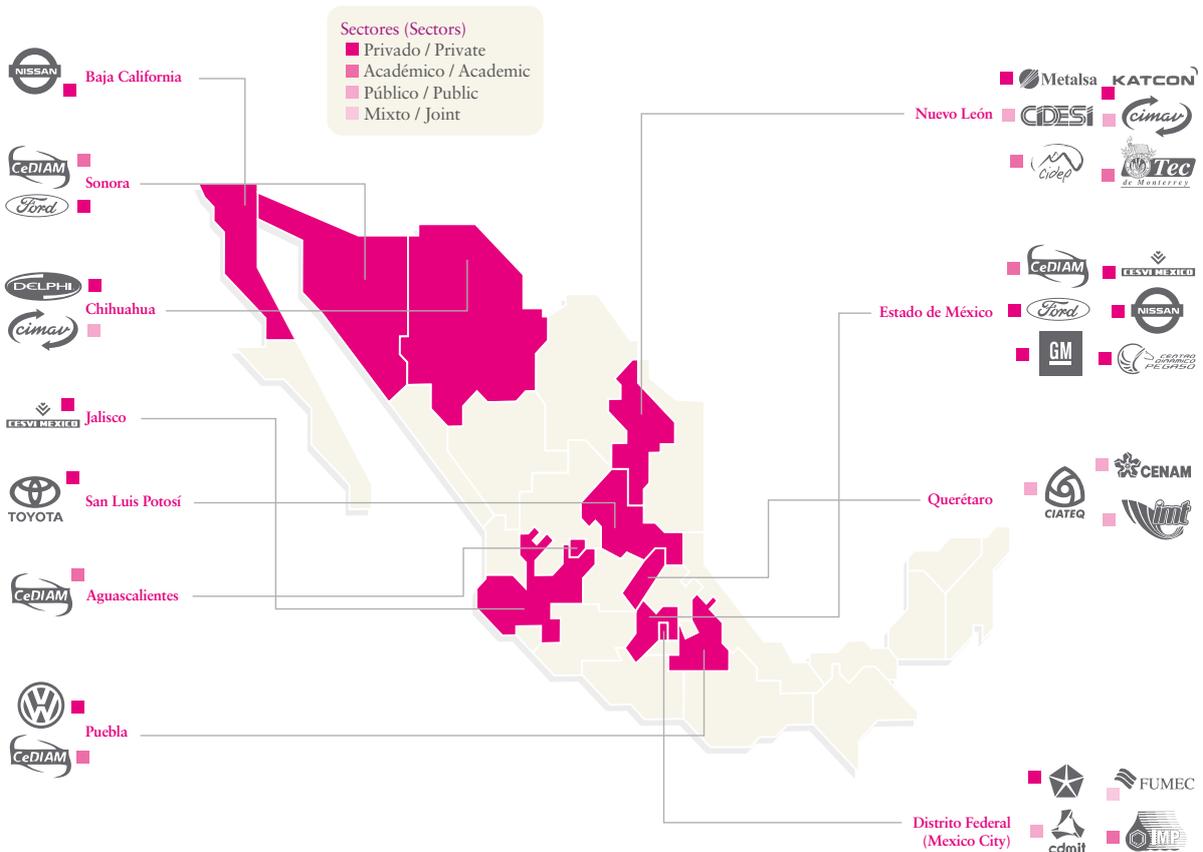
Founded on March 9, 1984, CIDESI belongs to the system of centers operated by the National Science and Technology Board (CONACYT). It has ISO 9001:2008 certification and was the first CONACYT center to obtain AS9100 B certification as a supplier of the aeronautics industry. Winner of the 2003 National Technology Prize and the 2004 Export Prize awarded by the State of Querétaro, CIDESI is a supplier of the state-owned oil company Pemex, an authorized supplier of Bombardier and a member of the National Instruments-Texas Instruments Design House alliance. The center's mission is to contribute to the development of the country's manufacturing sector and it has two divisions: one in the State of Querétaro and a second in Nuevo León, at the Monterrey Technological Research and Innovation Park, as well as labs in San Luis Potosí and at leading corporations throughout the country.

**Center for Research into Advanced Materials (CIMAV)**

A member of the CONACYT National System of Public Centers, CIMAV was founded in the city of Chihuahua in October 1994 as a result of an agreement between the federal government, the state government of Chihuahua and the Chihuahua Delegation of the National Manufacturing Industry Chamber (CANACINTRA).

Its highly qualified personnel carry out basic, guided and applied technological research and development based on 11 lines of research and two institutional academic programs, with a view to meeting scientific, technological and academic demand in Mexico.

**FIGURE 8. MAP OF R&D CENTERS IN MEXICO**



Source: ProMéxico

## 3.9 CLUSTERS IN MEXICO

### *Nuevo León Auto Cluster*

CLAUT is a civil association comprised of Tier 1 auto industry manufacturers and related academic and government institutions.

Its goal is to promote the integration of the auto industry, from vehicle manufacturers to Tier 1, Tier 2 and Tier 3 suppliers, including firms offering logistics, consulting and other services geared toward the sector.

### *The Guanajuato Auto Cluster*

This cluster is comprised of 297 companies, the most noteworthy of which are: General Motors and Volkswagen in Silao, Mazda in Salamanca and Honda in Celaya, as well as reputable tire manufacturers like Pirelli and manufacturers of auto parts, transmissions and components.

Countries that have invested in the state include: Germany, Japan, United States, Italy, France, England, Spain, Canada, Brazil, Holland, India, Taiwan, Switzerland, Sweden and Korea.

### *Estado de México Auto Cluster*

This civil association is made up of OEMs, Tier 1, Tier 2 and Tier 3 suppliers, consulting firms, logistics companies, customs agents and other service companies that comprise the automotive industry value chain in the region.

Its goal is to promote the development of the sector and strengthen business networks by connecting companies and advocating projects that trigger regional growth and productivity.

### *Chihuahua Auto Cluster*

The members of this association aim to consolidate Chihuahua as a world-class automotive cluster that is open to growth opportunities for international corporations seeking to join the supply chains of its affiliates.

### *Other clusters*

The Querétaro Auto Cluster features 15 founding companies, two educational institutions, the Industrial Engineering and Development Center and the Querétaro Science and Technology Board.

The San Luis Potosí Auto Cluster is a civil association that works to ensure companies operating in the state meet international specification and certification requirements.

## 3.10 KEY INITIATIVES IN MEXICO'S AUTO INDUSTRY

### *Strategic alliances and innovation networks*

AERIS is a CONACYT mechanism designed to help companies plan and build alliances and innovation networks with their peers and academic institutions.

Its goal is to position Mexico as a viable global option for R&D in the automotive industry, promote the development and application of new products and technologies and contribute to the technical know-how of Mexican engineers. The network's strategic research lines include:

- New materials: ultra-light plastics.
- Nanotechnology applied to automotive systems.
- Development of mathematical simulation models (CAD, CAE, CAM).
- Innovation in fuel economy and alternative fuels (electric hybrids).
- Adaptation of vehicles to the specific characteristics of Mexico.
- Research and development in electrical systems and components.
- Development of technology for HVAC air conditioning.
- New applied manufacturing technologies.

### *Consolidation of the Mexican automotive industry*

Traditionally a maquila-oriented industry, in recent years the Mexican auto sector has developed the capacities to manufacture complete vehicles that cater to specific market niches. Vehizero, Dina and Vühl are three cases in point.

#### *Vehizero*

Vehizero was founded in July 1999 by the engineer Sean O'Hea, who worked on the assembly project for zero-emission vehicles with the support of the National Autonomous University of Mexico (UNAM), the Iberoamericana University and input from Harvard experts. Since 2006, the company has been designing, developing, manufacturing and assembling prototypes and hybrids.

In early 2008, the Aguascalientes state government assigned the company a five-hectare plot on which to build an assembly plant, with the option of seven additional adjacent hectares. The plant, which was built with the financial support of CONACYT, Nafin, the Aguascalientes state government and funds put up by O'Hea himself, currently manufactures and markets Ecco-C1, Ecco-C2 and Ecco-C3 models.

