

Mobility and Logistics Sector Report

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Activa

Abstract

Mobility and Logistics

Humanity has always had the **need to move** in order to change places of residence, access new resources necessary for their survival, or go to places where living conditions are more favourable, among many other reasons. At the same time, as human communities were established and became specialised in their productive systems, the **exchange of goods and services** in the form of an organised transfer of goods appeared. Human evolution can therefore also be interpreted as a process of transfer and exchange of people, products and goods of all kinds, a process that has become more and more complex as **technological change** has made it more modern and efficient.

Today, in modern contemporary and globalised societies, the need to transfer people, resources, information, goods,

services and freight of all kinds is a key and central issue that conditions the social and economic organisation, the efficiency of the territory, an equal access to the resources valued by society and the very well-being of individuals and communities. As a result of this essential need, a sector of economic activity has developed that has the common denominator of organisation —of the transport of people and goods—. Transporting people and products does not only include the physical fact of carrying them over land, sea or air, but also the whole **process of organisation and intelligence** that must be applied so that it is effective (taking place in the right conditions) and efficient (at the lowest possible cost), with the continued and changing incorporation of the technology available to a certain productive system.

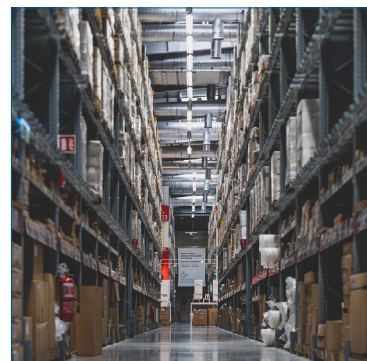
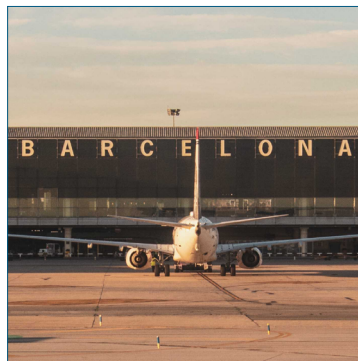
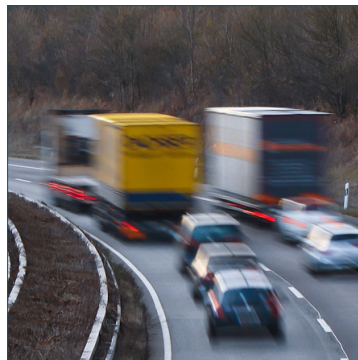




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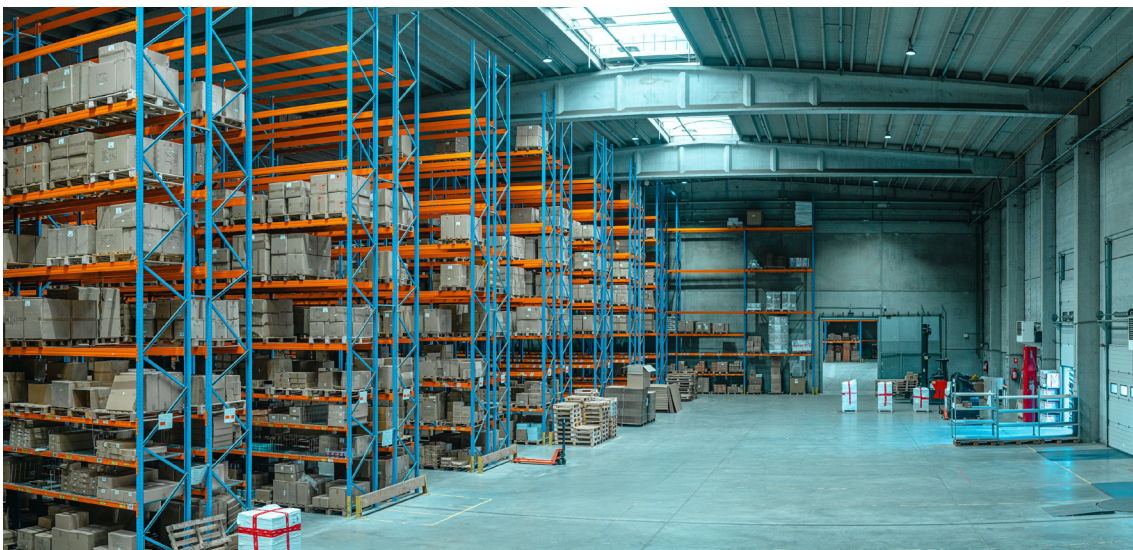
Get to know the sector

