

MOBILITY AND LOGISTICS

Sector focus



Sustainable mobility

2023



Ajuntament de
Barcelona

 Barcelona
Activa

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Sustainable mobility: towards a new model of transportation

The concept of **sustainable mobility** was born in opposition to the urban transport systems that have prevailed so far, which are based on the use of motorised private vehicles. It is a new way of understanding the transport of people and goods in the city. Sustainable mobility favours environmentally friendly travel and ensures the health of the population. At the same time, it promotes a city to be lived in –as it aims to create quality public spaces for citizens to walk through and meet at. It refers to transport systems that are committed to improving the quality of life of citizens as they reduce the congestion of motorised traffic, which involves large delays and an expenditure of millions of euros per day, as well as greenhouse gas emissions and the constant use of fossil fuels.

Private vehicles must play a key role in the sustainable mobility system as a complement to public transport, but they must be **sustainable** in order to comply with the necessary reduction of emissions and the subsequent improvement of pollution levels in cities. Currently, the volume of cars with an electrified version in Spain is only between 10% and 12%, a percentage that is significantly reduced in the case of 100% electric vehicles.

In order to increase the circulation of electric cars, **charging infrastructure** must also be increased. Besides, to achieve truly sustainable mobility, the network of charging points must be linked to the production of renewable energies.

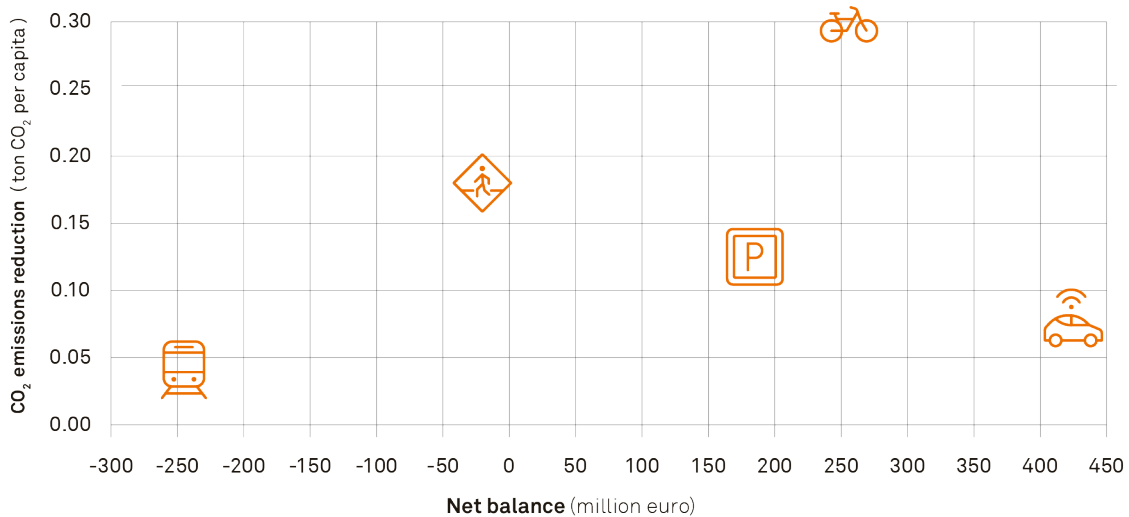







In this context, there has been a surge in transport policies focused on the promotion of sustainable mobility. They consist of actions and measures aimed at making it easier for citizens to travel to their destination (for work, study, services, leisure or other purposes) using alternatives such as **shared transport**, **public transport** or **active mobility models** (on foot or by bicycle).

According to the conclusions of the study “Costs and Benefits of the Urban Mobility Transition in Europe”, an additional 86 billion euros will be needed by 2030 to achieve sustainable urban mobility in Europe. This investment is expected to have a great social return, since each euro invested in the transition could generate up to 3.06 euros by 2030.