#### *Dina*

Founded in 1951, Dina is a Mexican company specializing in the manufacture and marketing of passenger and freight vehicles. It has a production capacity of 23 urban units a day and a network of distributors that takes in the states of Hidalgo, Estado de México, Mexico City, Jalisco, Nuevo León, Yucatán and Veracruz.

In recent years, Dina has invested over 120 million dollars with a view to consolidating its exports to the United States and Central America. The strategy has yielded fruit, as evidenced by the export of the first 200 terminal tractors of an order of 5,000 to be delivered to the United States over the next ten years and the first batch of an order of 350 autobuses to Nicaragua.

Dina's buses feature proprietary technology developed in conjunction with nine Mexican universities and government bodies such as CONACYT.

An example of the innovation capacity of this Mexican enterprise is the adaptation of its vehicles in a highly competitive environment, by designing and manufacturing environmentally-friendly vehicles, for instance the case of the Urban Project, which consists in the design and fabrication of a hybrid city bus and trolleybus Dina has developed with the assistance of the Autonomous Metropolitan University (UAM) and CONACYT.

#### *Vühl 05 (Vehicles of Ultra High-Performance and Lightweight)*

Designed by ETXE Diseño, the drive system of this Mexican sports car is optimized in the United Kingdom and tuning tests are conducted in the United States. Its carbon fiber body is made in Canada and, once approved, is sent to Mexico, where the chassis is manufactured. Final assembly takes place in Mexico City.

In 2014, the company announced an initial investment of 10 million dollars in a new plant in the State of Querétaro. The plant will have three assembly lines that will manufacture parts of the chassis and suspension, and where the final assembly process will be completed.

Vühl is scheduled to begin operations in the first half of 2015.

### **3.11 MEXICO AND ITS PLACE IN THE BUSINESS PLANS OF LUXURY VEHICLE MANUFACTURERS**

The luxury vehicle niche has been swept up by the dynamism of the automotive industry in general, with leading actors like Mercedes-Benz, BMW and Audi starting to look for greater profitability beyond Europe. These three brands have taken the first steps in a much more aggressive strategy, which consists of placing more emphasis on the relationship between cost reduction and the supply of higher-quality products, this being one of the industry's more discerning niches.

Mexico has managed to attract manufacturers of luxury vehicles with models like the Lincoln MKZ currently being produced at the company's plant in Hermosillo, Sonora. Others plan to begin producing in Mexico in the near future, like Audi, which will be manufacturing its Q5 in Puebla, Mercedes-Benz and Infiniti, which have projects in Aguascalientes, and BMW, which will be coming to San Luis Potosí.

These projects will potentially establish Mexico as the world's fourth-largest producer of luxury vehicles by 2020, due largely to the high standard and competitiveness of Mexican labor.



# CHAPTER 4





# BUSINESS OPPORTUNITIES

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## 4.1 EXPORTS

Mexico's federal government supports and promotes the development of small and medium companies via the National Entrepreneurship Institute (INADEM).

For example, in 2015 INA and INADEM announced that they would be financing 50% of the cost of providing Tier 1, Tier 2 and Tier 3 auto part manufacturers that want to become OEM suppliers with the basic quality tools required by the industry, such as: Core Tools, Quality Management Systems (QMS), ISO/TS-16949 certification and/or advanced management systems.

In its drive to foster international business, ProMéxico has identified three areas in which export opportunities are to be had.

- Mexico as an export platform. The country's growing network of trade agreements has opened up enormous opportunities for exports to other markets, so it is no coincidence that Mexico is currently the world's fourth-largest exporter of light vehicles or that carmakers have announced plans to either increase their production capacity or transfer their operations here.
- Opportunities in specific segments of the terminal automotive industry, such as exports of heavy vehicles to Latin American markets like Colombia and Peru.

In 2015, exports by Mexico's heavy vehicle segment to Latin America and the Caribbean were valued at 1.4 billion dollars. The majority of these products were shipped to Colombia (which accounted for 47% of total Mexican exports to the region), Peru (10%), Chile (10%), Ecuador (7%) and Venezuela (6%).

Mexico's exports to Colombia totaled 649 million dollars and have grown at an average annual rate of 15% in the last four years. The country's main export competitors in this segment are the United States, Canada and the United Kingdom.

Likewise, exports to Peru were valued at 143 million dollars in the period and have posted average annual growth of 9% in the last four years. Brazil, Thailand and China are Mexico's main rivals on this export market.

Based on Mexico's exportable supply and demand in Colombia and Peru, there are export opportunities to be exploited in both countries in the area of freight vehicles with a capacity of five to 20 tons.

Mexican exporters may take commercial advantages due to the preferential tariffs for these types of vehicles that have been established under the free-trade agreement between Mexico and Colombia (G3), and the transition to the EURO IV standard from the EPA 98 standard. In the case of Peru, the trade integration agreement signed by the two countries gives Mexican exporters an edge over its competitors on these markets, in addition to the logistical advantages intrinsic to Mexico's strategic geographical location.

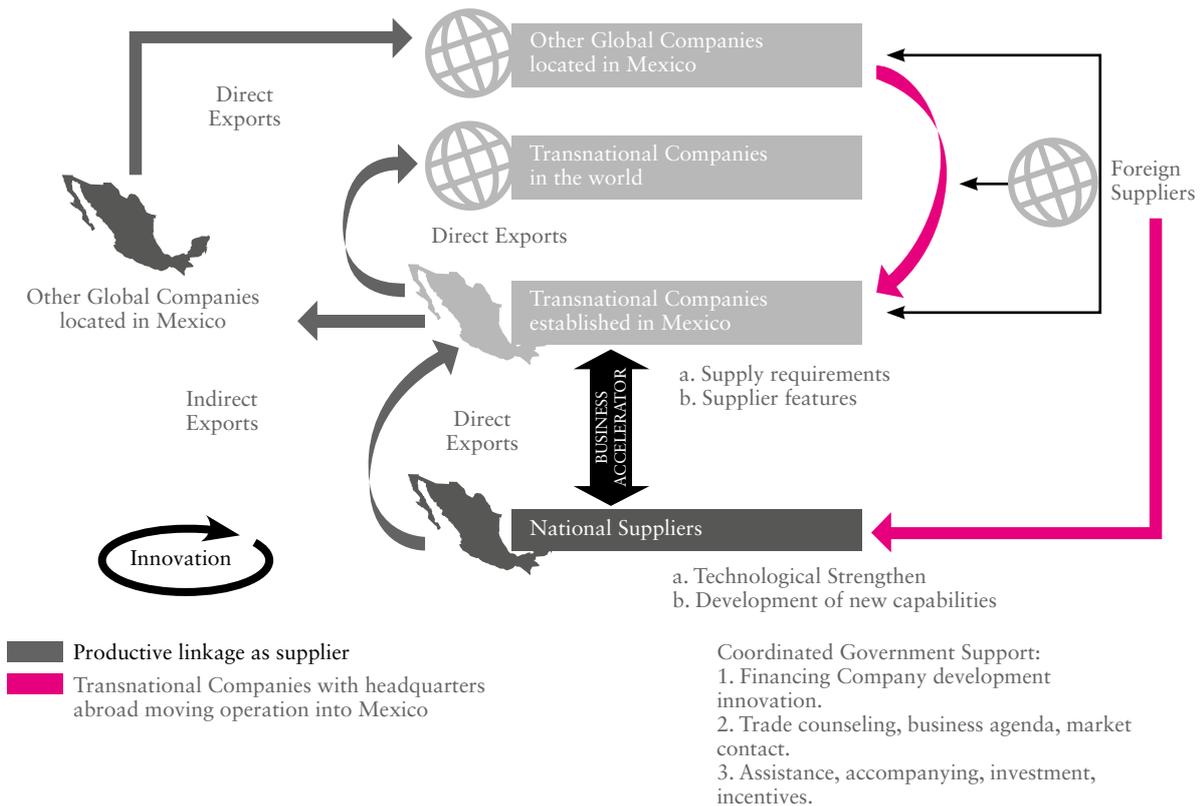
- ProMéxico's Multinational Accompaniment (ACT) model seeks to take advantage of the fact that many multinationals established in Mexico are interested in expanding their operations here, mainly by strengthening their supply chains and filling gaps in the market. ACT is a comprehensive model

designed to promote exports (direct and indirect) by Mexican companies and foreign direct investment in Mexico. Its goals are to:

- Foster ties between Mexican suppliers and multinationals established in the country
- Promote exports by linking Mexican suppliers and the global supply chains of multinationals
- Retain and promote reinvestment by multinationals in Mexico
- Strengthen production chains by encouraging direct investment by foreign suppliers

ProMéxico organizes business meetings and seminars between vehicle manufacturers and Tier 1 suppliers in the country, with a view to facilitating the incorporation of Tier 2 and Tier 3 companies into the supply chains of the former.

