

## EXECUTIVE SUMMARY

### Promoting zero-emission mobility

A great opportunity to decarbonise transport and generate economic activity and employment

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# Introduction

The process of decarbonisation of transport and mobility in Spain is both mandatory and essential, and a decisive commitment is needed to give greater impetus to a set of more sustainable zero-emission mobility modes and services. All this in a context of innovation, digitalisation and greening of the economy and employment in keeping with the objectives set by the European Green Pact and its application in Spain. But also, within a process of just transition in which disappearing employment in the most polluting sectors of transport is offset and exceeded, if possible, by the generation of employment in other sectors, both in the manufacture of vehicles and in the provision of transport services.

This two-fold challenge of decarbonising transport and generating new employment in Spain makes it necessary to give greater impetus to new sustainable mobility policies, in environmental, social and economic terms, in order to meet these objectives. It is therefore necessary to give greater value and visibility to the development potential of these transport sectors in our country.

These transport sectors constitute an endless number of companies that represent a myriad of production sectors and services, both public and private, which are already of great significance in the current Spanish business fabric. These are activities which, due to their great growth potential, should be strongly supported, both in terms of industry and services. In general, we are referring to the manufacture of railways, buses and bicycles, the provision of public and occasional transport services and the new mobility services, such as public bicycle-sharing services and car-sharing, among many others.

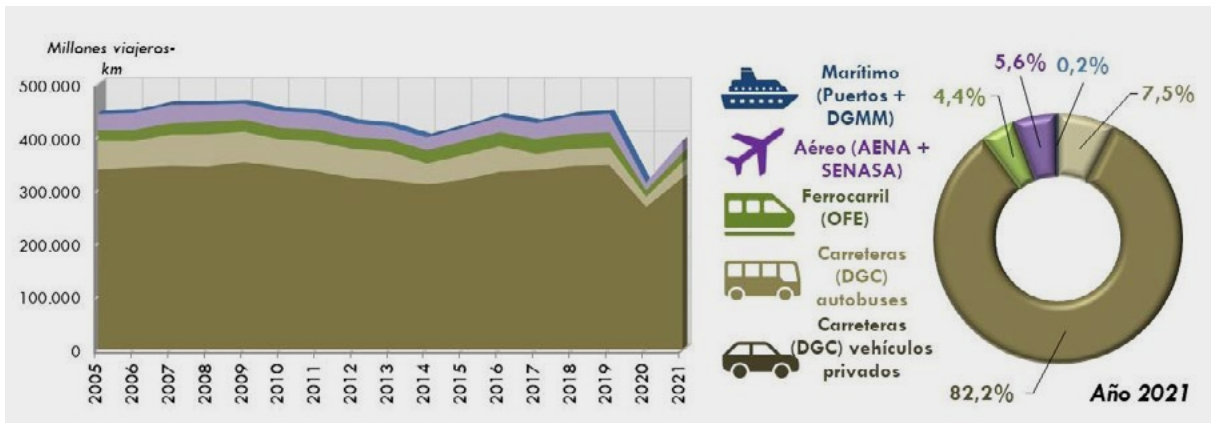




# Modal passenger transport quotas

Private vehicles continue to be the predominant mode of interurban passenger travel, rising from 78.0% of total passenger-km in 2019, before the pandemic, to 85.6% in 2020 and 82.2% in 2021. We are thus seeing a downward trend for the last two years for which we have observatory data, approaching the pre-pandemic figures, although it continues to be clearly dominant.

**Shares of domestic passenger transport modes (millions of passengers-km). 2021 and evolution 2005-2021**



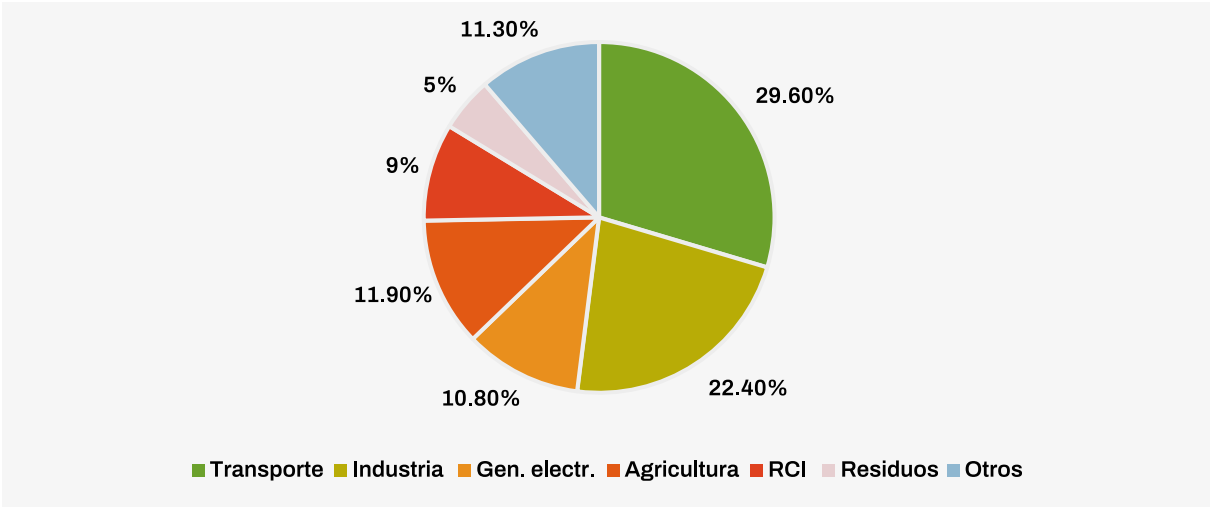
Source: Transport and logistics observatory in Spain. Annual report 2022. Ministry of Transport, Mobility and Urban Agenda 2023.



# Greenhouse gas emissions from transport

As we can see in the following chart, the sector with the greatest weight in the overall figure for greenhouse gas (GG) emissions in 2021 continues to be transport, as in previous years, with a figure of 29.6%; this percentage is similar to the figure for 2019, before the effects of the pandemic on mobility.

Distribution of gross GG emissions by sectors 2021

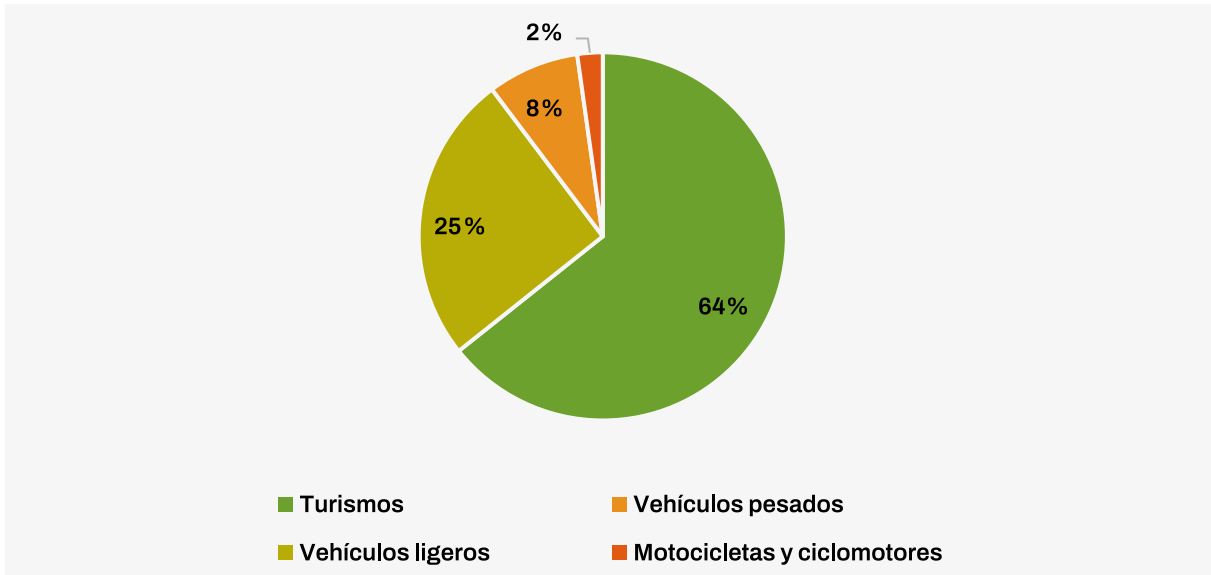


Source: National inventory report on greenhouse gases 1990 -2021 Ministry for the Ecological Transition and the Demographic Challenge. March 2023.

In 2021 transport saw a 15.7% increase in emissions compared to 2020, principally due to road transport, which alone supposes 27.8% of the total GG emissions; this means that the other transport categories represent just the remaining 1.8% (domestic air traffic, rail transport, domestic maritime transport and transport by pipeline). If we look in more detail at road transport, the percentage of private cars accounted for 64.3% in 2021.



### Emissions of CO2-eq in the road transport category by category of vehicles 2021 (kt)



Source: National inventory report on greenhouse gases 1990 -2021 Ministry for the Ecological Transition and the Demographic Challenge. March 2023.