The results, which include 779 European cities with more than 50,000 inhabitants, show that the best options for small to medium cities to transition towards sustainability by 2030 are the **charging systems** (congestion and pollution tolls, paying street parking, integrated ticket systems and public transport fares), while **innovative services** (transport adapted to demand, self-driving vehicles, smart transport systems) are the best measures for big cities.

Figure 1. Effectivity of different types of sustainable urban mobility policies, according to cost/benefit (in millions of euros) and the reduction of CO₂ emissions per capita

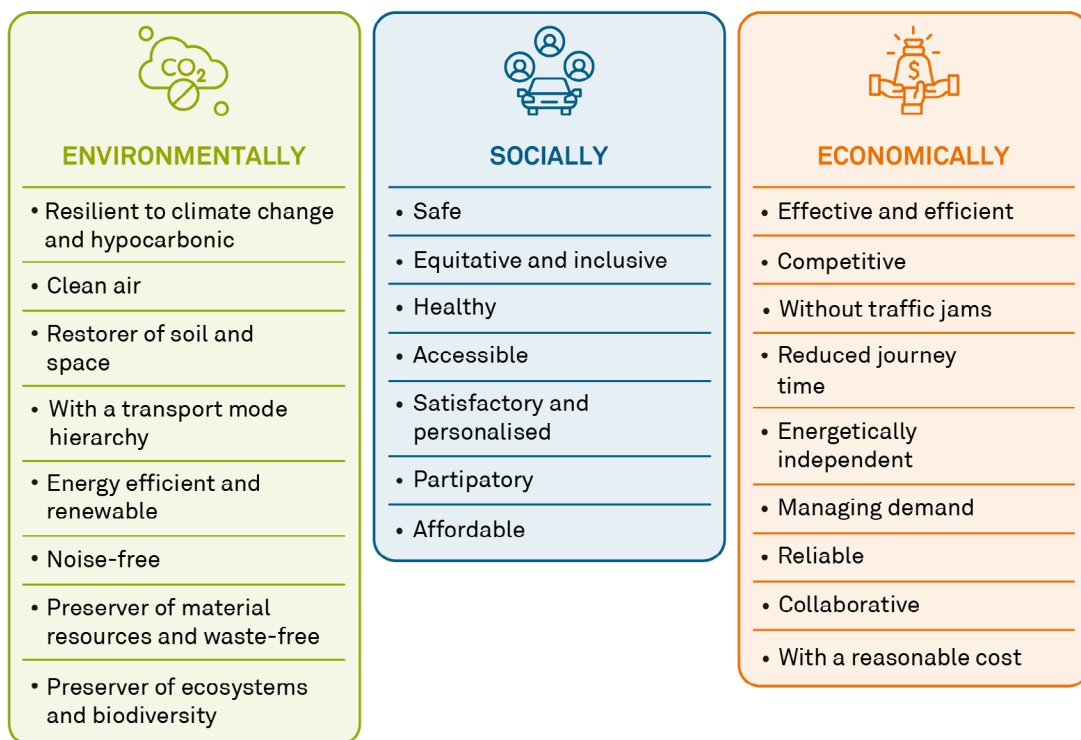


-  **Transport Infrastructure:** bus & tram network and facilities, walking and cycling networks and facilities, urban delivery centres.
-  **Pricing Schemes:** Congestion and pollution charging, parking pricing, public transport integrated ticketing and tariff schemes.
-  **Traffic Management:** legal framework for logistics and new mobility, traffic calming measures, prioritising public transport.
-  **Shared Mobility and Demand Management:** MaaS, vehicle sharing, delivery plans, teleworking.
-  **Innovative services:** autonomous vehicles, DRT, ITS.