FIGURE 9. PROMÉXICO'S ACT MODEL



Source: ProMexico

## 4.2 INVESTMENT

Carmakers like Toyota, BMW, Mercedes-Benz, Infiniti and Kia Motors have all seen in Mexico a country that offers manufacturing opportunities, and Ford and Volkswagen have also invested here recently.

Consequently, in order to strengthen its position as a producer and exporter of auto parts, Mexico needs to attract major foreign Tier 1 companies. Yet there are areas of opportunity as regards the development of the country's Tier 2 and Tier 3 automotive suppliers.

ProMéxico has identified opportunities for the terminal and auto parts sectors focused on linking both sectors, specifically in the case of Tier 2 and Tier 3 suppliers engaged in the processing of specialized and/or quality materials that add value to the final product.

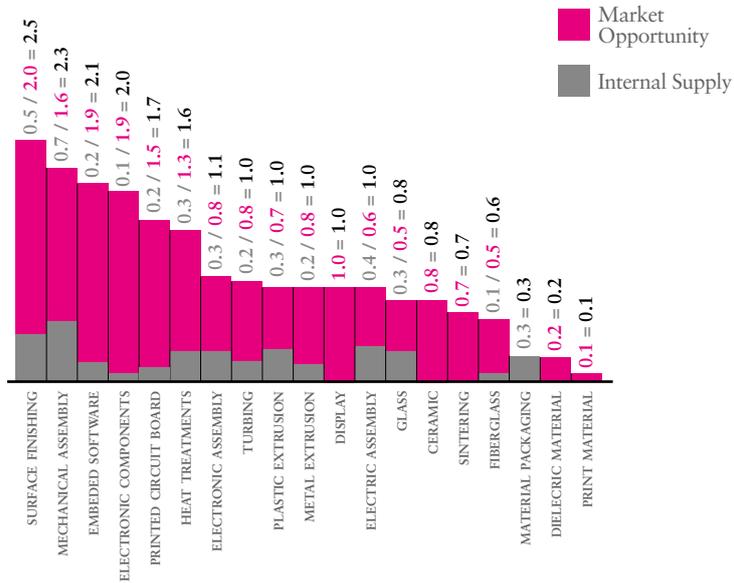
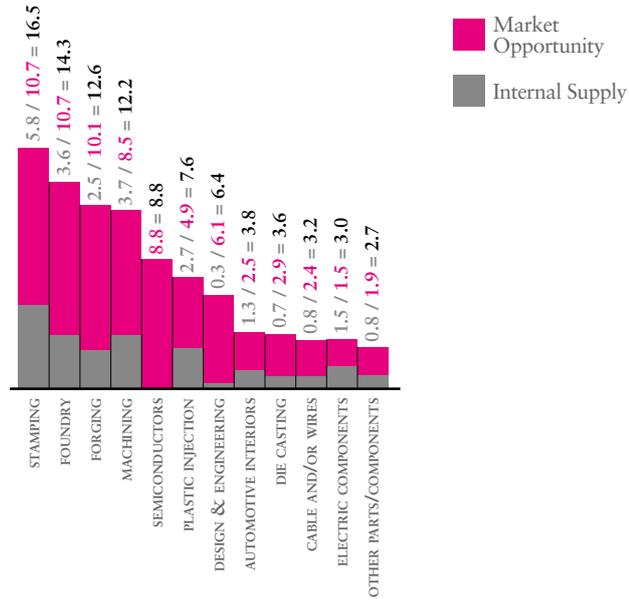
ProMéxico seeks to attract foreign companies that can contribute to the development of Mexican suppliers and share their know-how and technology with Mexican companies via alliances or joint ventures.

The following graph illustrates investment opportunities ProMéxico has detected in the automotive supply chain. It should be noted that:

- 76% of total demand is for imported processes, which implies enormous investment opportunities for foreign companies
- Some of the processes most in demand are stamping, smelting, forging and machining

The following graphs illustrate investment opportunities vis-a-vis the processes most in demand by the auto industry supply chain in Mexico. The first graph shows 12 processes that represent 80% of the opportunity value detected by ProMéxico, while the second illustrates 19 processes that make up the remaining 20%.

## GRAPHS 19 & 20. MARKET VALUE AND INVESTMENT OPPORTUNITIES IN MEXICO'S AUTOMOTIVE SUPPLY CHAIN, 2014 (billion dollars)



Source: Estimations by ProMéxico with data from INEGI

To get a better understanding of what these graphs illustrate, let's take the die-cutting and/or stamping bar.

- Total market demand is estimated at 16.5 billion dollars, made up of nationally supplied inputs (5.8 billion dollars) and imports of parts and components used in this particular manufacturing process (10.7 billion dollars).
- This means that Mexican manufacturers supply 5.8 billion dollars or 35.1% of demand for parts and components used in automotive die-casting and/or stamping processes.
- Consequently, the market opportunity is valued at 10.7 billion dollars, because the terminal and auto parts industry must import the remaining 64.9% of parts required for these processes.

The same calculation of market opportunity can be made for the other processes shown on the graphs.

### 4.3 VALUE CHAINS

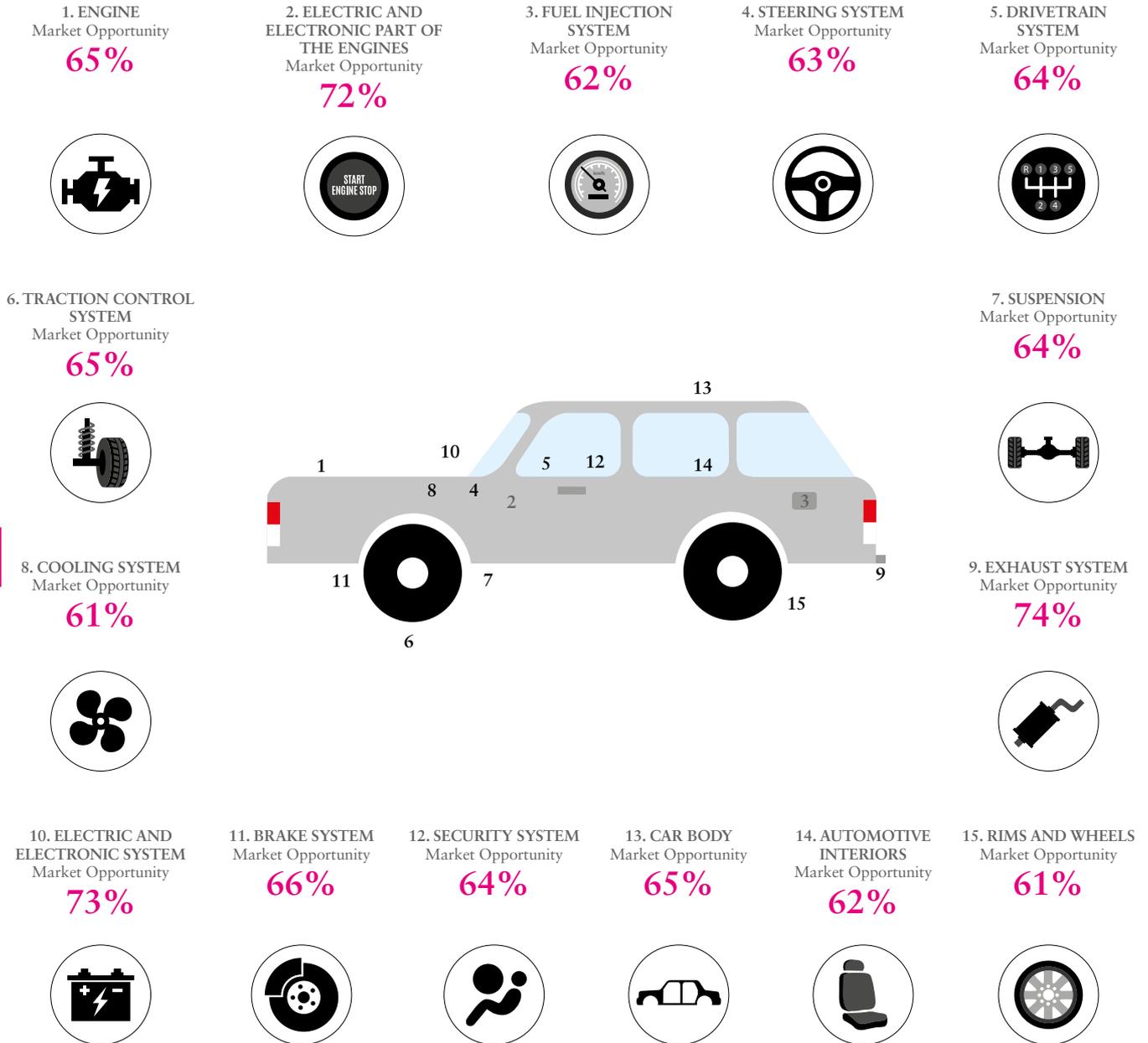
Based on the previous analysis, the following shows investment opportunities in terms of systems and components required by the automotive supply chain.