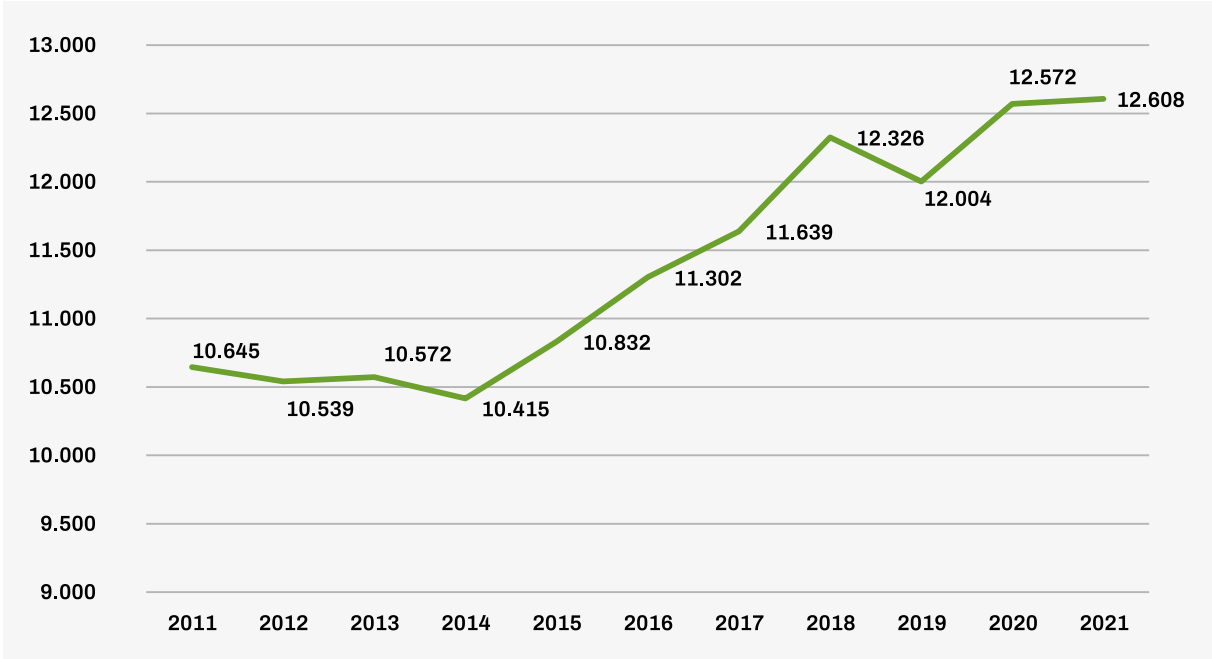


# Employment in the manufacture of sustainable transport

## Manufacture of railways

As we can see in the figures of the National Classification of Economic Activities (*Clasificación Nacional de Actividades Económicas - CNAE*) that correspond to the CNAE 302 of the National Statistics Institute (*Instituto Nacional de Estadística - INE*) which includes the manufacture of locomotives and rolling stock between 2010 and 2021, employment has increased gradually. In percentage terms, we are talking about a 15% increase in just over a decade, which in absolute terms suppose an increase of 1,661 people working in the sector. If we go a little further back, to 10 years earlier, in 2000, there were 7,548 people working in the sector; in other words, in 20 years the number of workers rose by 5,060 people, equivalent to 67%.

Manufacture of locomotives and rolling stock 2010 - 2021



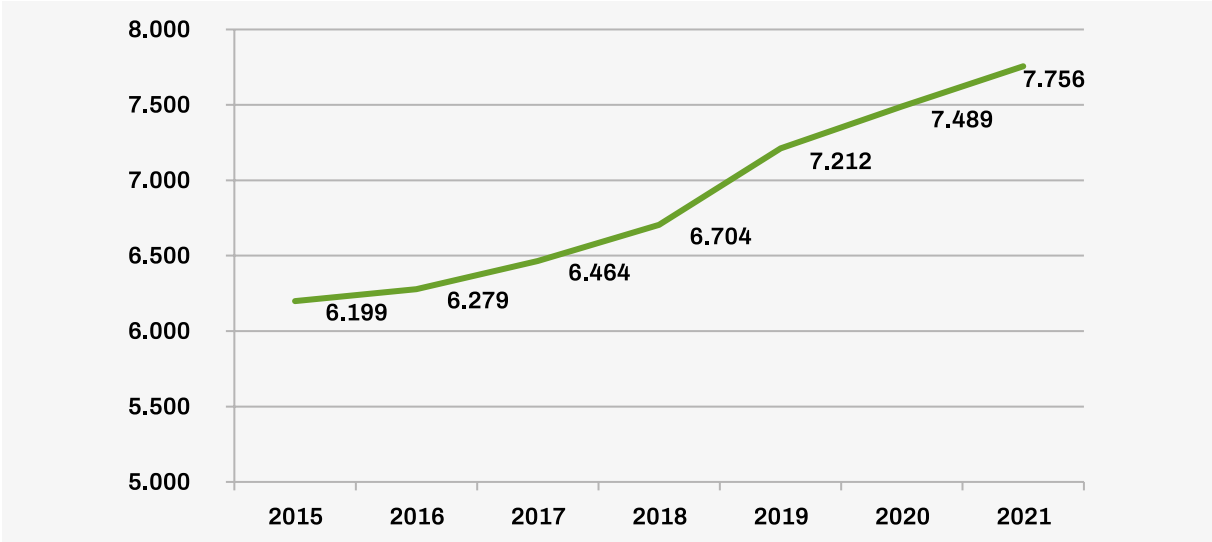
Source: INE. CNAE 302 Manufacture of locomotives and rolling stock.



It is also worth pointing out that these companies, in addition to the manufacture of trains, have other railway-related fields in which they carry out their activity (signalling, infrastructure, electrification, components, engineering, etc.).

Although it is not exclusive to the railway sector, but it does include it, we also have CNAE 3317 on “Repair and maintenance of other transport equipment”, which has also experienced growth that is undoubtedly related to the expansion of the railway sector. There were 6,199 people employed in 2015 and by 2021 that figure had reached 7,756. In other words, a growth of 1,557 jobs representing a 25% increase in five years.

**Repair and maintenance of other transport equipment 2015-2021**



Source: INE. CNAE 3317 Repair and maintenance of other transport equipment.

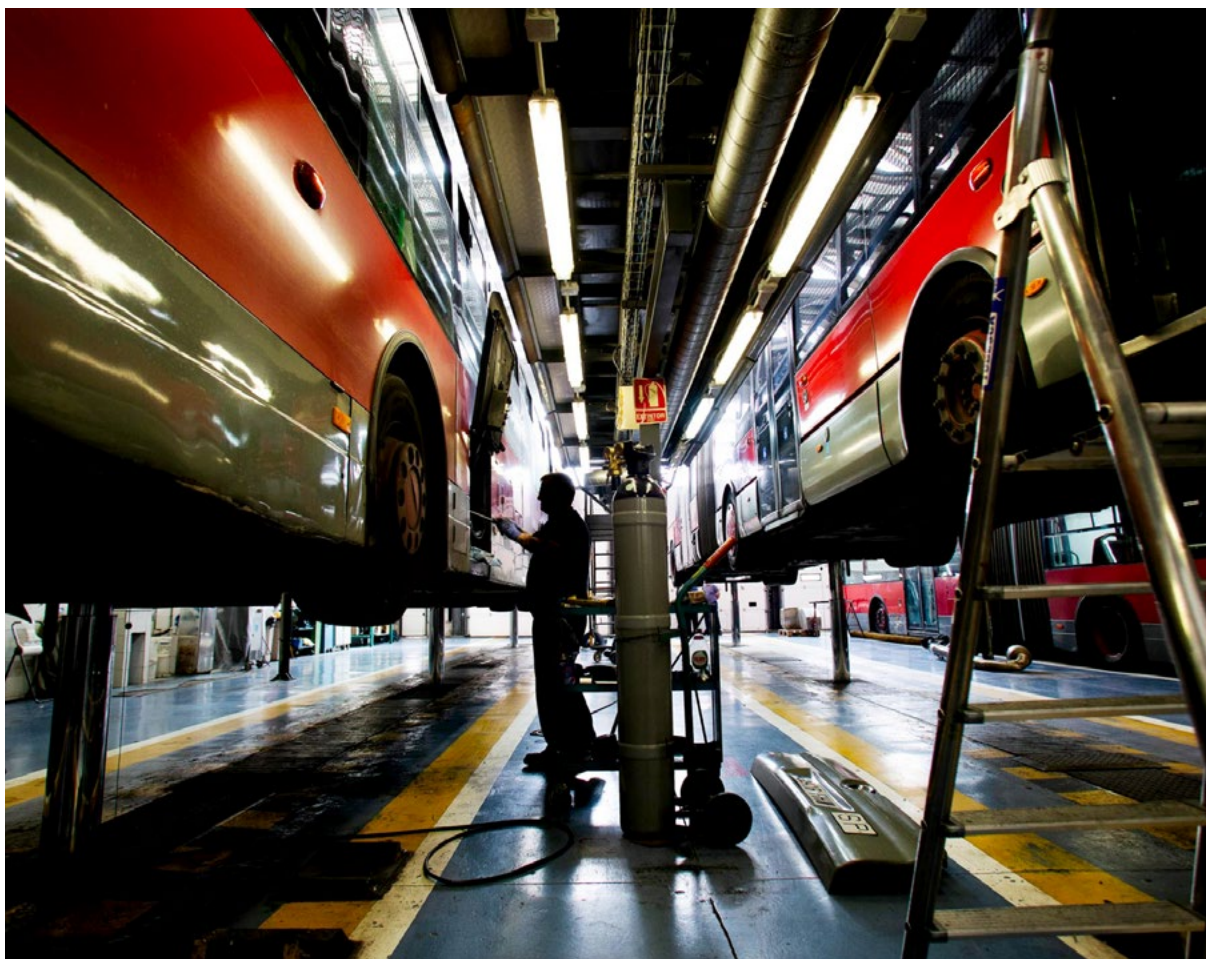


## Manufacture of buses and coaches

Another industry with a strong presence in Spain is the manufacture of buses and coaches. Because it does not have a specific CNAE to identify it, it is difficult for us to put a figure on employment in the industry, because it forms part of the overall group of manufacture of motor vehicles together with cars and other vehicles.

However, using information provided by the different companies in the sector, but also drawing on different news offered by the companies themselves or in the media, we have calculated that the bus manufacturing industry currently employs some 2,790 workers. It is important to emphasise that this figure refers fundamentally to vehicle manufacture and does not include the production of equipment and components necessary for manufacture and replacement parts for buses and coaches.

Meanwhile, in keeping with the electrification of transport, electric buses are increasingly being produced in Spanish factories.