Introduction to the sector

This sector brings together economic activities related to transporting people, products and goods in general by land, sea and air, using different transport systems in a complementary way where necessary. When we talk about the Mobility and Logistics sector, we are referring to different concepts. On the one hand, it refers to the **transfer of people and goods** and, on the other hand, it also refers to the intelligence that must be applied in **transport systems, supply chains and information and communication technologies**. More generically or intuitively, the term “**mobility**” is more related to the organisation of people’s movement flows in the territory, while the term “**logistic**” usually refers to the materials and services needed to meet the demands of consumers (either people or companies) in the appropriate quality, quantity, time and place.

Originally, the term “logistics” comes from the military world. It referred to the supply of weapons, ammunition, groceries, and everything that was necessary in the militia. Today, the concept of logistics has been adopted by the business sphere and covers the **management and planning of activities** of the departments of purchase, production, storage, maintenance and distribution. The aim is to efficiently organise movement and storage of products, which facilitates the flow of products **from the point of acquisition of materials to the point of consumption or delivery**, as well as the flow of information that is launched.

In short, this sector deals with organising the flow of materials, goods and persons from one location of origin to another location of destination, always seeking **maximum efficiency** and harmoniously coordinating and integrating the movements of persons and goods taking place in a territory using various transport systems. In this sense, **three subsectors of activity** within the sector can be differentiated:





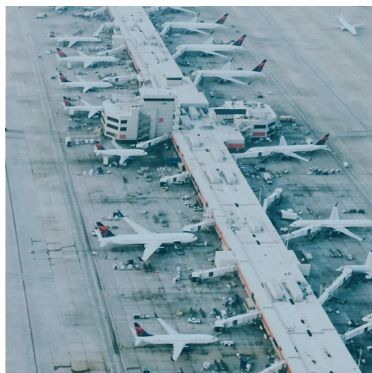
Logistics and freight management

It includes activities aimed at optimum **coordination of transport and information flows** in order to place—in the shortest time and lowest cost possible—the necessary amount of a product or service at the right place and time. The activities of the logistics subsector are quite diverse: from the design, management and control of the logistics chain to the distribution of the goods, including product storage and the internal management of the logistics chain itself.



Urban mobility

It refers to the set of **journeys or movements** of both **people** and **goods** that occur in a given territory or geographical area. This activity involves a significant volume of economic and social players, such as pedestrians, private motorised and non-motorised vehicles, public transport and goods vehicles.



Aeronautics

It encompasses activities related to the **construction, maintenance and commercialisation of aircraft**, as well as activities related to **air travel**. It therefore includes the maintenance and management of airport infrastructures, the management of air traffic and the associated means of transport, and the coordination of passenger mobility and aircraft supply.

Together, the three subsectors have their **point of convergence** par excellence in **large cities and their metropolitan areas**, where different actors guided by their dynamics - in regulations, technologies and local market demands - interact in the same environment. Some authors talk about the concept of urban logistics to make its connection explicit, which seeks to balance the rate of displacements - of people and goods - into existing mobility spaces and networks, in search of an efficient and sustainable model.