Source: Prepared by the authors based on data from “Costs and Benefits of the Urban Mobility Transition in Europe”, by EIT Urban Mobility (2022)

The impacts of developing a sustainable mobility model, in economic terms, basically entail substantial changes in the **value chain of the car industry and its ecosystem**. In the social field, it is important to highlight the transformation of the labour market, with clear technological advances that will require professional profiles with more knowledge and creativity, as well as the new working conditions, which present a clear interrelation with mobility, to the extent that the incidence of teleworking and flexible hours have a clear impact on the distribution of journeys throughout the day. Finally, in relation to citizenship, the transition to a sustainable mobility model requires a change in attitudes and behaviours in travel and a firm commitment on the part of governments to make it possible.

Figure 2. The transition to environmentally, socially and economically sustainable mobility



Source: Own. based on data from the Labour, Economic and Social Council of Catalonia (2021).

Challenges of sustainable mobility

Transitioning to a model with a predominance of sustainable mobility policies and investments involves a transformation in the mobility industry and the incorporation of new tasks. As a consequence, there are new professional profiles specialised in the design and implementation of measures that favour new models of travel. Therefore, expertise is required on topics such as:

Connected and self-driving vehicles

Any means of transport that incorporates a telematic device that allows drivers to use the Internet to optimise journeys and reduce CO₂ consumption is already considered a connected vehicle. However, artificial intelligence and the Internet of Things, sensors and software platforms capable of generating big data provide multiple possibilities for developing smart models in the mobility industry. Self-driving will continue to be a growing opportunity. In addition, autonomous vehicles aim to achieve a more **efficient use of infrastructure** and improve the **safety** and **comfort** of drivers.

Clean and energy-efficient vehicles

Electric vehicles are the most efficient, followed by plug-in hybrids and, subsequently, hybrids and natural gas vehicles. Emissions are reduced thanks to the use of technology, and therefore the electric vehicle represents a qualitative leap in the sustainable mobility industry. However, it is necessary to analyse its **global impact** in terms of environmental sustainability, taking into account the **entire life cycle of the vehicle** by analysing its carbon footprint and the CO₂ emissions associated with the manufacturing process of the vehicle and its components, especially the batteries.

Mobility as a service

Integration and access to the diversity of public and private mobility services through apps appears as a response to the promotion of sustainable mobility. **MaaS** (Mobility as a Service) allows **integrated access to different mobility services**, thanks to which users can plan, pay and obtain their multimodal transport ticket through a single intermediary. However, this model represents a new architecture in mobility management, in which new functions, agents and interactions appear. MaaS is a new trend that presents **two important challenges**, which are key to driving a real change: on the one hand, the ability to create mobility services capable of meeting the needs of all users and, on the other hand, that information and access to services is clear, comfortable and simple.

In any case, by way of example, the diversity of options shows that shared mobility is here to stay. In cities, the use of shared bicycles, scooters, motorcycles and cars has increased, and so have on-demand transport options. Besides, new generations have developed a climate awareness and a preference for flexibility (switching from ownership to access to services). In addition, these technological, social and mobility market changes have been propelled by the pandemic, which accelerated the need to adapt the transport offer to the current context.

Intermodality

In the logistics sector, especially freight transport, intermodality and multimodality are key to an efficient service. Therefore, different transport models need to get on and facilitate exchanges. In the case of passenger mobility and urban mobility systems, it is a matter of moving forward with similar solutions, where rather than competing with each other, the **different solutions associated with mobility must be seen as complementary** links of a truly efficient value chain. In this scheme, transport nodes, park & rides and exchangers play an essential role in the functionality of the network, structuring the flows of also sustainable modes of transport such as shared vehicles for longer distance journeys, and bicycle or scooter for last-mile journeys. In the promotion of this intermodality, the use of MaaS is crucial and the biggest challenge is to put the different operators of urban mobility, public and private, to work in an aligned way for a more efficient metropolitan mobility.

Mobility management

To facilitate the transition towards a sustainable mobility model and contribute decisively to it, solutions must be applied to ensure that everyone can move through urban environments with a better quality of life, healthier, safer and in a more environmentally sustainable way. In this sense, professionals who have specific technical knowledge to plan and manage local mobility are key to designing and implementing sustainable mobility projects. Developing content such as road hierarchisation and functionality, single platform roads, accessibility for everyone, network of itineraries for active mobility, low-emission areas, tactical urbanism, school paths, data and new mobility trends, will be something important and urgent on current public agendas.



