Automotive

Recycling of materials

It consists of the **use of recyclable or recycled materials** in the manufacturing of automobiles to comply with European legislation requiring the reuse and recycling of 95% of the weight of vehicles. The use of recycled materials has many advantages: a **responsible** consumption of natural resources and saving **raw materials** in the manufacture. On one hand, the use of recyclable material protects the buyer from oscillations in the prices of raw materials and allows the reuse of rejected parts, one of the most important sources of expenditure. Furthermore, vehicles have increasingly short shelf lives, so it is recommended that the design is focused on the possibility of later reuse.

ORIGIN OF THE INVESTMENT OPPORTUNITY

ECONOMIC/BUSINESS | **DEMAND** | **REGULATIONS** | **TECHNOLOGY**

This opportunity has been brought about by the EU directive, incorporated into Spanish law in early 2003 by Royal Decree 1383/2002, on 20 December 200, which states that **85% of the weight of out of use vehicles** is to be **reused and recycled** by 2006, and that this percentage would rise to **95% in 2015**.

The main objective of this regulation is to **protect the environment** and prevent toxic fluids, scrap or other contaminants from motor vehicles from dirtying and degrading the environment.

As a result the opportunity arises to **generate recycling materials** that will become part of the structure, traction or internal equipment of new cars, or even have an application in other transport such as aircraft, boats, trains, motorcycles and bicycles. This challenge calls for the participation of all stakeholders.

LOCATION OF THE INVESTMENT OPPORTUNITY IN THE SECTOR VALUE CHAIN

Components industry → **Assembly industry** → **Commercialisation and sales** → **After-sales service and maintenance**

This opportunity involves all stakeholders: on the one hand, **manufacturers of components and the assembly industry** should prioritise the use of recyclable materials or invest in R+D to help the process of recycling materials and, on the other hand, the maintenance services sector, understood as being car scrappers, should increase their capabilities and resources to supply a larger market.

DIFFERENTIATING FACTORS OF THE INVESTMENT OPPORTUNITY

CONSUMER/USER

- Innovation
- Price
- Quality

- Incorporating recyclable and lightweight materials into automobile manufacturing reduces vehicle weight, resulting in a quieter, smoother ride without vibrations.
- The use of recycled materials in vehicle manufacture **protects the buyer** from the oscillations in prices of raw materials.

COMPANY/INNOVATION

- Operations
- Supplies
- New business lines

- Compliance with this standard requires manufacturers of automobiles and components to **innovate** to keep track of recycling from the design phase; **encode parts** individually to allow for their identification; simplify the dismantling of car parts; reduce the number of composite materials used or, alternatively, seek possible recycling; and the use of recyclable materials.

SOCIETY

- Environment
- Well-being
- Safety

- The recycling of a vehicle contributes to **protecting the environment**, since it goes through a process of decontamination and recycling most of its components for reuse in the production of other goods. In this way a more efficient use of natural resources is made and the emission of polluting and/or toxic gases given off by vehicles in disuse is reduced.

INVESTMENT OPPORTUNITY LIFE CYCLE

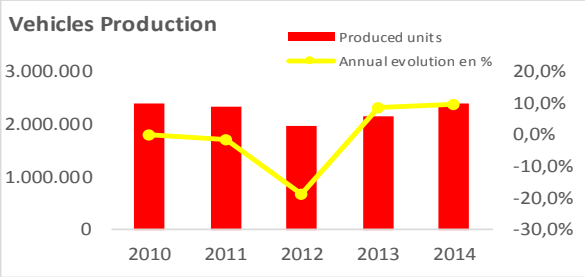
DEVELOPMENT | INTRODUCTION | **GROWTH** | MATURITY

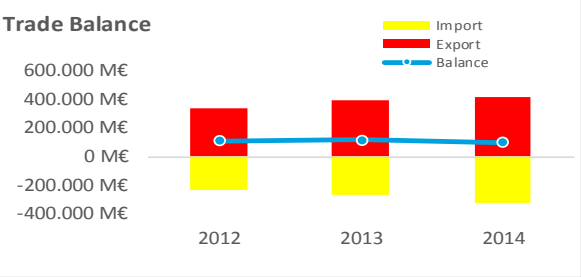
In 2012, Spain achieved a rate of **83% for reuse and recycling of vehicle weight**. If this rate appreciation (the use of the energy content of certain residues) is added, the figure rises to 88.2%.