Barcelona as a hub for Mobility and Logistics

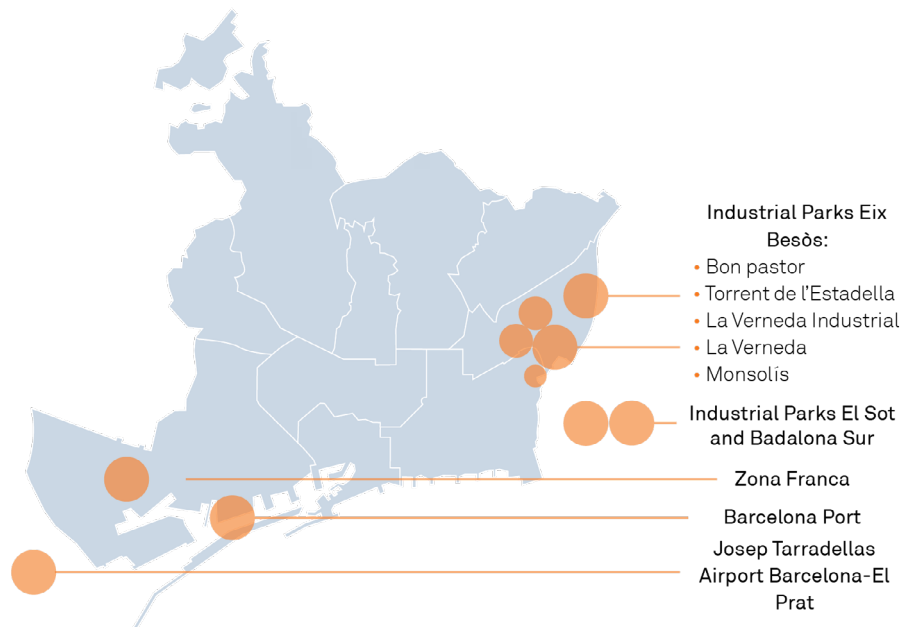
Barcelona and its metropolitan area are a **benchmark logistics hub in southern Europe**, both because of the important strategic situation of the port of Barcelona (the gateway of goods coming from South East Asia via the Suez Canal) and because of the metropolitan concentration including around four million inhabitants. Thus, the city and its metropolitan area have an extensive logistics network of infrastructures and devices connected through four main axes: **El Prat Airport**, the **Zona Franca**, the **Port of Barcelona** and the **industrial soil of the Eix Besòs**.

The **intermodality** of logistics platforms is key to the economic development of the city, which is becoming increasingly technified, sustainable and innovative, which encourage its **contribution to economic growth and employment**. It is worth noting the platform of the Port of Barcelona and its area of logistics activities linked to energy and its distribution by land. Likewise, the Zona Franca is an area of economic activities and industrial parks, and acts as a business hub for the Mobility and Logistics sector, but also for the Industry 4.0, with which it maintains strong links.

Located in the area of influence of the Zona Franca and the Port, **El Prat Airport** is an asset of great importance for international mobility and trade, making it the point of entry and exit of millions of people each year. At the same time, it also has an air cargo centre that is strategically positioned for its hinterland —or area of influence— in southern Europe in both industrial and consumer products.

Regarding mobility, Barcelona promotes several projects that seek to place the city as a European benchmark in terms of both mobility management and the good use of public space. It's competitiveness as a city is related to intensifying and enhancing the current **efficient public transport** model, **urban development policies** and promoting a of **more sustainable transport** such as electric vehicle, among others.

Figure 1. Main logistics hubs in Barcelona



Source: prepared by the authors.

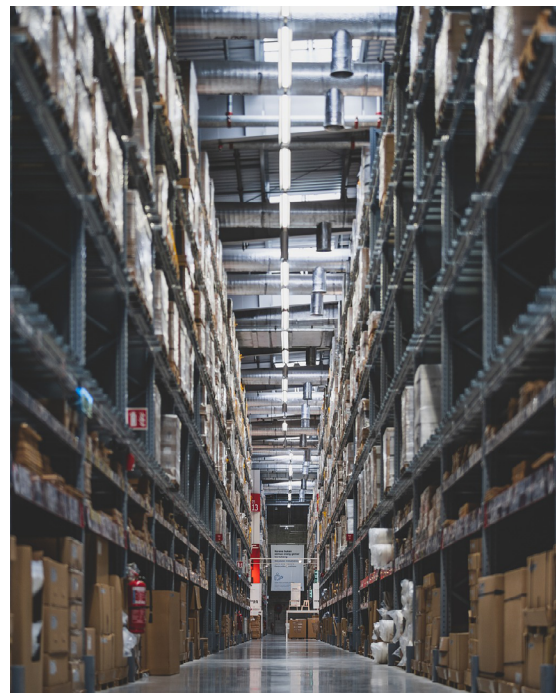
Fields of activity

To delve into the logic of the sector and identify its professional profiles, below are presented its **fields of activity** or **subsectors of economic activity**, and the internal logics that can be identified. The common denominator is still the transfer of materials, commodities and persons by various means and the application of technological solutions to cope with the significant increases in demand for transport flows, as well as in their safety and efficiency.