While it is true that the terminal automotive sector has received investment in recent years, opportunities have also arisen to invest in the auto parts sector and strengthen the supply chain of the former.

The smiley curve model illustrates how important these opportunities are to generating added value. The curve shows the activities—in this case in the automotive and auto parts sectors—that create the greatest value, from the origin of the product until it reaches the final consumer. At the bottom of the curve we find maquila and assembly activities, while the greatest added value is to be found in design and R&D activities, final testing, distribution and sale to the end customer.

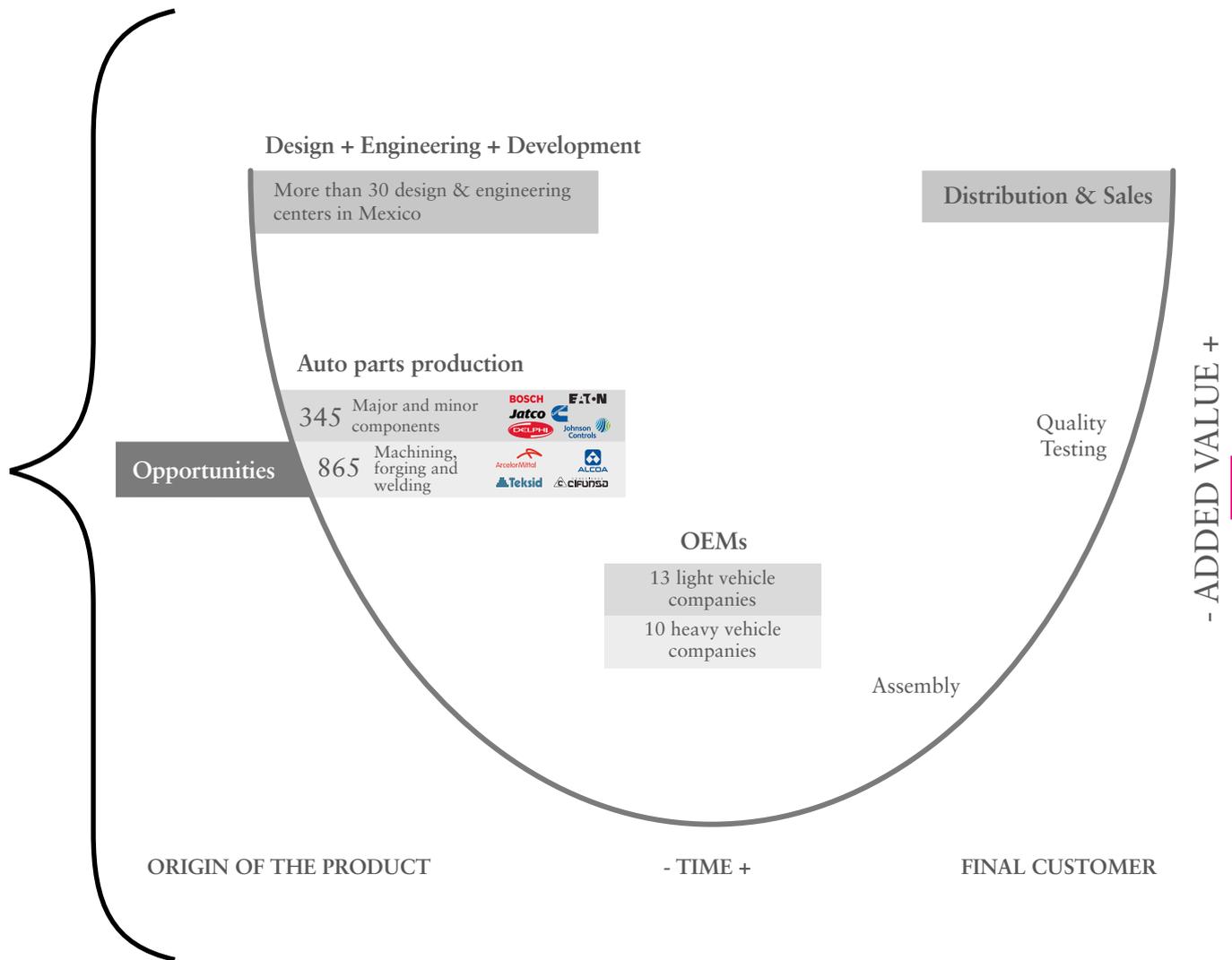
In manufacturing, a solid supply chain is essential to attracting or creating companies whose production processes incorporate more advanced technology and/or that make more complex products, thereby generating demand for research and development activities and, subsequently, manufacturing products of higher quality and attracting new projects with even more added value.

**FIGURE 10. OPPORTUNITIES IN THE AUTO COMPONENTS AND SYSTEMS MARKETS**



Source: ProMéxico

**FIGURE 11. ADDED VALUE OF AUTO INDUSTRY PRODUCTS VS. TIME IT TAKES TO DEVELOP THEM**



Source: ProMéxico with data from the Ministry of Economy

# CHAPTER 5



# LEGAL FRAMEWORK

## 5.1 SUPPORT PROGRAMS IN MEXICO

### *PROSEC Automotive*

Sectorial Promotion Programs (PROSEC) enable manufacturers to import their inputs at preferential tariffs, so as to ensure they remain competitive, especially in globalized industries like the automotive business.

Thus, the majority of PROSEC Automotive inputs can be imported duty free.

**TABLE 12. PROSEC AUTOMOTIVE TARIFF STRUCTURE**

Import Duty (%)	Number of tariff codes
Exempt	497
3	109
5	22
10	1
<b>Total</b>	<b>629</b>

*Source: ProMéxico, based on data provided by the Integral System of Foreign Trade Information (SIICEX), the decree published in the Official Gazette on June 30, 2007 and modifications up to April 4, 2016*

However, in cases where PROSEC does not solve their needs, companies can resort to the Eighth Rule mechanism for the automotive and auto parts sectors, which gives them access to a 0% tariff rate (tariff code 9802.00.19), provided they are registered PROSEC Automotive companies and their imports:

- Help diversify supply sources and maintain levels of competitiveness.
- Are intended for new investment projects.
- Fill a gap or cover a shortfall in the domestic supply chain.