Impact of sustainable mobility on professional profiles

More specifically, the most **emerging and innovative professional profiles** in the field of sustainable mobility are:



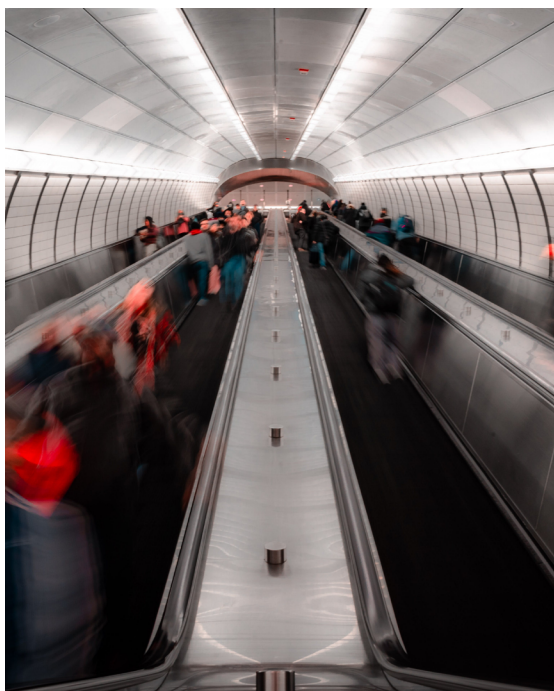
Electric vehicle maintenance technician: this professional is dedicated repairing any electric vehicle, from industrial vehicles to Personal Mobility Vehicles (PMVs) such as motorcycles, scooters or bicycles. They are responsible for diagnosing breakdowns and perform maintenance tasks, complying with technical specifications of safety and environmental protection. Basically, they develop their professional activity in the area of maintenance and assembly of vehicle electromechanical accessories.



Intermodal transport platform planner: professional with skills to design and manage intermodal transport platforms, which are smart assistance tools that respond to the traveler's needs and provide information before and during their journey. These systems are built to use information such as the network of streets and roads, schedules of buses of different companies and all data related to urban mobility services, including all transport such as train, tram, metro or public bicycle rental system. The purpose is to respond to the user in the best possible way with the fastest and most adapted travel proposal to the context of each person.



Manager of road safety for pedestrians and cyclists: professional profile dedicated to the promotion and communication to get citizens to become more responsible and sustainable users in their journeys. They promote a sustainable mobility model through incorporating skills and behaviors that favour greater safety on public roads. Basically, they design and execute several informative activities such as education, training and advertising campaigns in school environments; talks and training programs for local government authorities, organisation of exhibitions, etc. Their mission is to reduce accidents and their main targets are road users. For this reason, they study the causes of accidents in order to try to prevent them from happening in the future, by promoting educational programmes on road safety in schools; making presentations in community associations; designing exhibitions and advertising campaigns; setting up pedestrian training projects or cycling and better driving skills courses, among others.



The most **consolidated professional profiles** in the labour market are also worth highlighting:



Car sharing fleet manager: the use of shared vehicles is a mobility alternative, especially interesting in large cities, because it improves traffic flow and reduces air and noise pollution. Sharing a vehicle in an organised way with an undetermined number of drivers who have at their service a fleet of vehicles (cars, motorcycles, bicycles, scooters, etc.) on a is accessed in a regime of use has experienced a more than remarkable growth. The car sharing fleet manager responds to the need to manage the fleet of vehicles through digital means —which facilitates a quick and secure access to a vehicle—, the management of the booking system, the monitoring and control of the use of vehicles by each user and the safety and quality of the service.