Logistics and freight management

Logistics and freight management include a series of economic activities that are directly related to **providing materials for industrial production** and also to **commercially distributing goods and services for the consumer** (person or company). The areas of activity that make up this subsector are:

- **Merchandise control.** It encompasses activities aimed at knowing the stock of existing goods at a given time in a warehouse, controlling both the goods entering and leaving, as well as the existing inventories at all times.
- **Logistics management.** Professionals in this field provide an integral view of the logistics chain and its management, especially regarding how the distribution of materials affects the company's production chain.
- **Warehouse management.** This area refers to all activities that take place within this facility to ensure efficient operation, and are in charge of receiving material, storing it and preparing and delivering orders.
- **Railway transport.** Much of the movement of goods is through rail transport, as it admits a significant amount of cargo with relatively little accidents and pollution, thus becoming an efficient means of transport for medium and long distances.
- **Road transport.** In this area of activity the main means of transport is the truck, which although it has a relatively small transport capacity compared to other means, allows goods to move quickly over short distances and is easily coordinated with other transport systems.



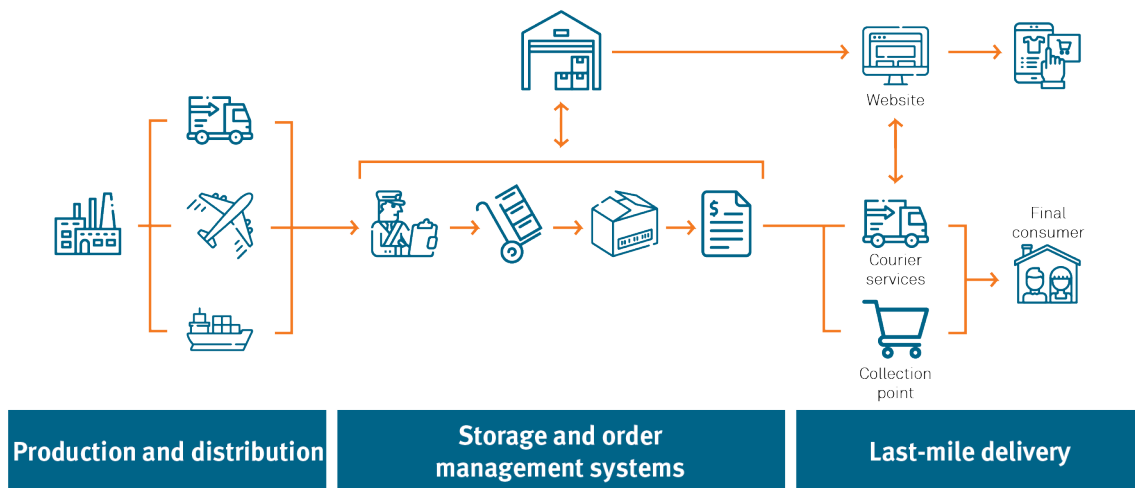
The core of logistics and freight management is the concept of a **logistics chain** or **supply chain**. It is defined as the system that manages storage and transport and aims to make products available for final consumption. That is, it provides the distribution process with enough product to satisfy the market at the lowest possible cost, always serving the following objectives:

- **Optimising transport costs**
- **Minimising product quantity in stock**
- **Delivering the goods just in time**

The design of the logistics chain is determined by a system of distribution of goods flows and information flows necessary for management.

Graphically,

Figure 2. Current logistics chain (digital)



Source: Prepared by the authors, based on data by Benchmarking of experiences and tendencies in last mile Distribution (2018).

Logistics and freight management are aimed at managing the flow of materials and information, coordinating resources and demand, in order to ensure a certain level of service at the lowest possible cost by using **any transport system**: road transport, ship, rail and air transport, among others, as well as multiple combinations between different transport systems.