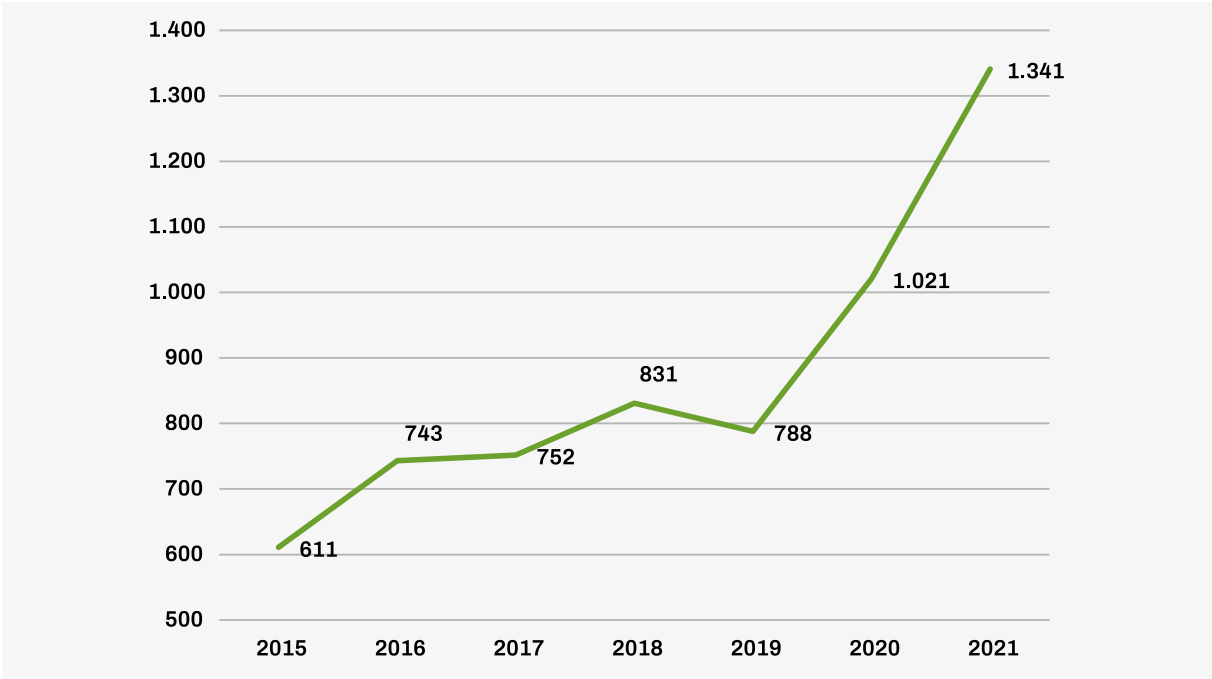


# Manufacture of bicycles

Bicycle use is experiencing a boom, which obviously has a positive influence on the home-grown industry that manufactures them. The CNAE 3092 heading that refers to bicycle manufacture excludes the manufacture of bicycles with an auxiliary motor. In other words, it does not take into account the manufacture of electric bicycles, which is an anomaly that needs to be corrected because this type of bicycle is clearly selling more and therefore being produced more, as indicated by the figures provided by the Spanish Association of Brands and Bicycles (*Asociación de Marcas y Bicicletas de España - AMBE*). In 2022, a total of 236,183 electric bicycles were sold, an increase of 5.7% on the previous year.

In any event, although CNAE 3092 underestimates employment in the sector, the number of jobs increased from 611 workers in 2015 to 1,341 in 2021. This is an increase of 730 workers, with employment more than doubling in this short period of time.

Manufacture of bicycles and vehicles for people with disabilities



Source: INE. CNAE 3092 Manufacture of bicycles and vehicles for people with disabilities.

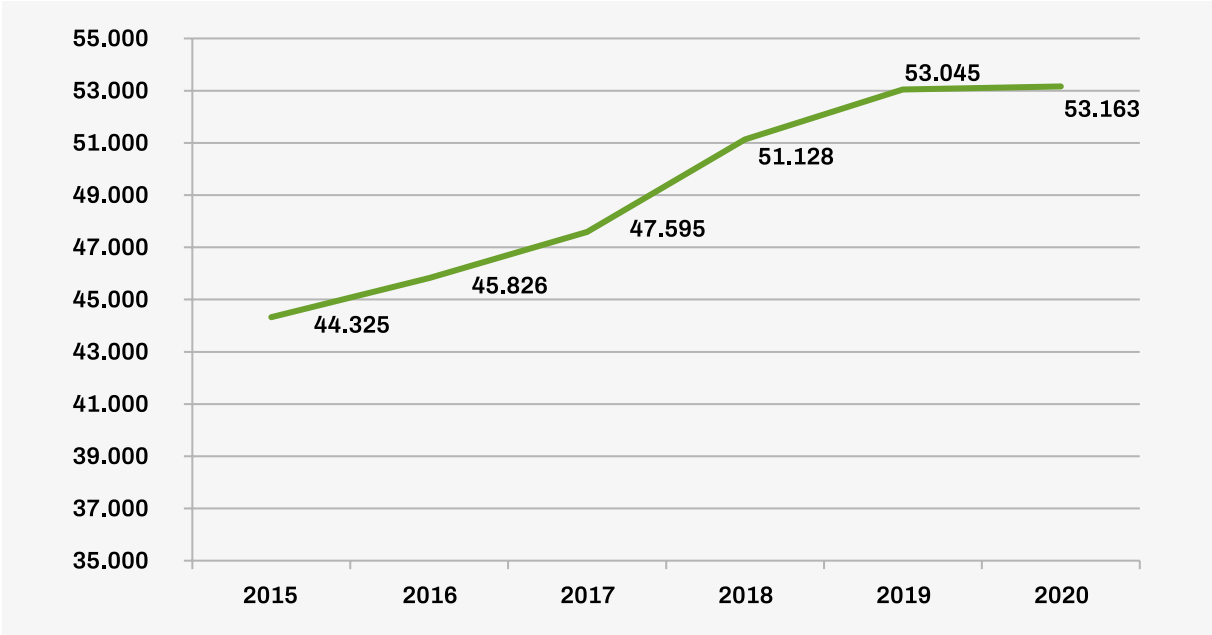
If we look at the bicycle industry as a whole and not just the manufacture of bicycles and components, we can see how big it is, because AMBE provides us with the number of people working in companies in the bicycle industry overall. Companies producing, importing and distributing bicycles employed 10,202 people in 2022. In retail sale and bicycle workshops, the number of workers was 14,254. If we add together both types, the figure for people employed in the bicycle industry is 24,456 people.



# Employment in urban and suburban public transport

Another group of companies we would like to refer to is those that provide public transport services and occasional transport services. Using the CNAE 4931 classification criteria as a starting point, we will look at urban and suburban passenger land transport. This class includes both buses and trains of different types. The evolution in the number of people employed in the five-year period between 2015 and 2020 has been a positive one. To be more specific, it has seen growth of 8,838 workers, which represents a 32% increase.

Employment in urban and suburban passenger land transport



Source: INE: CNAE 4931 Urban and suburban passenger land transport.

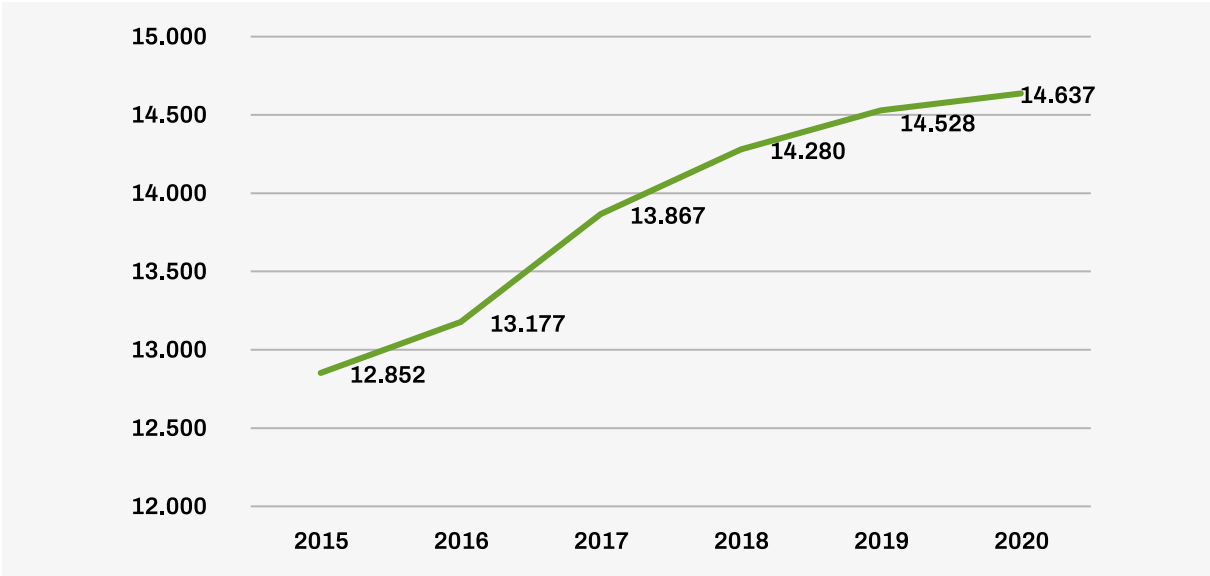




# Employment in interurban passenger transport by rail

The INE provides us with information on personnel employed in another transport category: the CNAE 491 which includes interurban passenger transport by rail. Once again we can see growth in the evolution of employment in the provision of public transport services, with an additional 1,785 jobs between 2015 and 2020, equivalent to a 14% increase.