### *Automotive decree*

A decree to “foster the competitiveness of the terminal automotive industry and the development of the domestic automotive market” was published in the Official Gazette on December 31, 2003 with a view to promoting investment in the production of light vehicles in Mexico by offering registered manufacturers the following benefits:

- The status of “manufacturer” for purposes of the automotive bonded warehousing and other provisions of the Customs Law.
- The option to import vehicles in their segment at an *ad-valorem* zero rate under the tariff-rate quota, up to an annual volume equivalent to 10% of the previous year’s production levels.
- The automatic status of “manufacturer” under the Sectorial Promotion Program for the Automotive and Auto Parts Industry (PROSEC Automotive).

The decree stipulates three registration criteria in order to gain access to these benefits:

**TABLE 13. AUTOMOTIVE DECREE**

	Article 3	Article 4	Article 7
Registration Criteria	Light vehicle manufacturers established in Mexico that have invested at least 100 million dollars in fixed assets and that produce at least 50,000 vehicles a year. (Article 3)	Companies that are or will be engaged in manufacturing, assembly or armoring processes that increase the vehicle's value by 50%. (Article 4)	Companies that are still in the process of meeting the annual production volumes set forth in Article 3, but that have met the rest of the requirements stipulated in said article. (Article 7)
Participating Companies	General Motors Chrysler Ford Nissan-Renault Volkswagen Honda Toyota	BMW	None

*Source: ProMéxico, based on information from the Ministry of Economy*

***Eighth Rule***

This mechanism is linked to the PROSEC Automotive programs and allows companies to import materials, inputs, parts and components under tariff code 9802.00.19 of the Mexican Import and Export Tariff (TIGIE) at a zero rate, provided the provisions of the Eighth Rule of the applicable complementary regulations have been met.

***Manufacturing Industry, Maquila and Export Services***

INMEX simplifies the requirements and procedures to the maquila regime for companies that already have a structured trade plan. It allows to temporarily import goods or services used in industrial processes whose purpose is the manufacture, processing or repair of imported goods of foreign origin.

***Import tax refunds for exporters***

Under this mechanism, exporters can claim refunds on the general import tax paid on goods incorporated into export merchandise and merchandise that is returned in the same state or that has been repaired or altered in some way.

## 5.2 INTERNATIONAL STANDARDS AND CERTIFICATIONS

There are two international regulatory bodies in the automotive industry that issue international vehicle manufacturing guidelines, standards and certifications: the UNECE World Forum for the Harmonization of Vehicle Regulations (WP.29) and the WTO. The former was established by the European Union, while the latter regulates imports of vehicles by the United States together with the US Department of Transportation.

The quality standards regarding on safety and emissions that must be met by manufacturers on the domestic market are set out in the following standards:

Security for new light vehicles	Vehicle emissions
NOM-194-SCFI-2015	NOM_042_SEMARNAT_2003 NOM_044_SEMARNAT_2006 NOM-076-SEMARNAT-1995
Noise	Carbon dioxide emissions
NOM-079-SEMARNAT-1994 NOM-082-SEMARNAT-1994	NOM-163-SEMARNAT-ENER-SCFI-2013

These standards are in line with international regulations. It is estimated that applying the technical regulations of CO<sub>2</sub> emissions in Mexico, on an equivalent basis for the period from 2013 to 2032, gasoline consumption will be reduced by 112.8 billion liters and the emission of 265 million tons of CO<sub>2</sub> will be avoided. With respect to local pollutants, it is estimated that during the same period the emission of 546,354 tons of nitrogen oxides and 88,360 tons of sulfur oxides will be prevented. These results will help to prevent diseases and deaths, translating in savings of 26.8 billion pesos in health services.

### *European Union (WP. 29)*

The WP.29 was established on June 6, 1952 within the framework of the Inland Transportation Committee, by resolution number 45 issued by the Highway Transportation Subcommittee (SC.1) of the United Nations Economic Commission for Europe (UNECE).

WP.29 meetings are public and can be attended and observed by any government or interested party.

The official procedure for participating in WP.29 meetings and activities is very simple. All the interested country or regional economic integration organization has to do is send a letter to this effect signed by a competent authority to the WP.29 secretariat. Mexico keeps up to date with regulations issued by the WP.29 and began incorporating the minimum vehicle safety standards it recommends into its vehicles in 2011.

The WP.29 normally meets three times a year, while work groups of subsidiary experts meet twice a year.

The forum issues standards in the following areas:

- Active safety of vehicles and their components (accident prevention)
- Passive safety of vehicles and their components (collision resistance)

- Environmental considerations
- General safety considerations
- Special technical considerations

*United States (US Department of Transportation and WTO)*

Guidelines governing vehicle imports to the United States are issued by the US Department of Transportation, which has a list of safety regulations and standards for vehicles in general.

One example of a measure that has affected Mexico's automotive manufacturing industry and its exports was President Barack Obama's announcement back in July 2011 that the United States government and 13 light vehicle producers that currently account for 90% of all vehicles sold in the United States (Ford, GM, Chrysler, BMW, Honda, Hyundai, Jaguar/Land Rover, Kia, Mazda, Mitsubishi, Nissan, Toyota and Volvo) had reached an agreement to increase the fuel economy of their vehicles to 35.5 miles per gallon (mpg) in the 2012-2016 period, rising to 54.5 mpg by 2025. This implies a reduction of 1.7 trillion dollars in fuel costs—an average of 8,000 dollars per vehicle by 2025.

The measure is part of an agreement between carmakers to invest in the research and development of new vehicles and clean technologies. According to Car and Driver magazine, the new environmental regulations could put Japanese carmakers like Toyota, Honda and Nissan, and the Korean-based Hyundai and Kia at an advantage, because they need to make substantially fewer improvements to their vehicles compared to their competitors in order to comply.

Ford will have to improve the fuel economy of its cars by 22.4% and General Motors by 24.1%. Chrysler faces an even tougher challenge of increasing the fuel economy of its vehicles by 25.3%, but its alliance with Fiat (which currently holds a 53.5% stake in Chrysler) should facilitate matters.

The agreement caused concern in Mexico due to the infrastructure modifications it entailed and its potential impact on the production of new vehicles. As a benefit, Mexico was offered the chance to take the lead as a producer of environmentally—friendly vehicles. Certain manufacturers have taken advantage of this situation, like Lincoln, which produces its MKZ models in Mexico, Ford, whose Fusion hybrids are Mexican made and Fiat, which manufactures its 500e electric model here.

The World Trade Organization's (WTO) Technical Barriers to Trade Agreements defines the characteristics of products and/or related production processes and methods, including applicable administrative provisions of mandatory compliance. These can also include requirements concerning terminology, symbols, packaging, marking or labeling applicable to a product, process or production method, or address these exclusively. The principles the WTO upholds are:

- Most-favored-nation treatment. The technical regulations state that WTO members will treat products imported from their WTO trading partners the same as they would treat similar products from any other country.
- National treatment. The technical regulations state that WTO members will treat products imported from any WTO trading partner the same as they would treat similar products of domestic origin.

**CHAPTER 6**



# COMPETITIVE ADVANTAGES

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## *Infrastructure*

Mexico has excellent communications infrastructure. Extensive highway and rail systems connect the country internally, with the United States to the north, Guatemala and Belize to the south, its Pacific ports in the west with the Gulf of Mexico in the east and the Caribbean in the Atlantic.

Mexico has:

- 76 airports (63 international and 13 national)
- 117 ports (69 deep water and 48 cabotage)
- 27,000 kilometers of railroads
- Over 378,000 kilometers of highways

## *Manufacturing costs*

Compared with the United States, Mexico offered reductions of 12.3% in manufacturing costs of auto parts, 16.3% in metal components, 9.8% in precision components and 15.2% in plastics supplies for the industry.

## *Low duties*

Mexico ranks second in the world in terms of the number of free-trade agreements it is a signatory to —ten to be precise, plus an economic partnership agreement (EPA), giving the country access to markets in 46 countries, including some of the world's largest economies, like the United States, Canada, all 27 member countries of the European Union and Japan. This means Mexico has preferential access to over 1 billion potential consumers representing 64.9% of global GDP.

The export strategies of carmakers with a presence in Mexico are designed to take advantage of the benefits offered by the country's numerous free-trade agreements, especially NAFTA, which makes Mexico an excellent platform for exporting to the United States and other countries, strengthening the industry's already highly competitive position.