The specialisation of production and the need for high-quality, highly specialised services have led to the emergence and consolidation of **companies that are specialists** in the management of the logistics chain, providing **transport, storage, stock management, delivery and traceability** of products, among others, so that client companies do not have to deal with supply and can focus on their own production process, thereby gaining in overall efficiency. The logistics chain ensures the optimum functioning of productive processes, and because of that it is so important today.

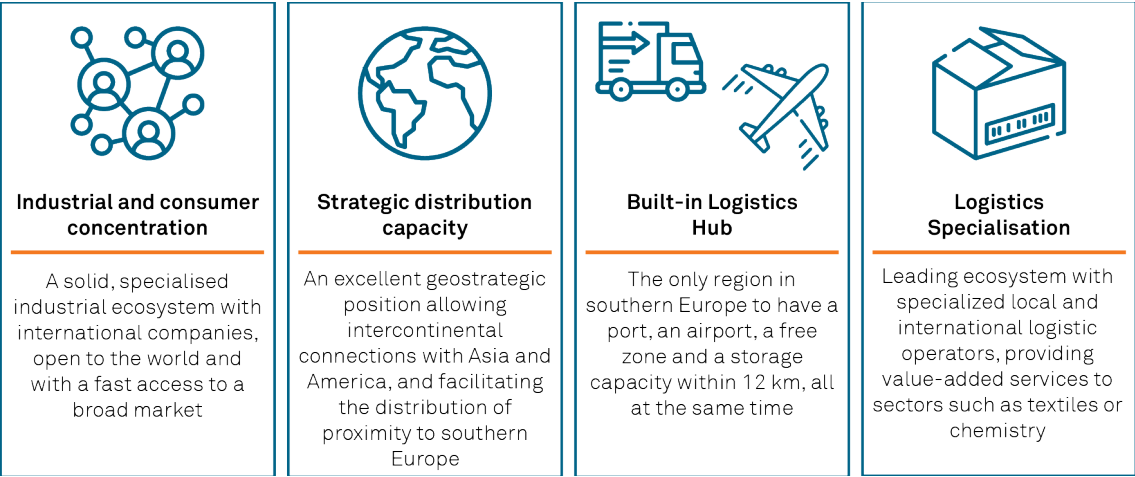
Besides, the economic activities that make up logistics and freight management are, of course, affected by the process of **technological change** and, in particular, by the **digital revolution**, as well as by the need to increasingly have more sustainable supply chains, that is to say, with a **neutral environmental impact**. This continuous change, which can also be found in other sectors of economic activity, makes it easier for logistics chain management to apply **Industry 4.0 technologies**, for example in warehouse management or in intermodal route planning and digital fleet control.



One factor that has recently had a strong impact on logistics and freight management has been **online trade**. This new type of trade implies that the product acquired from the point of production must be brought to the point of consumer collection (usually the home), thereby inevitably increasing the pressure on the logistics chain as well as increasing the number of transport routes and services, resulting in undesirable effects of higher **CO2 emissions** and **higher traffic saturation** in urban areas.

Finally, it should be pointed out that in terms of the Logistics subsector it has been considered that the area of **Catalonia has a strategic location** and territorial configuration that makes it optimal for logistics activities, as the following graph states:

Figure 3. Logistics in Catalonia: competitive advantage



Source: Prepared by the authors, based on data by ACCIÓ (2019), La logística a Catalunya.