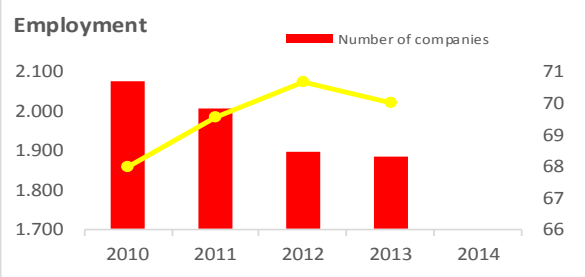
This data show a **marked increase in the percentage of recovery of vehicles**, considering that between 2002 and 2012 it has increased more than **12 percent**. (1)

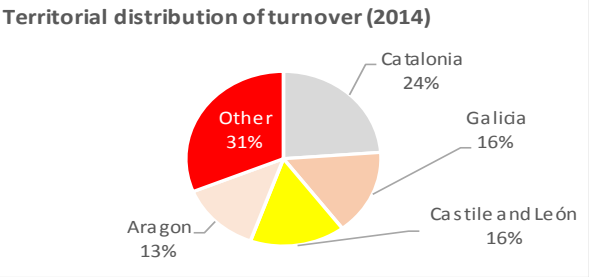
Sources: MAPFRE. Ministry of Industry. Sigrauto. (1) National Association of Automobile & Component Manufacturers (ANFAC).

CHARACTERISTICS OF THE AUTOMOTIVE SECTOR (1)









SUPPLY

TOP 5 COMPETITORS IN SPAIN

#	Company	Net sales	Last available data
1	Ficosa	€968.48 M	2013
2	Carbures	€22.19 M	2013
3	Novelis*	N. avai.	-
4	Alcoa*	N. avai.	-
5	Constellium*	N. avai.	-

*** Data not available in the queried database. SABI.**

DEMAND

GROWTH

- Legislation has promoted the reuse of components and materials such as batteries, cables, glass, brake fluids, oils, filters, coolants, airbags, plastic, scrap metal, tires, textiles and foams. **All the lead, 87% of steel and 82% of the aluminium** produced in our country comes from recycled materials. (2)
- The recycling sector contributes about **2% of Spanish GDP**, turns over more than **5 billion euros** annually and generates more than **125,000** direct and indirect **jobs**. (2)

SUCCESS STORIES

The **Opel ADAM** includes a total of 170 components made from recycled material. **Recycled plastic** is the raw material for the frames of the headlights, the water deflector between the engine bonnet and the screen, and the supports for the bumper. Even the intake manifold is recycled material, which makes it extremely durable, able to withstand temperatures from -40ºC to over 200ºC during recirculation of the exhaust gases. The energy saved with the use of these materials contributes to **30% less $C0_2$ emissions**. Among the advantages of recycled materials are its reaction to vibrations (low risk of breaking) and its resistance to UV rays.

The Spanish manufacturer Seat is certified by the Ministry of Industry which ensures that **all its range is 95% recyclable by weight**, including the reuse of parts, and recovery of materials. Parts of their vehicles such as the wheel arches or lower floor coatings contain **100% recycled material**.
The Ibiza **ECOMOTIVE**, a green version of the brand's flagship model , equipped with a 1.4 TDI, 80 hp engine, with an average consumption of 3.8 litres per 100 kilometres, reduces CO_2 emissions to 100 grams per kilometre, was the first car from the brand to reach that 95% in 2008.

Since 2001, a dedicated team of Ford engineers has been working to incorporate sustainable materials in Ford vehicles. In addition, the team has worked with companies such as Heinz on research into the development of **recyclable materials and compounds** for their vehicles, such as tomato fibres. The company is a founding member of the **Bioplastic Feedstock Alliance**, a support group created with the World Wildlife Fund, Heinz, Unilever and other global partners, to promote the responsible development of **organic-based plastics**. At present, the use of materials as varied as plastic bottles, cotton, kenaf, wheat straw, soy beans and oil has reduced waste and energy consumption.

Sources: (2) Spanish Recovery Federation (FER). MAPFRE. Ministry of Industry.

POSITIVE FACTORS FOR INVESTING IN SPAIN

Favourable factors in Spain for the development of the opportunity

Collaboration between the players involved

The Spanish Association for the environmental treatment of the out of use vehicles (Sigrauto) coordinates and manages the activities resulting from the new legislation in this area. It consists of **associations of the main sectors** involved in the chain of treatment of vehicles at the end of its useful life (manufacturers and importers, car shredders and scrap yards). Through this partnership, agents analyse the problems affecting the treatment of vehicles at the end of its life and try to provide its partners with the **necessary tools** to comply with new environmental obligations related to such treatment.

Authorised Treatment Facilities and shredders

Spain has a network of Authorized Treatment Facilities and shredders responsible for the management of end-of-life vehicles (ELVs) once they are decontaminated, that is larger than any other across the European Union with 1,000 facilities authorised or going through the authorization process.