Interurban passenger transport by rail



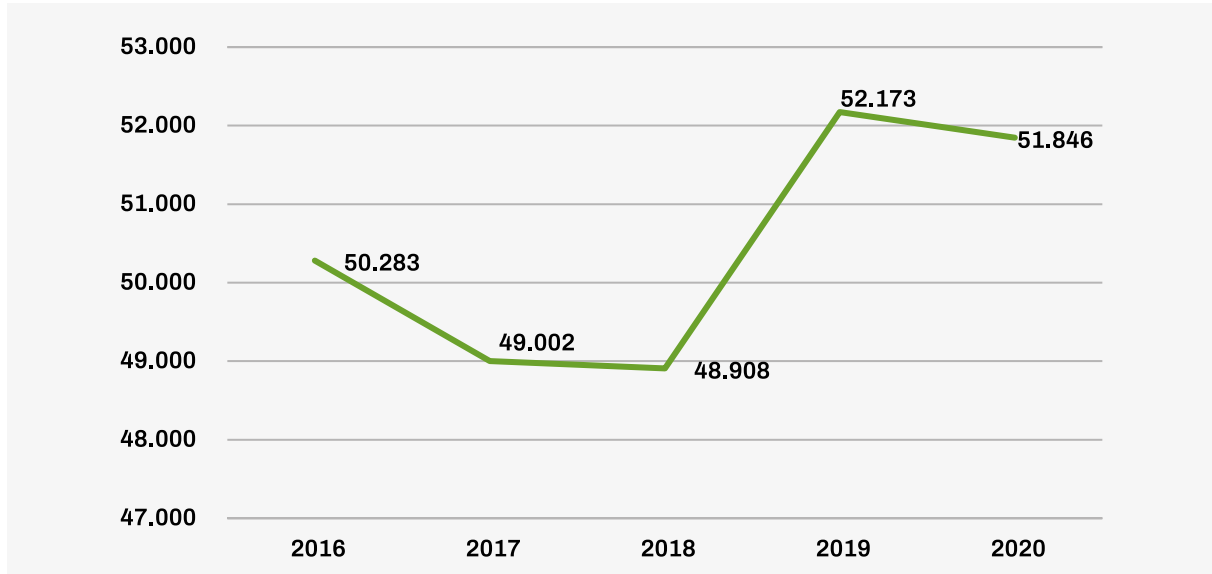
Source: INE: CNAE 491 Interurban passenger transport by rail.

We have other activities related to railways, grouped into the CNAE 5251 “Activities associated with land transport”. This heading is quite varied, and is not exclusive to passenger transport.

The following table shows that the behaviour of employment is very irregular, with constant fluctuation; the most notable feature is the increase in the number of people employed - 3,265 - between 2018 and 2019, the year prior to the pandemic, which saw the highest level of employment.



### Activities associated with land transport



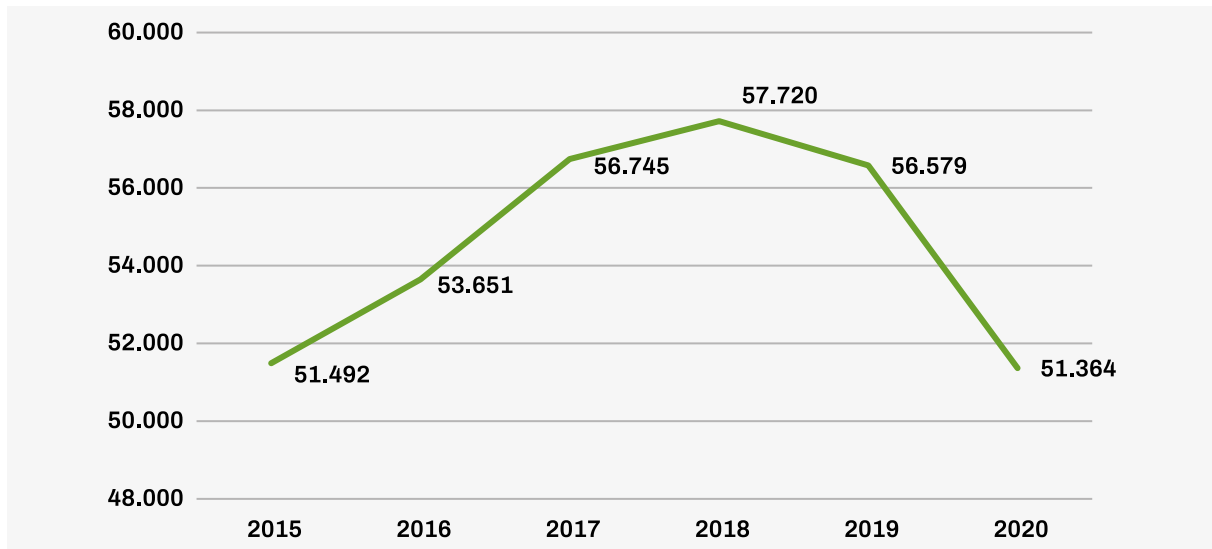
Source: INE: CNAE 5251 Activities associated with land transport.

## Employment in interurban road transport

Another heading referring to public transport, principally by road, although somewhat diverse, is CNAE 4939 “Other types of passenger land transport”. Basically this refers to scheduled interurban bus services and occasional or repeated bus and coach services. This type of transport breaks with the general trend experienced in both manufacture and provision of transport and sustainable mobility services, because in this case, although at the end of the period analysed (2015-2020) employment remained at the same level, actually between the peak year of 2018, with 57,720 people employed, and the last year for which figures are available (2020), employment fell significantly by 6,356 people, a fall of 11%.



### Evolution of other types of passenger land transport 2015 - 2020



Source: INE: CNAE 4939 Other types of passenger land transport (not included in other sections).

According to a survey carried out in October 2020 by the Spanish Confederation of Bus Transport (*Confederación Española de Transporte en Autobús* - CONFEBUS), this decrease was due to the impact of the pandemic. In addition, the number of actively employed people fell in almost all the companies in the sector, with almost a quarter (23%) experiencing a reduction in employment of between 75 and 100%.

However, these effects must be nuanced, as all the indicators (increase in tourism, rising demand, etc.) suggest that this sector has already recovered and that by 2023 there will have been a resurgence in employment.

## Employment in taxis

Unlike the other employment we have extracted from the INE, and with there being a CNAE that corresponds to taxis, specifically the CNAE 4932 "transport by taxi", the INE does not provide employment figures until 2021. The employment figures shown in the statistics for 2021 amount to 79,965 people employed.



# Employment in New sustainable mobility services

In this third group, which covers the whole range of what we have come to call zero-emission mobility, we include what we can call the “New sustainable mobility services”. This is a diverse group made up of a broad array of companies and activities that are relatively new, although many of them are already well established in the market.

Generally, their activity is based on a change of model: from vehicle ownership to vehicle use. In other words, it is no longer a question of owning a vehicle but rather, in general, sharing use between different users.

Meanwhile, their emergence and management is inevitably underpinned by the advent of digitalisation. Information and communication technologies have made this type of service possible.

In any case, restricting ourselves to our task in this section, which is simply to find out the employment generated by zero-emission mobility, it must be said that unlike most of the sectors we have analysed so far, in this case we do not have defined and more or less concrete statistics.

Consequently, by way of example we have focussed on a few services from which we can draw conclusions with regard to the volume of employment they generate, bearing in mind that they only represent a small portion of this wide range of mobility services.



## Employment in public bicycle-sharing services

These are public services for the sharing of bicycles owned by the public authorities, generally local, although they may extend to more than one municipality.

To obtain an approximate determination of the employment generated, we will take as a reference for calculation the company that is currently the largest one providing this type of service in Spain, which is Bicing in the city of Barcelona.

The service, which began operating in 2007, has 7,000 bicycles, 3,000 of which are mechanical and the remaining 4,000 electric; it has now been continuously active for 16 years.

If we move on to the employment generated by this mode of shared transport in Barcelona, we have 15 people employed at Barcelona Serveis Municipals (BSM), the public company that belongs to the Barcelona City Council, which promotes, oversees, plans and manages the service.

The concession holder that actually provides the service is a company called Pedalem. This company's personnel is principally responsible for distributing the bicycles around stations, and mechanics. In total, it employs 160 people. This means that the total figure for direct employment generated by the public bicycle-sharing system in Barcelona is 175 people.

Even in the knowledge that directly extrapolating employment at Bicing to the rest of Spanish systems is merely a simulation exercise and, consequently, cannot be taken as definitive, we do it just to have an approximation of the total employment they can generate. To begin with, we will refer to a report drawn up by the public bicycle Observatory in Spain for 2019. Taking into account that at that time there were 43 operating services with 23,919 bicycles available, Bicing represented 29% of the total.

To calculate the approximate number of direct jobs generated by all the public bicycle-sharing services, we have calculated how much employment is generated per bicycle at Bicing and, subsequently, we extrapolated it to bicycles overall. This operation gives us the figure of 600 people working in Spain as a whole.





## Employment in car-sharing services

The car-sharing service is based on a fleet of vehicles made available to its users and managed by a company. These are cars that are used by several people, with payment for use depending on the time and/or the distance travelled.

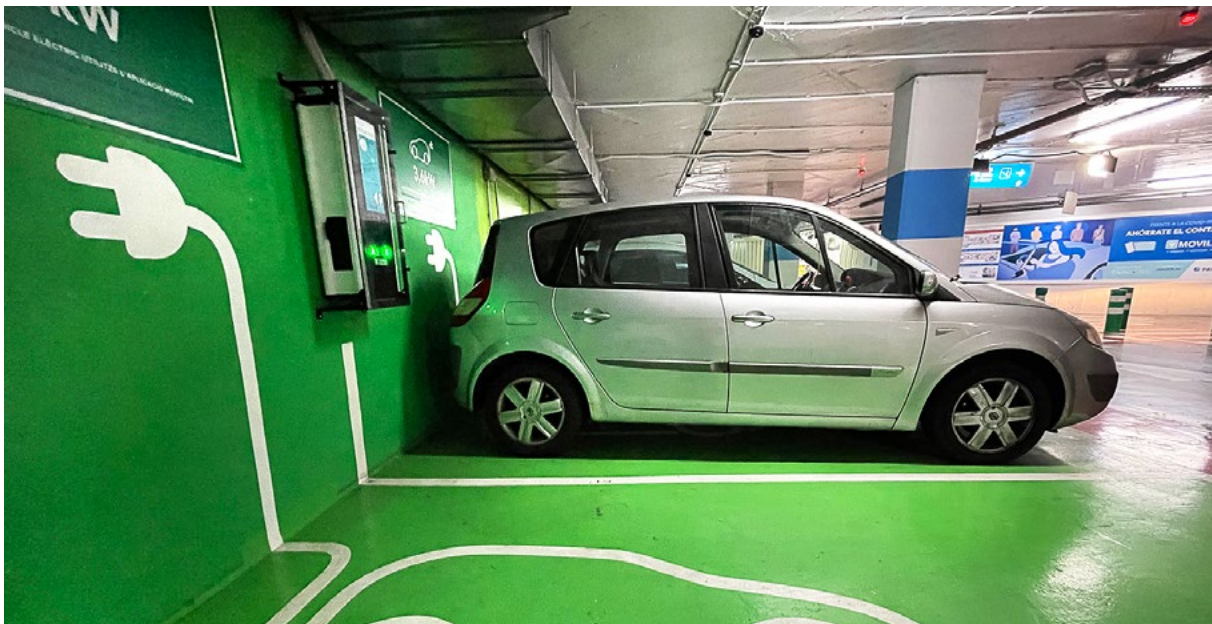
To assess the impact of this type of services, we are going to analyse a specific case, Free2move, which is the first car-sharing company that was set up in Madrid at the end of 2015. The company appeared on the scene with 350 vehicles, all electric, and it was even said at that time that it was the largest fleet of electric vehicles in Spain.