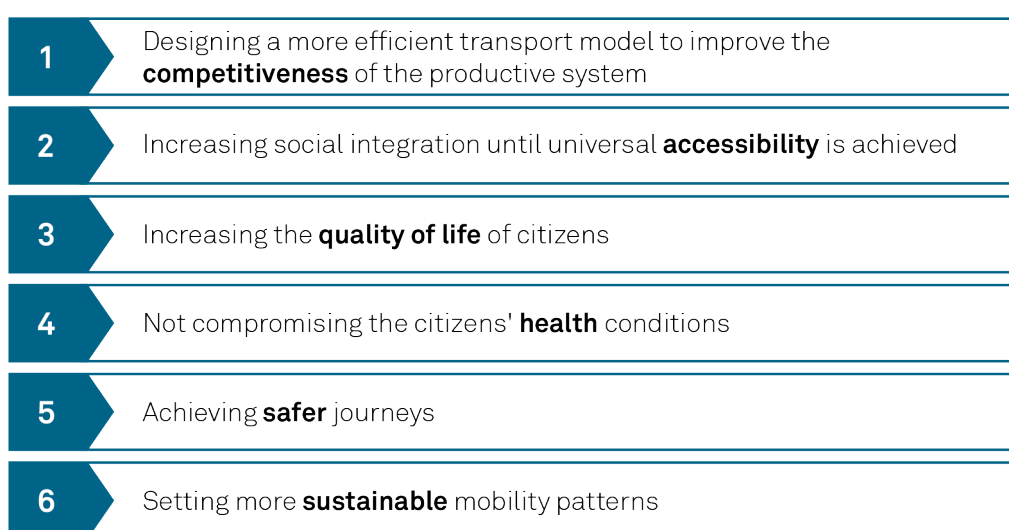
Urban mobility

Urban mobility refers to the **flows of people and goods taking place in urban areas**, i.e., where urbanised areas define villages, cities and towns where travel occurs. The phenomenon of urbanisation was consolidated in the second half of the 20th century, and it is estimated that by 2050 70% of the world's population will live in urban areas. Mobility flows are sustained by **transport systems** (such as rail or road transport fleets) and in highly densified urban areas are where the so-called **negative externalities** occur: **traffic, accidents, pollution and public space occupation**. Transport is responsible for 30% of CO2 polluting emissions in the EU and, within transport, road transport accounts for 72% of emissions. Consequently, the management of mobility has become a key factor in the **competitiveness** of metropolitan areas, which means that it affects the competitiveness of their productive network and also the **quality of life** of the citizenship.



For these reasons, urban mobility has become an **area of public regulation and intervention**. The scope and intensity of the movement of persons and goods, the interaction that is established between them and their effects in the form of negative externalities are the hard core of public policies, with the aim to obtain a model of sustainable mobility which is specific to each territory or metropolitan area. This will help to harmonise, pacify and make urban mobility flows more efficient. Graphically,

Figure 4. Urban mobility model: present and future



Source: Prepared by the authors, based on data found in the report *Guia bàsica per a l'elaboració de plans de mobilitat urbana*.

In urban mobility, the term “**modal share**” is used to analyse the means by which journeys in cities are carried out:

- **Active mobility:** refers to travels carried out on foot and by bicycle
- **Public transport:** includes rail and bus transport systems, as well as taxi services
- **Private vehicle:** includes car and motorcycle, basically

Within the mobility subsector we can find the professional activities of auxiliary **mobility support services** (e.g. managing fleets of shared vehicles) and **public transport**.

- **Auxiliary services.** They encompass activities aimed at planning and executing activities linked to mobility —both public and private— to improve their efficiency and adapt it to new user demands. It also incorporates all activities aimed at managing shared transport services.
- **Public transport.** It encompasses the collective means of transport that users do not own (as opposed to private transport systems). These services may be managed by private companies or public consortia, and are usually funded partly by direct payment by users of the services and partly also by public funds.

In the great urban areas around us, there is an inherited situation in which active mobility and public transport have less weight than the private vehicle, which in turn is the means of transport that generates more negative externalities. Consequently, public policies must always aim to **reduce the relative weight of private vehicle use**. As an example, in the case of Barcelona, in 2018 26% of the journeys were carried out by private vehicle, and in 2024 this is expected to become 19%, according to the Urban Mobility Plan promoted by the Barcelona City Council.



Finally, it is worth saying **managing urban mobility** has become a key issue in local agendas, given that social pressure for a better quality of life (away from insecurity, pollution, noise, traffic and usage of public space) is a factor in urban competitiveness. In this regard, policies to promote equipment and infrastructures linked to improving mobility are a priority, as is the promotion of intermodality (areas for the exchange of different transport systems) to move forward in the creation of more efficient mobility networks. Other realities such as **fare integration**, the construction of **parking lots to discourage the use of the private vehicle at the entrance to large urban centres** (e.g. park&ride areas) or **schedule regulations in goods loading and unloading areas** could also be mentioned here.