Additionally, in 2014 Mexico reduced its average import tariff for all countries from 13% to 7.5%, facilitating access to inputs and final products at competitive prices and helping increase the profitability of companies established in the country.

A free-trade agreement benefits countries that make up a specific trade zone. To determine which goods are subject to preferential customs treatment, rules of origin are used. The following table shows rules of origin for the automotive industry derived from the various free-trade and economic partnership agreements signed by Mexico.

**TABLE 14. AUTOMOTIVE RULES OF ORIGIN, 2015**

Free Trade / Economic Partnership Agreement	
NAFTA	Value of Regional Content (VRC) must be 62.5% for vehicles used to transport 15 or fewer passengers or 60% in the case of vehicles used to transport 16 or more passengers using the net cost method.
European Union	To be conferred “original” status, the value of all the not ordinary materials used to manufacture the product should not exceed 40% of its factory price.
EFTA	To be conferred “original” status, the value of all the materials used to manufacture the product should not exceed 40% of its factory price.
Mercosur	Regional Content Index (RCI) not less than 60% in the case of Brazil and Argentina; not less than 50% in the case of Uruguay; and not less than 30% in the case of Mexico
Pacific Alliance	VCR of at least 35% using the transaction value method; VCR of at least 29% using the net cost method.
Panama	VRC of at least 32% using the transaction value method; VRC of at least 22% using the net cost method.
Bolivia	VRC of at least 40% using the net cost method.
Costa Rica, Nicaragua, Guatemala, Honduras and El Salvador	VRC of at least 50%.
Israel	VRC of 40% using the transaction value method or 30% using the net cost method.
Japan	VRC of at least 65%.

*Source: Compiled by ProMéxico based on information from the Ministry of Economy*

**CONGRUSSION**



# CONCLUSION

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The competitive advantages Mexico has to offer in terms of supply chains, skilled labor, geographical location and preferential access to international markets has established the country as one of the world's leading vehicle producers and exporters.

Furthermore, the maturity and dynamism of the industry has attracted fresh investment, which means it is likely to produce even more vehicles in the near future for sale not just on the domestic market, but for export to the United States and other regions of the world, like Europe and Latin America.

In an international context, Mexico has proven to be a valuable ally in the global business strategies of vehicle manufacturers, as evidenced by the high levels of foreign direct investment in the sector in recent years by companies like Honda, Mazda, Chrysler, General Motors, Kia, Ford, Toyota and Volkswagen, while luxury brands like Mercedes-Benz, Infiniti and BMW have also announced plans to invest in the country's auto industry in the near future, illustrating international recognition of its competitive workforce and capacities.

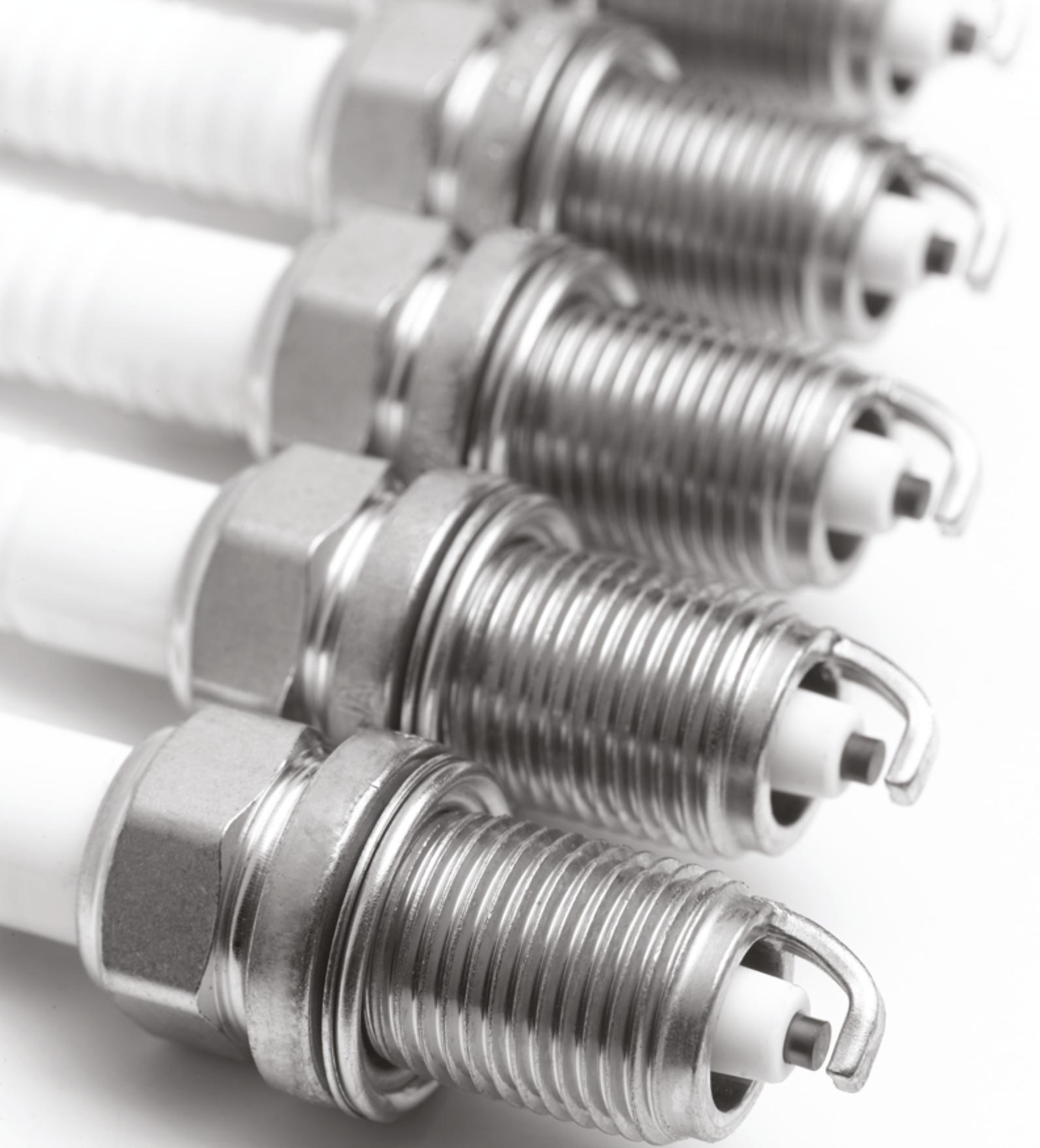
Mexico's automotive and auto parts industries are in a growth stage, even in today's difficult international environment where competition is rife and the development of new technologies constantly forces manufacturers to revise their processes. Nonetheless, many international experts predict it won't be long before Mexico is ranked the world's sixth-largest vehicle producer and third-largest exporter of light vehicles, surpassing countries like Brazil, Korea and India in terms of output.

The Mexican auto industry of today is a more mature one that conducts research and development and even has its own brands. It will be especially interesting to see if these Mexican carmakers can strengthen their presence on the domestic and international markets and develop their technological potential to the full, positioning the industry as a leading actor in all links of the value chain.

Faced with a scenario of competitive growth, the Mexican auto industry has stepped up efforts to develop Tier 2 and Tier 3 suppliers in the terminal sector. Like comparable industries, specifically that of Eastern Europe, Mexico has opted for highly specialized manufacturing processes and components as a means of attracting projects with higher added value that require design, research and development activities.

But if the domestic industry is to continue to pass milestones, it needs a reliable supply of highly qualified talent to meet the stringent quality standards demanded by today's increasingly complex, specialized manufacturing processes and components, not to mention innovation, design and development capacities on a par with a global industry as progressive as the automotive business—all of which will require cooperation and coordination between corporations, educational and government institutions.

With maturity has come international recognition, consolidating Mexico as a major vehicle producer and exporter capable of addressing every new challenge that crosses its path in a complex, highly contested market, and putting it well on the way to becoming a global leader in innovation and the design of vehicles and auto parts in the long term.