To have an idea of the size and the increasingly significant role of this sector in the mobility system, this car-sharing service company is currently present in 17 cities in 8 European countries, with 13,000 vehicles and 4,000,000 users.

In the case of Spain, the company is only present in Madrid, and currently has 700 vehicles, of which 610 are pure battery electric and 90 plug-in hybrid vehicles.

In terms of employment in Europe as a whole, Free2move employs almost 800 people, with around 60 of these in Spain.

In Spain, according to the metropolitan mobility Observatory, in 2020 there were around twenty car-sharing companies. Taking into account all the car-sharing vehicles, we calculate that Spain has around 4,150 vehicles. In addition, as we know the number of employees of one of the leading car-sharing companies and the number of vehicles in its fleet, if we establish an employment ratio generated per vehicle we can deduce that there are around 360 people directly employed in the car-sharing sector.



## Employment in shared corporate transport

We use this term to refer to the bus service management companies, which manage *a la carte* services according to demand. We are referring specifically to companies that do not have their own fleet of buses, but manage buses owned by third parties.

Corporate transport can serve one company exclusively or be shared by more than one company. They are usually referred to as company transport. This transport model has been in existence for a long time, but now the new feature is that digitalisation has led to the appearance of new technology companies acting as intermediaries between the company that makes the service available to its employees and the transport operator.

One of the companies offering this shared corporate transport service is Busup, which started out in 2015 in Barcelona, initially with four people.

It manages a system of buses in which potential users design the route and the stops according to their requests by means of an online questionnaire in which companies are asked about where their workers live and their working hours.

Busup has its main headquarters in Spain and offices in Portugal, Brazil, Mexico, Peru and the USA. Worldwide, it currently has 120 employees, of whom 50 provide their services in Spain.

In terms of the size of their service, information on the company's website states that they currently have 1,400 active routes, in all the countries where they work, and have 39,800 passengers belonging to 110 different companies. They work with 150 bus operators.



# Total employment in zero-emission sustainable transport

The employment figures we present in this section arise from the data we have compiled, principally published by the INE, although we have also drawn on other sources, mainly company reports. We have also carried out extrapolations for global employment in their sector when this figure was not defined. Given the diversity of sources, the figures we have compiled per sector do not always correspond to the same year, which is why we present them in a range of four successive years from 2020 to 2023.

Although we have tried to be thorough and are convinced that the numbers are an accurate reflection of the reality, we would like to be prudent and state that in the end this is an estimation. Which does not detract from the fact that we believe it is valid and illustrates the employment generated by sustainable transport itself, which was one of our aims in this study.

Taking everything together, we have managed to obtain an employment figure of around 300,000 workers.

## Employment generated in a variety of zero-emission sustainable transport sector

Sustainable transport sectors	2020	2021	2022	2023
Railway manufacture		20.364		
Bus manufacture				2.790
Bicycle manufacture, distribution, retail sales and workshops			24.456	
Urban and suburban land transport	53.163			
Interurban rail transport	66.483			
Interurban bus transport	51.364			
Taxis		79.965		
Public bicycle-sharing services				600
Car-sharing				360
Shared corporate transport				50
<b>Subtotal</b>	<b>171.010</b>	<b>100.329</b>	<b>24.456</b>	<b>3.800</b>
<b>Total</b>		<b>299.595</b>		

Source: own elaboration.



## Offer of sustainable transport

There is an intrinsic relationship between supply and demand in sustainable transport; they are inseparable and the evolution of both supply and demand run in parallel. They then feed into each other, generating activity in the industry and in the provision of mobility services. In other words, if we increase the mobility services, in both quantity and quality, we attract more people and, at the same time, if the number of passengers goes up, more transport is needed to satisfy them.

For this reason, below we would like to show this mutual dependence in which the evolution of supply and demand are both the cause and the effect of the evolution of the activity and, consequently, of the employment we have analysed.

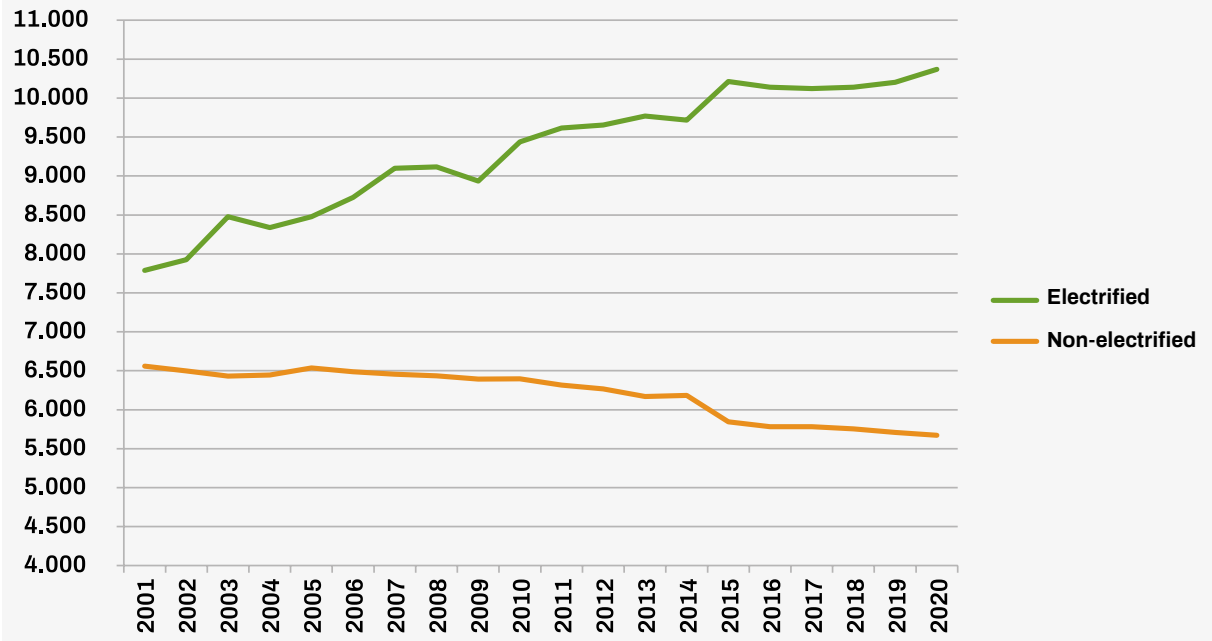
That is not all, however. With the premise of decarbonising transport which, as we have said, is no longer just an option but an obligation that requires a shared commitment, in this section of the study we are going to pay special attention to the process of electrification that allows the expansion and intensification of the different modes of sustainable transport.



# The offer of railway transport

From 2000 to 2020, the Spanish rail network increased by 1,694 kilometres. If we look closely, however, we can see that actually the behaviour was different, given that the non-electrified network decreased, whereas the electrified infrastructure increased by 2,581 kilometres. This means that, at the start of the century, in 2000, the weight of the electrified network in Spain as a whole was 54%, rising to 65% by 2020.

Length of the rail network by traction (kilometres)



Source: Statistical yearbook 2020. Ministry of transport, mobility and urban agenda 2023.

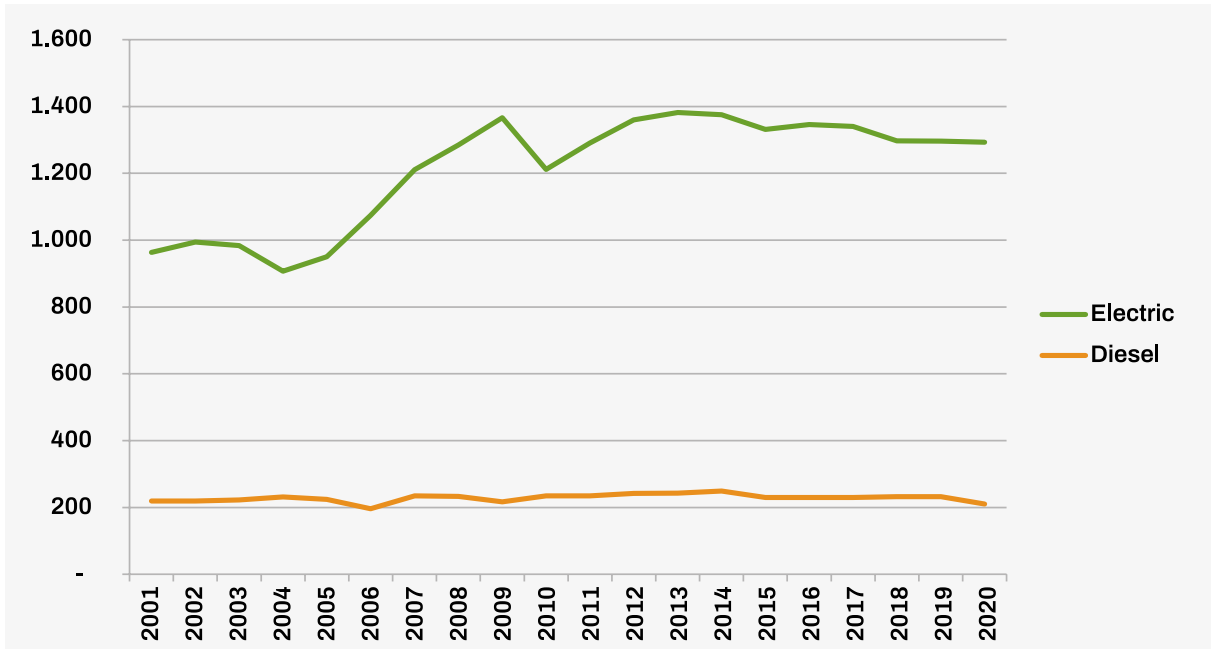
When we talk about vehicles we are specifically talking about the rolling stock fleet of self-propelled units that do not require a separate locomotive, as they have their own engines and other traction systems included.