Aeronautics

Aeronautics is the set of knowledge and economic activities that make an aircraft safe and efficient to fly. Aeronautics itself is nothing more than a **system of transporting people and goods**, but because of its technical characteristics, aeronautics constitutes a distinct economic subsector. It includes everything related to airport management, aircraft design and construction, navigation systems, communications and air traffic services, methods of operation of aircraft, as well as legislation and regulations applicable by civil aviation organisations and agencies.

Within the subsector of aeronautics we find two major **areas of activity**:

- **Airport services.** It encompasses the activities that take place in the airport area and which allow flights to be conducted with maximum efficacy, efficiency and safety.
- **Air transport.** This field of activity includes those directly related to the movement of people and goods for commercial purposes performed by aircraft.

The most visible part of the Aeronautics subsector are **airports**, which are large facilities with a clear centrality role in the current metropolitan areas and where a large number of service companies (aircraft maintenance, surveillance and control services, fuel provision, among many others) accumulate a strong economic impact on their environment.

Aircraft are characterised by **three** very different **aspects**: **airport infrastructure management** -runways for the landing and take-off of aircraft, terminals, control tower and commercial activity for passengers-, **airlines** -aircraft operation, routes, crew management- and **passenger management** -customer care at flight time, handling and passenger boarding services-.



Graphically,

Figure 5. Airport employment and services



Source: Prepared by the authors.

Regarding the impact and driving force of Aeronautics, there is a distinction between **primary markets** of aeronautical economic activity (tourism and leisure travel, professional travel and freight distribution) and **secondary markets** (additional services aimed both at travellers and companies directly linked to transport), which also have considerable weight.

Today, the aeronautical sector is central to society, both because of the number of people who use the services, and because of its role as a **booster and economic promoter** of a territory, with the added value that it is an intensive economic activity in knowledge and technology.

In short, the sector of Logistics and Mobility includes several areas of activity of a heterogeneous nature, but with the clear common denominator of providing solutions to the needs of the movement of persons, freight, goods and services. The increase in the mobility of persons in cities and territories, as well as the increase in the mobility of raw materials and products in logistics chains, pose the challenge of making the various activities in the sector more **economically efficient and environmentally sustainable**.

Sector trends

As in other sectors, the Mobility and Logistics sector is experiencing a time of **change and transformation** within the new commercial and digital environment. Detected trends are aimed at reducing negative externalities and making the supply and distribution logistics chains more efficient. The sector is therefore fully involved in the transformations that will result from the **Energy Transition** towards Sustainability and the **Digital Transition** as an accelerator of technological change.

Established trends

- **Logistics Platforms.** They are the key to logistics management. These are limited spaces in which different logistics operators (companies) carry out activities related to organising the distribution of goods, at both local and global levels. They offer services to workers (restaurants, rest areas, repair workshops, customs services, among others), logistics companies (warehouse, manipulation, order preparation) and intermodal services (articulation of different modes of transport). Logistics platforms reduce management costs and increase the speed of movement of goods, which is reflected in the final price and quality of the service provided. Platform types are **dry ports** (usually an intermodal freight terminal located inside a country, connected directly to seaports through the rail network), **integrated freight centres** (usually road transport serving an industrial and consumer area) and **logistics activities area** (located near ports and container terminals, with intermodality with rail, road and airport).