ANNEX



## LIST OF T1 SUPPLY CAPABILITIES IN MEXICO

### AGUASCALIENTES

Aisin Seiki	Manufacture of auto parts (door frames)
CalsonicKansei Corp.	Frame components Electronic components for interiors Exhaust devices Resin parts Air-conditioning systems
Gestamp	Body parts
Jatco	Continuously variable transmissions (CVT)
Mahle GmbH	Camshaft bushing
Robert Bosh GmbH	Brakes
Sensata Technologies	Powerdrive and actuator sensors
Sumitomo Electric Industries Ltd.	Auto parts Harnesses Services
TRW Automotive Inc.	Safety belts
Valeo SA	Thermal systems

### BAJA CALIFORNIA

Infineon Technologies AG	Representatives offices
Robert Bosh GmbH	Tools
Sensata Technologies	Powerdrive and actuator sensors
Trelleborg Automotive	Sealants

### CHIHUAHUA

BorgWarner Inc.	Engine parts
Cummins Inc.	Automotive parts
Delphi Holding LLP	Auto industry components
Federal-Mogul Corp.	Friction systems Lighting systems Windshield wipers
Infineon Technologies AG	Representatives offices
Inteva Products	Interior systems
Johnson Controls	Car seats, roof, door and instrument panel systems Heating equipment, controls and services, ventilation, air-conditioning, refrigeration and safety systems
Lear Corp.	Harnesses Seat upholstery Car seats
Leoni AG	Cables
Magneti Marelli S.p.A.	Lighting
Robert Bosh GmbH	Automotive electronics
TRW Automotive Inc.	Steering wheels Air bags
Valeo SA	Windshield wiper systems
Visteon Corp.	Air-conditioning Electronics
Yazaki Corp.	Plastic connectors for the automotive industry Manufacture of harnesses
ZF Friedrichshafen	Production plant

## CIUDAD DE MÉXICO

BASF SE	Catalyzers Engineered plastics and polyurethane Capping, catalyzers, engineered plastics, polyurethane products
Bayer MaterialScience	Sales offices
Continental	Tires
Cooper-Standard Automotive	Window guides Trunk seals Door seals Window seals
Cummins Inc.	Diesel engines
Dow Automotive	Sales
Eberspaecher Holding GmbH	Air-conditioning equipment and spare parts
Faurecia	Car seats
Federal-Mogul Corp.	Friction systems Sealants and protection systems Spark plugs Ignition systems
GKN Driveline	Traction shafts Constant speed shafts
Goodyear Tire & Rubber Co.	Assembly services
Honeywell Transportation Systems	Sparkplug cables
Infineon Technologies AG	Micro-controllers Information technologies
JTEKT Corp.	Sales base
Lear Corp.	Automotive interiors
Robert Bosh GmbH	Industrial automation
Schaeffler Group	Manufacture of components for the spare parts market Clutches and accessories Transmission belts and hydraulic components Valve elevator elements Wheel bearings
Trelleborg Automotive	Sealants
Valeo SA	Services
Visteon Corp.	Air-conditioning
Webasto AG	Sunroofs, wheels and SUV accessories
ZF Friedrichshafen	Services

## COAHUILA

BorgWarner Inc.	Engine parts
Cooper-Standard Automotive	Hoses Sensors Thermostats Oil pipes Gasoline pipes Nylon pipes Metal pipes Valves PVC valves Hose assembly Thermostats Suspension components Trunk seals Door seals Window seals

Denso Corp	Hoses and pipes for automotive air-conditioning equipment
Faurecia	Car seats Interior systems
Grupo Antolin	Interiors Roofs, doors and seats
IAC	Components for interiors
Johnson Controls	Car seats, roof, door and instrument panel systems
Linamar Corp.	Cylinder block components Engine components Transmission components
Magna International	Chassis Driver controls Handles Doors Safety systems Sales systems Interiors Powerdrive systems Seats
Magneti Marelli S.p.A.	Suspension systems
Mahle GmbH	Base bearings Connecting rod bearings Engine bearings Engine pistons Connecting rods for diesel engines Connecting rods for gasoline engines Diesel engine pistons
Martinrea International	Fuel tanks, brake systems, delta pressure tubes, AC lines Stamping and assembly of large and medium parts Metal stamping and welding
Plastic Omnium Co.	Plastic components for fuel and emission-reduction systems
Takata Corp.	Air bags and safety belts Air bags
Tower International	Parts and components for light vehicles
Toyota Boshoku Corp	Seats and upholstery Roofs and upholstery
ZF Friedrichshafen	Production plant
<b>COLIMA</b>	
Yazaki Corp.	Manufacture of electrical and electronic equipment and parts
<b>DURANGO</b>	
Leoni AG	Cabling systems
Linamar Corp.	Precision engine, transmission and assembly components
Yazaki Corp.	Manufacture of electronic components
<b>ESTADO DE MÉXICO</b>	
Autoliv Inc.	Safety systems assembly
Bayer MaterialScience	Super-absorbent polymers
CIE Automotive S.A.	Aluminum injection and machining
Cooper-Standard Automotive	Seals
Dana Holding Corp.	Light axles

Du Pont	Paint
Federal-Mogul Corp.	Sealants and protection systems Aftermarket
Freescale Semiconductor Inc.	Sensors Processers
Gestamp	Body parts
Hella KGaA Hueck & Co.	Cooling equipment Fascia
Hitachi Automotive Systems Ltd.	Automotive water pumps Ignition systems
Honeywell Transportation Systems	Additives Antifreeze Spark plugs Sparkplug cables Oil filters Air filters Fuel filters Brake fluid Contact points Disk and drum brakes Master cylinders Wheel cylinders Rotors Drums
IAC	Components for interiors
Johnson Controls	Batteries and filters
Koito Manufacturing Ltd.	Lighting systems (headlights)
Magna International	Chassis Driver controls Engineering, product development and sales Handles Doors Safety systems Sales systems Exteriors Interiors Auto parts
Magneti Marelli S.p.A.	Electronic systems
Mahle GmbH	Engine pistons Trust washers Piston rings Bearings Gasoline engine pistons
NTN Corp.	Bearings
Plastic Omnium Co.	Plastic components
Robert Bosh GmbH	Brakes Electric products
TI Automotive Ltd.	Diesel injection pipes Fuel system pipes
TRW Automotive Inc.	Heavy equipment steering
Valeo SA	Air-conditioning units Locks Steering columns Steering column locking devices Trunk struts Door handle struts
ZF Friedrichshafen	Production plant

## GUANAJUATO

Akebono	Brake systems
American Axle & Manufacturing	Chassis system components Power plant components Metal products Drivetrain systems Vehicle architecture
Autoneum Management AG	Acoustic and thermal automotive components
BorgWarner Inc.	Engine parts
CIE Automotive S.A.	Manufacture of automotive components Automotive machining Painting and stamping
Continental	Air bags Dash clusters Wheels Pressure and temperature sensors ABS brake sensors Anti-lock electronic brake systems Instrument panels Automobile tachometer Assembled printed circuit board Radiofrequency transmitter to activate measuring devices Voltmeters
F-Tech Inc.	Assembly, welding, painting of suspension bearings and stamping
Faurecia	Emission-control technologies
Flex-N-Gate Corp.	Stamping of metal parts, chromium plating, painting and mechanical assembly
GKN Driveline	Axles
Grupo Antolin	Trays
Hella KGaA Hueck & Co.	Electric and electronic components Headlights
Kautex Textron GmbH	Fuel tanks
KSPG AG	Engine pistons
Lear Corp.	Automotive interiors
Leopold Kostal GmbH	Parts and spare parts, mainly parts for steering column switches, alarm centers, tripping devices and switches
Magna International	Chassis Exteriors
Martinrea International	Stamping and fuel systems assembly
Mitsuba Corp.	Components Windshield wipers Window cleaners Starter engines
Nissin Kogyo Co.	Brake systems
Omron	Interior lighting systems
Plastic Omnium Co.	Components for Exteriors
Schaeffler Group	Manufacture of components for the spare parts market
Showa Corp.	Steering systems
Webasto AG	Sunroofs, wheels and SUV accessories