The evolution of these railway units shows that the number of units increased by 346 from 2000 to 2020; in the overwhelming majority of these, the increase was in electric traction units. For this reason, their relative weight has risen from 81% to 85% of the total in this time period. The exact figures are an increase from 1,172 units in 2000 to 1,518 in 2020.





### Railway transport Rolling stock fleet. Self-propelled units



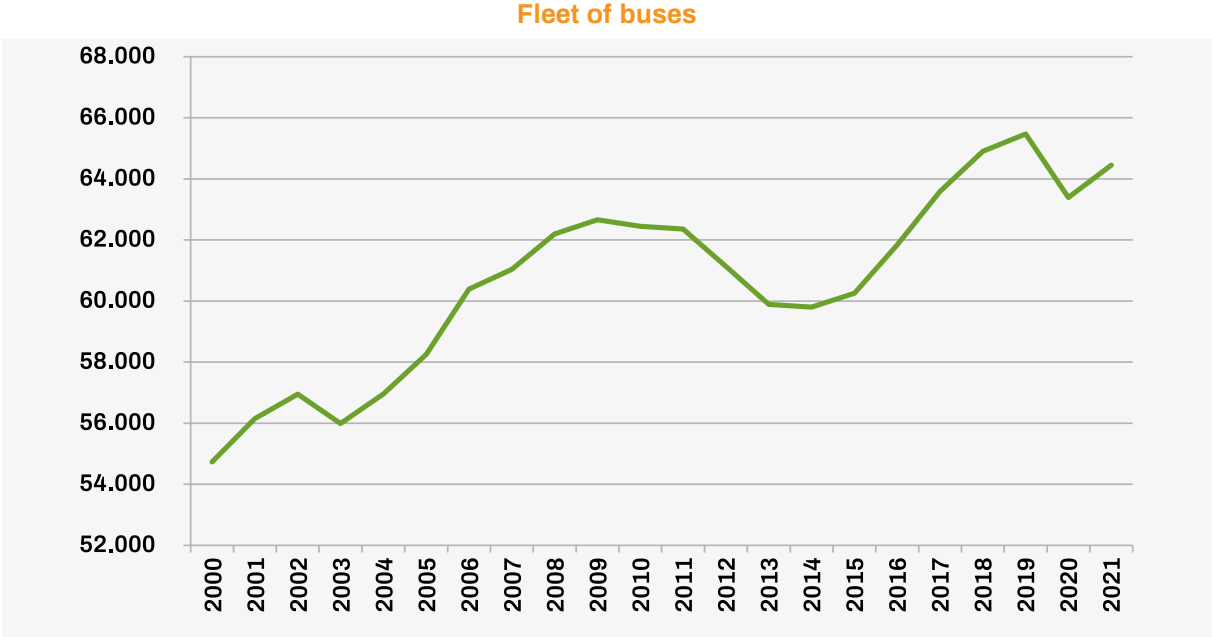
Source: Statistical yearbook 2020. Ministry of transport, mobility and urban agenda 2023.



# The offer of buses

Spain's fleet of buses has seen a significant increase. From 2000 to 2019 growth was gradual with a few fluctuations, giving specific growth of 10,738 vehicles, but the outbreak of the coronavirus pandemic in 2020 led to the removal of more than 2,000 buses compared to the previous year prior to the pandemic.

However, from that point onwards, the figures have picked up and we now have almost the same numbers as in 2019, the year with the largest number of buses in the whole of the 21st century. To be more specific, in 2022 the fleet numbered 65,337 buses compared to the figure of 54,732 in 2000.



Source: Statistical yearbook 2020. Ministry of transport, mobility and urban agenda.



## The offer of metropolitan transport

Another territorial level we would like to talk about is the metropolitan areas, where we find the principal networks of metros, trams and urban and interurban buses.

As a first step, we will look at the rail offer of metro, tram and light rail up to 2019; although we have figures for 2020, these are anomalous because they reflect a drop in the offer as a result of the pandemic, which has recovered in subsequent years.

The final result, both in terms of the offer of seat-kilometres and vehicle-kilometres in circulation, in the comparison between 2015 and 2019 clearly shows that there has been a quantitative improvement. In other words, there is an increasing commitment, at least in the major metropolitan areas, to rail transport, making the offer of public transport more attractive, with a consequent increase in its use.

### Offer of urban rail seats and vehicles in metropolitan areas

Unit	2015				2019			
	Million seat-kilometres		Million vehicle-kilometre		Million seat-kilometres		Million vehicle-kilometre	
	Metro	Tram/light rail	Metro	Tram/light rail	Metro	Tram/light rail	Metro	Tram/light rail
<b>Total</b>	<b>47.750,00</b>	<b>1.512,00</b>	<b>267,90</b>	<b>18,60</b>	<b>55.204,00</b>	<b>2.658,00</b>	<b>288,45</b>	<b>21,68</b>

Source: Transport and logistics observatory. Ministry of Transport, Mobility and Urban Agenda.

In the case of the offer of seat-kilometres and vehicle-kilometres in buses in the metropolitan areas, there has also been an increase in the final figure, over the time period considered in the following two tables.

### Offer of urban bus seats and vehicles in metropolitan areas 2015

Unit	2015					
	Million seat-kilometres			Million vehicle-kilometres		
	Urban bus capital city	Other urban buses	Metropolitan bus	Urban bus capital city	Other urban buses	Metropolitan bus
<b>Total</b>	<b>20.175,90</b>	<b>4.573,00</b>	<b>20.445,75</b>	<b>254,15</b>	<b>55,39</b>	<b>286,20</b>

Source: Transport and logistics observatory. Ministry of Transport, Mobility and Urban Agenda.



## Offer of urban bus seats and vehicles in metropolitan areas 2019

Unit	2019					
	Million seat-kilometres			Million vehicle-kilometres		
Type of transport	Urban bus capital city	Other urban buses	Metropolitan bus	Urban bus capital city	Other urban buses	Metropolitan bus
<b>Total</b>	<b>24.754,16</b>	<b>5.260,00</b>	<b>21.573,22</b>	<b>266,40</b>	<b>63,32</b>	<b>344,51</b>

Source: Transport and logistics observatory. Ministry of Transport, Mobility and Urban Agenda.

## Fuel used by buses

In the decarbonisation process, the electrification of the bus fleet is key. Until very recently, the principal fuel was diesel. However, diesel buses are now being replaced with electric or hybrid vehicles.

The following table shows the figures for registration of vehicles with traction other than diesel, together with natural gas, and reveals that the percentage of electric vehicles registered is still very small. However, we can see a positive evolution in many regards. To begin with, we can see how full hybrids became the most registered vehicles in 2021 and the percentage of the total of buses registered every year has increased. In the case of pure electric vehicles, although the figures are still very modest, 18 buses registered in 2017 has increased to 130 in 2021.

If we add together the percentages of electric, plug-in hybrid and full hybrid buses registered in 2021, the result is 28.5% of the total number of buses registered that year, almost a third. If we look back to 2017, this figure was only 4.7%, which means that there has been significant progress in this type of technologies in the last five years.

## Registration of buses by alternative traction power 2017-2021

Year	Elec- tric	% of total	Plug-in diesel hybrids	% of total	Diesel hybrids	% of total	Hydro- gen	% of total	CNG	% of total
2017	18,0	0,45	-	0	172	4,26	-	0	316	7,8
2018	22,0	2,13	8	0,2	260	6,76	-	0	407	10,6
2019	82,0	2,25	22	0,6	427	11,70	-	0	457	12,5
2020	40,0	1,76	11	0,5	294	12,96	-	0	524	23,1
2021	130,0	6,21	16	0,8	449	21,46	2	0,1	300	14,3

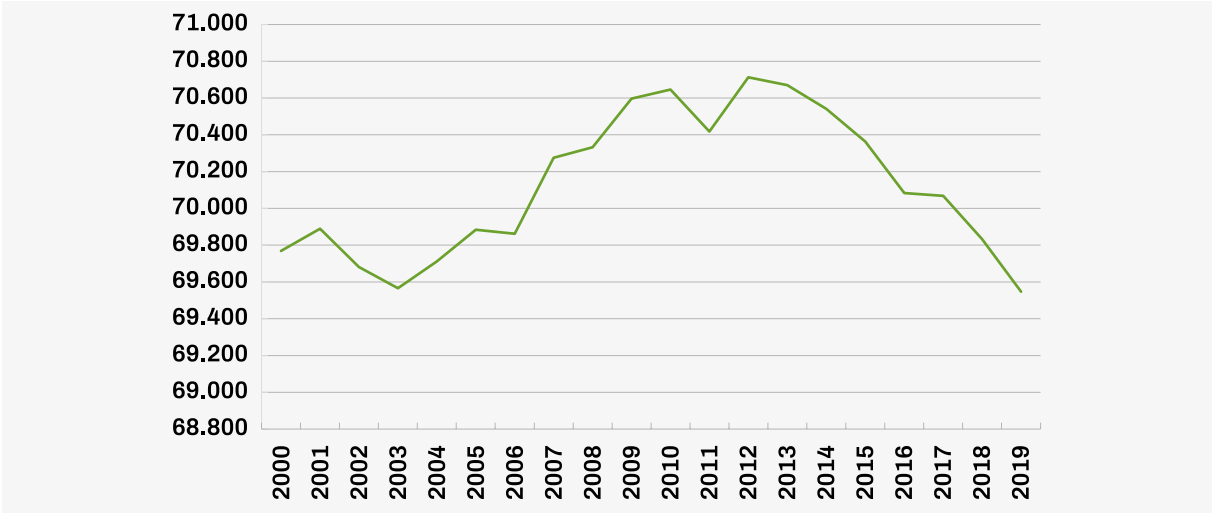
Source: Anfac and General Directorate of Traffic (DGT).



