



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

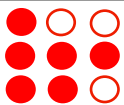
Commercialisation
and sales

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



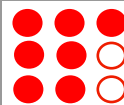
Innovation

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



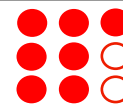
Operations

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

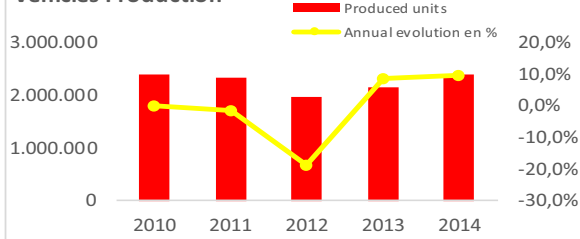
In 2012, Spain achieved a rate of **83% for reuse and recycling of vehicle weight**. If this rate appreciation (the use of the energy content of certain residues) is added, the figure rises to 88.2%.

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⁾

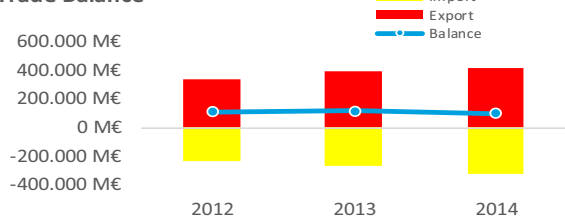
Sources: MAPFRE. Ministry of Industry. Sigrauto. (1) National Association of Automobile & Component Manufacturers (ANFAC).

CHARACTERISTICS OF THE AUTOMOTIVE SECTOR ⁽¹⁾

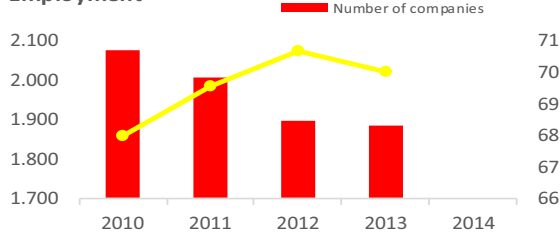
Vehicles Production



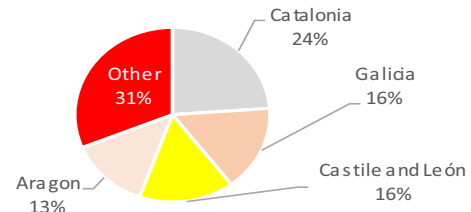
Trade Balance



Employment



Territorial distribution of turnover (2014)



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 -40°C to over 200°C during recirculation of the exhaust gases. The energy saved with the use of these materials contributes to **30% less CO₂ 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 CO₂ 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.