## HIDALGO

Mitsuba Corp.	Door mirrors Lamps
Lear Corp.	Automotive parts

Magna International	Powerdrive electrification systems Driver assistance systems Powerdrive systems Actuators Roof consoles Interior and exterior mirrors Handles Electronic systems
Mahle GmbH	Piston skirts Air filters
Mitsuba Corp.	Windshield wipers Roof engines Starter engines Window engines Welding of components
Nemak	Cylinder heads Pneumatic couplings Monoblocs Clamps
NSK Ltd	Technical area Maintenance products Automotive products Lineal products
Takata Corp.	R&D, engineering and testing Electronics and steering wheels Safety belts
Trelleborg Automotive	Tires and wheels
TRW Automotive Inc.	Friction materials
Visteon Corp.	Lighting
<b>JALISCO</b>	
BorgWarner Inc.	Engine parts
Continental	Brakes Hoses Automotive fuel (gasoline) gauges Mechanical air pressure gauges Electronic control modules Electronic control modules for air bags Electronic fuel sensor module Electronic fuel sensor Transmission-transmitter modules Window opening modules Odometers Odometers for automobiles Radio frequency receptors Digital clock for automobiles
Cummins Inc.	Hydraulic and diesel engine water, air and fuel filters Admission systems Exhaust systems
Draexlmaier Group	Miscellaneous auto parts
Freescale Semiconductor Inc.	Energy and analogical systems management Digital signal processors and controllers Sensors Micro-controllers Sensors Tools and software
Hella KGaA Hueck & Co.	Headlights
Infineon Technologies AG	Representatives offices ESD & EMI
Johnson Controls	Heating equipment, controls and services, ventilation, air-conditioning, refrigeration and safety systems
Robert Bosh GmbH	Brakes

Takata Corp.	Safety belts
ZF Friedrichshafen	Production plant Services
<b>MORELOS</b>	
BorgWarner Inc.	Engine parts
<b>NUEVO LEÓN</b>	
Aisin Seiki	Manufacture of auto parts (doors)
Bayer MaterialScience	Polycarbonate sheets
Denso Corp	Evaporator leak checks Fuel and air modules Air-conditioning control panels Fuel senders Wheel speed sensors Control valves
Dura Automotive Systems Inc	Roof arches Air bags Security stamping Brake impellers
Honeywell Transportation Systems	Heat interchangers Rubber parts Die-cast parts Engine struts Transmission struts Diesel engine turbochargers
IAC	Manufacture of Ford panels and doors
Johnson Controls	Fuels, diluents, emulsions and additives Batteries and filters
Yazaki Corp.	Manufacture and sale of automotive harnesses, components and instruments Automotive cables Services
<b>PUEBLA</b>	
Benteler Automobiltechnik GmbH	Anti-intrusion bars Frames Sub-frames Control arms Crankcases Exhaust pipes Fenders Rear axles Transverse mufflers Structures Reinforcements Fender reinforcements Door reinforcements Engine struts Instrument panel struts Fuel tank struts Front and rear suspensions Exhaust pipes
Brose Fahrzeugteile GmbH	Seat adjusters
Continental	Stereo adapter Antenna Automobile antennae Audio devices for automobiles with AM/FM radios, CD and digital video players Dash assembly with mask and goggles Locking devices Data readers Pressure gauges Automotive temperature gauges
Draexlmaier Group	Interior parts
Faurecia	Car seats Interior systems

Federal-Mogul Corp.	Steering and suspension systems Pistons Bearings , engine parts
Flex-N-Gate Corp.	Stamping of small parts and mechanical assembly
Gestamp	Body parts
Grupo Antolin	Roofs, doors and seats
IAC	Components for interiors
Infineon Technologies AG	Automotive system
Inteva Products	Sunroofs
Johnson Controls	Car seats, truck seats, headrests, emblems, running boards, car interiors and door panels Corporate offices, automobile seats and interiors
Kautex Textron GmbH	Fuel tanks
Lear Corp.	Automotive parts
Magna International	Chassis
Mahle GmbH	Engine parts
Plastic Omnium Co.	Components for exteriors Plastic components for fuel and emission-reduction systems
Samvardhana Motherson Group	Interior and exterior modules
Schaeffler Group	Clutch covers, disks and components
SKF Automotive Division	Seals and bearings
Webasto AG	Sunroofs, wheels and SUV accessories
<b>QUERÉTARO</b>	
Autoliv Inc.	Air bags Electronic equipment
Brose Fahrzeugteile GmbH	Locks Window openers
Clarion Co.	Integrated on-board entertainment systems
Dana Holding Corp.	Driveshaft components Driveshafts Output shafts Front and rear axle shafts
Dura Automotive Systems Inc	Heavy trucks Door frames Windows
Faurecia	Emission-control technologies
F-Tech Inc.	Stamping
Hitachi Automotive Systems Ltd.	Suspensions
IAC	Components for interiors
Leopold Kostal GmbH	Electric and electronic components
Mahle GmbH	Transmission bushing
Martinrea International	High-pressure die-casting and machining of engines and transmission components
Michelin Group	Tires
Mitsubishi Electric Corp.	Alternators and starter engines
Nexteer Automotive	Transmissions
TRW Automotive Inc.	Air bags Automotive parts
Valeo SA	Clutch compounds Inertia wheels Taillights Headlights Fog lights Rear lights

## QUINTANA ROO

Johnson Controls	Heating equipment, controls and services, ventilation, air-conditioning, refrigeration and safety systems
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## SAN LUIS POTOSÍ

Continental	Tires
Cummins Inc.	Oil filters
Draexlmaier Group	Harnesses
Faurecia	Car seats
Hyundai Dymos	Seats
IOCHPE Maxion SA	Wheels and chassis
JTEKT Corp.	Manufacture of electric steering
Keihin Corp	Manufacture and sale of automotive products
Magna International	Chassis
Robert Bosh GmbH	Brakes
TI Automotive Ltd.	Tanks, pumps and plastic fuel modules
Toyoda Gosei Co.	Safety belts
Valeo SA	Switches Cooling modules Radiators Electric systems Plastic tanks Aluminum pipes Air-conditioning units Powerdrive systems

## SONORA

Autoneum Management AG	Acoustic parts
Benteler Automobiltechnik GmbH	Assembly
Faurecia	Emission-control technologies
Flex-N-Gate Corp.	Assembly welding Metal stamping Plastic injection Bumper reinforcements
Grupo Antolin	Roofs, doors and seats
Hella KGaA Hueck & Co.	Radiators
IAC	Manufacture of acoustic parts
Lear Corp.	Automotive parts
Leoni AG	Cable harnesses
Magna International	Exteriors Chassis
Martinrea International	Stamping, welding and modular chassis assembly
Robert Bosh GmbH	Radio communication accessories
Takata Corp.	Safety belts Manufacture of harnesses

## TAMAULIPAS

Alpine Electronics Inc.	Frequency tuning electronic circuits
Alps Electric	Sales
Autoliv Inc.	Manufacture of electrical and electronic equipment
Brose Fahrzeugteile GmbH	Window regulators Locks Door modules Engines with door system electronics

Dura Automotive Systems Inc	Suspension arms
Inteva Products	Engines and electronics
Johnson Controls	Car seats, roof, door and instrument panel systems
Kongsberg Automotive Holding	Seats
Linamar Corp.	Precision gears and axles
Magna International	Driver controls Handles Doors Safety systems Sales systems
Panasonic Automotive Systems Co.	Manufacture of audio and video equipment
Toyoda Gosei Co.	Safety systems products
TRW Automotive Inc.	Drum brakes Electronics Automotive parts Safety belts
TS Tech Co.	Manufacture of roofs
Valeo SA	Condensers Air coolers for tubes
<b>TLAXCALA</b>	
Johnson Controls	Car seats and padding, metallic paint lines, welding processes for metal frames
<b>OTHER COMPANIES</b>	
Delphi Holding LLP	Auto industry components The company has presence in 20 cities across the country, with more than 50 manufacturing plants

Source: ProMéxico based on information provided by the companies

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