# The offer of taxis

As we can see in the following table and graph the number of taxi vehicles in Spain grew continuously with the occasional fluctuation between 2000 up to 2012, from then onwards up to 2019. More specifically, in 2000 there was a total of 69,769 taxis, with the maximum figure of 70,713 for the period reached in 2012; the trend was reversed until 2019 with figures dropping to 69,547 taxis, the lowest number for the whole period. Taking the period from 2000 to 2019 as a whole, there has been a reduction of 222 taxis.

Evolution in the number of taxis between 2000 and 2019



Source: INE.





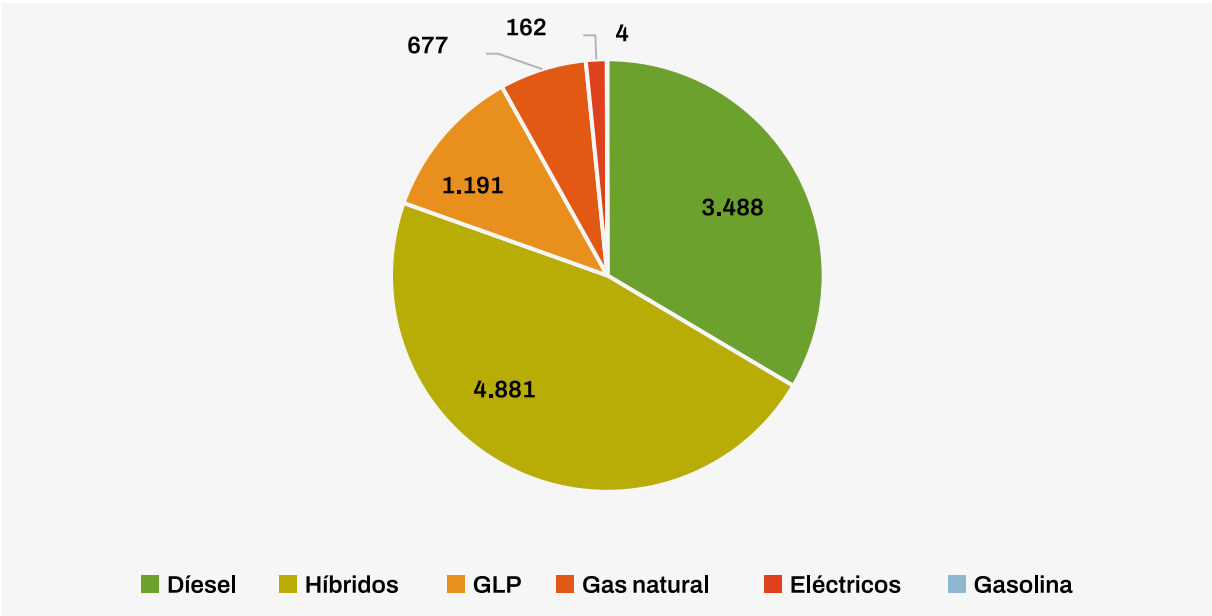
### Fuel used by taxis

As regards the fuels used by taxis, we refer to the situation in the metropolitan area of Barcelona, which is where we have most information. Although the information is incomplete, because it does not cover the whole fleet in Spain, it is significant because this area accounts for 16% of Spanish taxis.

The most notable variation is the very significant reduction in the use of diesel. In the Barcelona area, to be more specific, the majority relative weight of vehicles using diesel in 2012, with 83% of the total, fell to 33% by 2022. The vehicle type that has increased the most are hybrids, which have increased fourfold, and were the dominant system in 2022. In this regard, it is worth mentioning that the first electric taxi to operate on the streets of Barcelona did not arrive until 2014, making this a relatively recent arrival.

In 2022, electric taxis in Barcelona accounted for 1.6% of the total, compared to the general fleet of electric passenger car vehicles in Spain, which was 0.9%. We can conclude from this that the taxi sector is somewhat more advanced in the electrification of the fleet, and much more so when it comes to hybrids, which represented just 3.6% of the total of passenger vehicles in Spain in 2022, whereas this figure was 47% for Barcelona taxis<sup>1</sup>.

Fuel used by taxis in the Barcelona Metropolitan Area 2022



Source: Barcelona Metropolitan Taxi Institute.

1. Electrified vehicle. Report 2022. Anfac 2023.



## The offer of bicycles

In this section we will refer to private bicycles, for which we will use the data provided by the Barometer for Bicycles in Spain [Barómetro de la Bicicleta en España] in 2022.

If we look at bicycle ownership among private individuals, we can see that the number of people with a bicycle rose notably between the two reference years, 2019 and 2020.

### People owning a bicycle 2019 - 2020

	2019	2020
Have a bicycle	62,6%	70,3%
Do not have a bicycle	37,3%	29,7%

Source: Barometer for Bicycles in Spain 2022.

## The offer of public bicycle-sharing services

In 2011 there were 147 public bicycle-sharing systems in 197 municipalities. However, since then, the number of public bicycle-sharing systems has fallen. Currently, some 53 systems remain active, representing just 36% of those that existed in 2011, and the rest have closed down. In any event, new systems have been implemented recently, and others have been expanded.

The following table gives the figures for the services, the sharing points and the number of bicycles available in two different years, 2015 and 2020. If we make an overall calculation, we see that in 2020 there were 9 fewer services, but on the other hand the number of sharing points had increased by 44, meaning that the nationwide distribution was greater and the number of bicycles available also grew by 739.

	Bicycle-sharing services	Sharing points	Number of Bicycles
2015	41	1.581	19.133
2020	32	2.023	19.872

Source: Metropolitan Mobility Observatory. Reports 2015, 2020 and heads-up 2021. TRANSyT, Centre for Transport Research, Madrid Polytechnic University 2017 and 2022.



## The offer of car-sharing services

Car-sharing services have developed considerably in recent years, to the point where we now have around twenty different offers.

Although in some cases we do not have information on the figures for vehicles that make up the fleets, according to the data that we have been able to compile, there are around 4,150 vehicles. The great majority, approximately 80%, are electric-powered vehicles.

### Car-sharing services 2023

	Name	Service	Engine type	Number of vehicles
<b>Fixed parking</b>	Ibilkari	Bizkaia	Petrol	-
	Ubeeqo	Madrid, Barcelona	Various types	800
	Muvon	Mallorca	Electric	7
	Ukanauto	Bizkaia	Petrol	-
	Auzokar	Bizkaia	Diesel	-
	Goto	Madrid	Electric	300
	Ecotxe	Mallorca	Electric	-
	Ekiwi	Valladolid	Electric	4
	Electric way	Madrid	Electric	5
	Alterna.coop	Valencia	Electric	7
<b>Flexible parking</b>	Guppy	Asturias	Electric	180
	Zity	Madrid	Electric	800
	Wible	Madrid	Electric	500
	Som Mobilitat	Barcelona, Camp de Tarragona, Girona	Electric	100
	Alma	Zaragoza	Electric	70
	Free2move	Madrid	Electric	700
	Himobility	Asturias	Electric	110
	Mec	Barcelona	Electric	13
	Minitis	Badajoz	Electric	50
	Voltio	Madrid	Electric	500
<b>TOTAL</b>				<b>4.146</b>

Source: Metropolitan Mobility Observatory. Report 2020 and heads-up 2021. TRANSyT, Centre for Transport Research, Madrid Polytechnic University 2022 and other sources for the number of vehicles (websites, media, etc.).



# Total demand by type and means of public and occasional transport

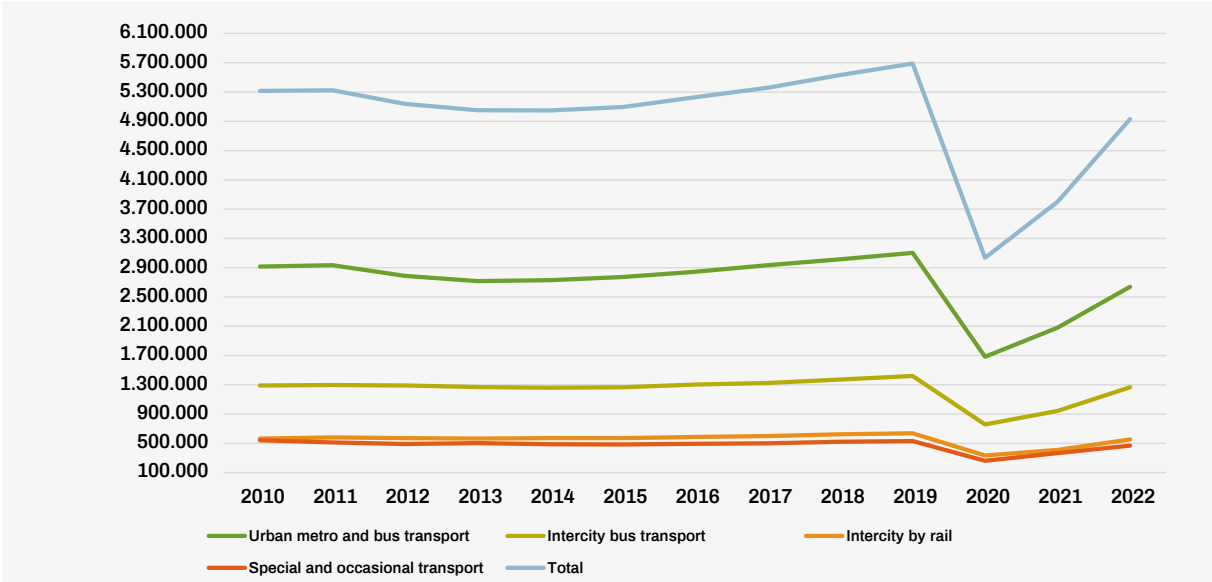
In this section we will analyse the demand for sustainable transport in recent years, covering the period from 2010 to 2022. We refer to the volume of passengers using rail and bus transport, both urban and interurban.