Therefore, the car sharing fleet manager is the professional who digitally manages the availability of vehicles, ensuring the correct functioning of operating systems (generally, digital platforms and applications for mobile devices) that allow access to a vehicle of the fleet according to the conditions agreed between the company of shared vehicles and the user.



Mobility specialist in collective transport: this professional dedicated to mobility in collective transport mainly deals with the management of routes and fleets of vehicles such as buses, metros, taxis, bicycles for collective use, trams and trains. Collective passenger transport is subject to fluctuations in its demand and therefore requires planning and management to guarantee a quality service to citizens and an optimisation of the number of vehicles necessary to provide the service with an acceptable level of customer satisfaction. They manage vehicle frequency by establishing service schedules as well as the types of vehicles according to their capacity, and foresee possible incidents that may entail route changes or any other affectation in the provision of the service.



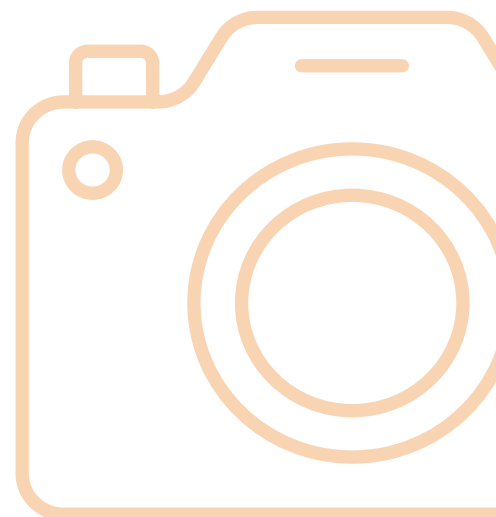
Smart mobility engineer: this professional profile is quite broad —a smart mobility engineer dedicates their activity to developing of applications for mobile devices associated with mobility. Using large amounts of data, they develop and adapt digital widgets to the new generations of mobile technologies that are appearing. They also research for new energy sources for vehicles with the aim of reducing pollution. They may also work on any solution linked to Mobility 4.0, which includes low-emission zones, urban tolls and the Eurovignette. Other tasks consists of evaluating, designing and implementing applications to promote mobility as a service as well as studying the future of connected and autonomous vehicles in the automobile industry. This profile may as well be an expert in electromobility trends or the rising of PMVs in the new models of sustainable mobility, among others.

In terms of professional profiles, it should be added that the **recycling and professional requalification** policies for people working in the traditional car repair and maintenance sector are ideal for qualified personnel in the sustainable mobility sector. In addition, retraining is crucial to be able to join the different areas of the value chain that exists around **electric, autonomous and connected mobility**. An example is the manufacture, installation and maintenance of charging stations, one of the subsectors with the highest growth.

A focus on sustainable mobility

Employment in the field of sustainable mobility is undergoing significant transformations due to the growing awareness of the importance of reducing carbon emissions and promoting more efficient means of transport. The most relevant are the following:

- **Demand for specialised skills:** there is a growing need for professionals with specific skills in sustainable mobility, from engineers specialised in electrical propulsion systems to urban planners dedicated to designing sustainable transport networks.
- **Technological innovation:** factors such as the development of electric vehicles, the implementation of intelligent charging systems, the creation of applications for public transport management and the integration of autonomous vehicles have sparked a revolution in the technological knowledge necessary to access the sustainable mobility job market.
- **Profiles oriented to sustainability and environmental responsibility:** companies include sustainability in their recruitment strategies. They search for professionals capable of designing and implementing solutions that reduce the carbon footprint and promote sustainable mobility.
- **Interdisciplinarity and diversity of profiles:** sustainable mobility requires a diverse range of skills and knowledge, from engineering to urban planning, data management and public policies. Multidisciplinary profiles are increasingly valued in this market.
- **Increase of entrepreneurship and start-ups:** sustainable mobility generates opportunities for the apparition of new companies and start-ups that offer innovative solutions, from shared transport systems to charging technologies and mobility management software.



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