Ageing national fleet

The number of cars in Spain in 2013 has reached 31 million. The market has grown exponentially in recent years, however 46% of the cars are more than ten years old, which means there is a **need for a renewal of the fleet** and a market for the recycling of vehicle components. Furthermore, incentives for fleet renewal (PIVE 5 & 6, PIMA Aire 3 & 4, PIMA Tierra & PIMA Transporte) have driven vehicle recycling and treatment in recent years. (3)

Social factors and habits

The Spanish population is very **sensitive to incentives** for renewing their vehicles. The number of vehicles treated in authorised centres decreases by around 200,000 units (cars) each year in which there has been no **renewal plan** (Foresee, Renove and 2000E) promoted by the Government.(3)

Favourable factors for the sector in Spain

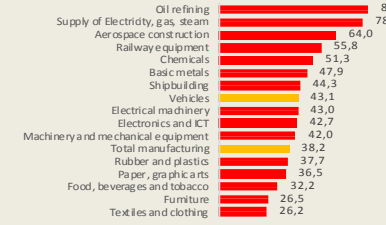
Macroeconomic situation

The **Added Value of automotive sector** in 2013 was 8.382 billion euros, representing 6.73% of the manufacturing sector.
Sector **exports** totalled **39.0495 billion euros**, representing **18.5%** of the exports of the industrial sector. (4)

Labour market

The **average productivity per employee** in the automotive sector is **63,600 euros** per year. Their **average individual remuneration** is **43,100 euros per year**. The **Unit Labour Cost** accounts for **67.8%** of the ratio between the remuneration per employee and the individual productivity (productivity defined as value added per employee). (4)

Remuneration per employee (thousands of €)



Graph created using data from the Sectoral Presentation: automotive sector. April 2015. Ministry of Industry, Energy and Tourism

Incentives

The Spanish government has launched a new set of incentives for the purchase of efficient vehicles, the **PIVE Plan**, which aims to promote a reduction of energy consumption nationally through incentives for the **modernisation** of the fleet of production vehicles (M1) and commercial vehicles (N1) with energy-efficient models, with lower fuel consumption and CO_2 emissions, all under the **2011-2020 Energy Saving and Efficiency Strategy**. The previous seven editions of this programme have seen the replacement of 890,000 old cars with new, cleaner and safer cars. The central government and car manufacturers have each earmarked **890 million euros** for the programme.

R+D+i

There are 390 **innovative companies** in the automotive and aerospace sector and the **percentage** of innovative companies is 39.3%, **spending** a total of 2.610475 billion euros on innovation. (5)

Suppliers, Supplies, Raw materials

An sector with a great tradition in Spain and directly linked to the car industry is that of the **machine tool**, which stands out as one of the most advanced in Europe. It is important to highlight the industries producing materials such as **plastic and steel** that are the raw materials for the construction of vehicles and their components. **Spain is a leading** producer and exporter of these materials. (6)

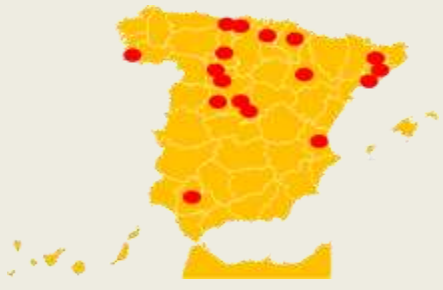
Geographic location

Spain is **within reach of three main regions**: the **European** region, the **Mediterranean** region and the **Atlantic** region. Spain is considered to be the **gateway** between **North Africa and Europe**, and a key **link** to **Latin America**, not only because of its geographical location but also because of its strong historical and cultural ties with the region. In Spain the **Canary Islands** play a key role with regards to **maritime traffic** with **West Africa**.

Technological and research infrastructure

Spain has **17 manufacturing centres** distributed throughout Spain and belonging to **10 different vehicle manufacturers** Most of the **production of family vehicles** has been specialised in mid-range and small vehicles, with Spain being one of the European leaders in this competitive segment. These centres have a high level of **automation and robotics**, with 89 robots per 10,000 workers, positioning the country 5th in Europe. In addition, there are 9 parks and 34 technology centres with projects related to vehicle manufacturing in Spain. (6)

Manufacturing Centres Locations



Graph created using data from the Spanish Automotive Equipment and Components Manufacturers Association (2015).

Transport infrastructure and logistics networks

Spain has the **best high-speed rail network** in Europe and has excellent sea connections to its **46 ports** distributed along the Atlantic and Mediterranean coasts. The agreement signed in 2013 between the Ministry of Public Works and Transport and the Manufacturers Association ANFAC will bring the rail networks together with the automobile manufacturing plants to connect them to the ports with greater importance in the sector and the Spanish border.

Sources: (3) SIGRAUTO (4) Sectoral Presentation: Automotive Sector. (5) Innovation in companies Survey 2013 (NACE 26,27,58-63). (6) ANFAC