In turn, we will analyse the demand between January and April 2023, the latest period for which we have data available, and we will compare them with the figures for the same four-month period in 2019 before the pandemic. We add this last period because, as we all know, the outbreak of the Covid pandemic in 2020 had a very major impact on people's mobility, particularly affecting collective transport.

In the graph we see a behaviour in which the total number of passengers increases, with some fluctuations, until it reaches a maximum in 2019. In 2020, as a result of the pandemic, the figures plunge until they reach the minimum for the stage analysed. From then on, post-pandemic, a clear recovery takes place, although it has still not reached the figure for passengers in 2019.

Meanwhile, this graph shows the different weighting between the different types and modes of transport, with considerable differences between them. The clear leader is urban metro and bus transport, followed by interurban bus transport, although this is only half the figure for urban transport; next, with similar numbers but a long way short of the previous modes, we have interurban rail transport and special and occasional transport.

**Passengers by type and mode of public and occasional transport 2010 – 2022**  
Units thousands of passengers



Source: INE.

The following table shows how, although in 2020 the figure for passenger transport was only 53.3% of the figure for 2019, in 2022 this had reached 86.6%, only 13 points down on 2019.

The comparison between the number of passengers between January and April 2019 and 2023 leaves no room for doubt: in 2023 we have already reached the figure of 99% of passengers of the accumulative figure for the same months in 2019.

**Passengers per type and mode of transport compared to 2019  
between 2020 and 2022  
Units thousands of passengers**

Type and mode of transport	2019	2020	%	2021	%	2022	%
Urban metro and bus transport	3.102.006	1.682.494	54,2	2.081.740	67,1	2.639.504	85,1
Interurban bus transport	1.420.276	757.193	53,3	944.400	66,5	1.265.779	89,1
Interurban rail transport	636.340	333.786	52,5	409.838	64,4	553.354	87,0
Special and occasional transport	530.184	261.109	49,2	367.034	69,2	470.018	88,7
<b>Total</b>	<b>5.688.806</b>	<b>3.034.582</b>	<b>53,3</b>	<b>3.803.012</b>	<b>66,9</b>	<b>4.928.655</b>	<b>86,6</b>

Source: INE.

**Passengers per type and mode of transport between  
January and April 2019 and 2023  
Units thousands of passengers**

Type and mode of transport	January - April 2019	January - April 2023	%	%
Urban metro and bus transport	1.050.379	1.034.682	98,5	-1,5
Interurban bus transport	467.556	479.620	102,6	2,6
Interurban rail transport	216.153	216.486	100,2	0,2
Special and occasional transport	184.511	169.473	91,8	-8,2
<b>Total</b>	<b>1.918.599</b>	<b>1.900.261</b>	<b>99,0</b>	<b>-1,0</b>

Source: INE.





# The demand for bicycles

Bicycle barometer: 11 million Spanish people use a bicycle on a weekly basis, 6 million use it occasionally and 2 million use it daily for necessary travel to work or to study. These are very revealing figures that show very high use: in the daily use category, it represents 6.5% of the total population of Spain.

Bicycle use	People	%
Necessary daily mobility*	2.000.000	6,5%
Occasional necessary mobility	6.000.000	17,5%
Use the bicycle on a weekly basis**	11.000.000	32,5%

Source: Bicycle barometer in Spain. Ministry of Transport, Mobility and Urban Agenda. Network of bicycle cities. 2022.

\* Use the bicycle on a daily basis to travel to work or to study.

\*\* Does not include those who only use it at weekends.



## Final considerations

To summarise the above, we can start out by saying that if transport, which is now the leading emitter of greenhouse gases and, therefore, a cause of climate change, is to drastically reduce its emissions, there needs to be extra impetus in the process to replace combustion engines with electromobility. In other words, moving on from traction with fossil fuels to electric vehicles as the final destination on this path we have embarked upon.

In any event, going beyond electrification, all these modes and types of transport and the services they provide are by definition sustainable, because from the outset their vocation is to replace private vehicles, principally combustion engine vehicles, which is an effective way of reducing their presence and thereby the emissions they produce. On the one hand, because collective transport can equate to several fewer vehicles of this type on the roads, and on the other, as in the case of bicycles, it is obvious. The same is true for shared vehicles, also because they are based precisely on the change of concept from ownership to use, replacing privately-owned vehicles.

What we have also intended to show is that the increased use of sustainable transport is both the cause and the effect of growth in the supply and, conversely, the increase in supply attracts more demand, provided that the supply is one of quality. And, of course, the more this mode of mobility is used, the lower the greenhouse gas emissions; and this, when all is said and done, is the ultimate goal for an efficient fight against climate change. In addition, however, this increased offer inevitably requires more vehicles and services. So it acts as a driving force for our industry that manufactures these vehicles to increase their workload, with the consequent generation of more employment.

Promoting sustainable transport in all its variants, then, as the title of our study says, means promoting zero-emission mobility and a great opportunity to decarbonise transport and generate economic activity and employment.

Of course, the increased role of zero-emission transport is not without difficulties that we have to negotiate and which will require political and economic measures:



### **Agreement to promote the sustainable transport industry.**

There needs to be more decisive support for the zero-emission transport sector from the public authorities. For this to happen, an agreement has to be drawn up for the sustainable transport industry with participation and cooperation between all the stakeholders in society, public authorities and research centres, to support the whole value chain in the railway, bus and bicycle manufacturing sectors. And there has to be strategic planning for the sector with consideration of medium and long-term scenarios.

### **Make it easier for, and prepare the integration of qualified labour as part of a fair transition.**

We are talking about sectors with a range of different difficulties, such as the railway industry, which require planning of the offer of employment with very specific professions, like welders, or drivers for buses and interurban coaches, where there is an increasing demand that is not always covered. This requires the design of training plans and at the same time an offer of fair working conditions to attract new workers. This also shapes the principal ideas to achieve a fair transition, and offer job opportunities so that people working in sectors under threat can requalify and take up job positions that are more in demand.

### **Continue with the process of electrification of passenger transport.**

Avoid the process of electrification of passenger transport grinding to a halt once the Next Generation funding runs out. When this aid, which has provided the first major boost for the incorporation of electric buses, has finished, there will have to be a change in the policy of subsidies replacing it, so that local authorities can continue to buy electric buses and install chargers.

### **Promote the purchase and use of bicycles.**

Make it easier for private individuals and companies to buy or hire bicycles. To encourage the purchase of bicycles by offering tax incentives, such as reduced VAT or direct assistance from public authorities. Bearing in mind that the main reason why we travel is to get to and from work, which is also when private vehicles are most used, there needs to be a study of tax measures to incentivise the purchase of fleets of bicycles by companies for their employees. There is also a need for the provision of allowances for workers per kilometre travelled, something which is already happening in countries around us.

### **Guarantee state and autonomous region funding for public transport.**

Establish criteria for municipalities or supra-municipal areas to receive this funding, at least in terms of population served, economic capacity and territorial extension to cover the financing needs of public transport. Likewise, to demand a minimum level of service provision and to promote the integration of fares for all public transport services that serve a territory, whether urban or rural, so that transfers are not penalised. Similarly, technical support should be given to municipalities or metropolitan entities with less capacity to plan transport services in accordance with the needs of citizens.



## **Approval and application of the state Law on sustainable mobility.**

We need a framework law that provides legal protection and sets out the basic principles that must govern this absolute prioritisation of the modes and types of transport guaranteeing sustainable mobility. The regulation must be a tool that has as its goal to achieve a mobility model based on 100% decarbonised transport, which is energy efficient, healthy, eradicating atmospheric and noise pollution, socially fair and safe, preventing transport accidents.

## **Apply planning and management measures that foment sustainable transport.**

Based on three basic principles:

- Compact and dense urban planning, with a mixture of uses.
- The promotion of sustainable mobility.
- Discouragement of the use of private vehicles with combustion engines.

In order to offer efficient transport and mobility services and promote the use of the active modes, we need to have a fully-used and continuous urban space, with medium population densities and activities and with a mixture of land uses and urban functions: dwellings, production activities, retail, school and healthcare facilities, etc. Promote the sustainable types and modes of transport by improving the offer in terms of quantity and quality. Providing an impetus for sustainable transport is necessary, but not sufficient. At the same time, there need to be measures to discourage the use of private modes of transport that run on fossil fuels; this requires the urgent implementation of traffic restriction measures such as Low Emission Zones (LEZ).

## **Green and progressive taxation.**

Using the principle of the polluter pays, together with the principle of those who have more pay more, there needs to be application of taxation to raise funds to apply the measures to aid and subsidise zero-emission transport that we have proposed. Using the necessary figures, we need to establish taxes on vehicles depending on how much they contaminate and the intensity of their use and, at the same time, apply income correction measures through territorial or personal redistribution of the funds raised. This will allow territories and people with lower incomes to offer and access, respectively, sustainable transport in sufficient quantity and quality.

Undoubtedly, the list of proposals can be much more specific and detailed for each mode or sector of activity we have considered in this report, but there is one equable proposal that covers everything, which is that there must be a decisive commitment to zero-emission sustainable mobility in all its environmental and social aspects, including the generation of employment. This requires a shared consensus, an agreement between the public authorities, companies, trade unions, other stakeholders in the transport arena and with citizens' interest groups in general if firm progress is to be made in the task ahead of us.