- **Big data & data analysis:** It refers to the collection and processing of data generated along the logistics chain to improve logistics processes and mobility flows. Specifically, the distribution of goods provides a large amount of information can be collected and analysed **to make forecasts and automate functions**, such as order preparation times or delivery times. It can also be applied to **stock control**, through processing of information generated in the warehouse and managing records about customer behaviour.
- **Increase in air transport.** The aviation sector has always experienced sustained growth. The International Air Transport Association foresees that **the global number of passengers will almost double by 2036**, rising to 7.8 billion per year. To meet this demand, the aviation industry continues to increase production to historic levels. In July 2018, Airbus announced that it would need nearly 37,400 new aircraft, worth \$5.8 trillion, for 20 years, doubling the world's passenger fleet to over 48,000 aircraft.
- **Assistive robots (Robotics):** Automation of order preparation store (Picking) and packaging tasks, which requires uninterrupted speed and accuracy, with the launch of robots that are coordinated and synchronised under specialised software. This trend is well established, as is, for example, the introduction of robots into the production lines of the manufacturing industry.
- **Online commerce.** The process of digitisation and change in consumer habits has led to the sector's growth being structured around e-commerce and the new opportunities created by it, which has posed a new challenge in the logistics distribution —since the products acquired must be delivered to the home of the buyers— as well as in the means of payment.
- **Electric Micromobility.** This is also a trend that has recently been established in urban areas. It is understood as the use of light, small-sized means of transport fitted with a low-power electric motor or used to travel short distances with a high level of personal autonomy, mainly **bicycles, skateboards and electric motorbikes**. This reality has led to the creation of companies with different business alternatives (suppliers and mobile applications, primarily) and has consequently become a niche of professional employment for technical profiles.

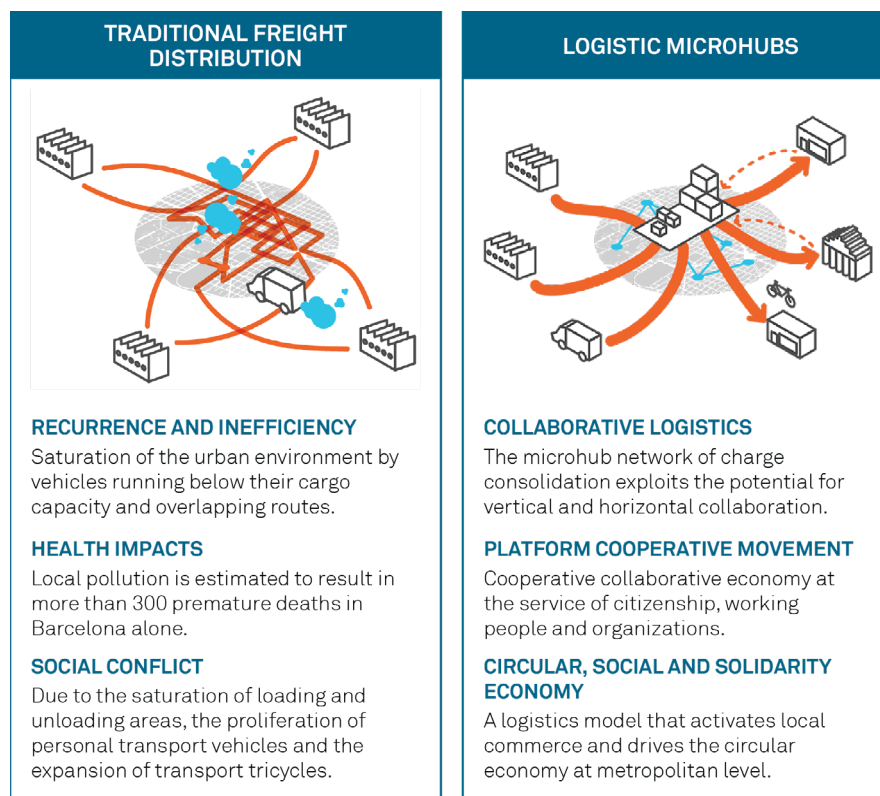


Emerging trends

- **Maas Mobility Platforms (Mobility as a service).** They are digital platforms, websites or mobile applications that **integrate all services, modes and transport operators**. This grouping allows offering a unified mobility service with a single subscription payment. Maas is used to promote the **efficient use of mobility**, such as intermodality, the use of different public transport systems or even demand-based transport. The aim of this digital solution is not so much to use new resources, but rather to optimise existing resources.

- **Microhubs (Last Sustainable Mile or Capillary Distribution of Goods).** It is a trend closely linked to online trade, in which distribution and delivery must be done in urban areas. According to the latest data by AMB, more than 20% of urban mobility is generated by freight management and, in addition, commercial vehicles account for 40% of polluting emissions. Therefore, microhubs are **logistics facilities** that group goods and products destined for deliveries within the boundaries of a given urban area. This space allows a change of the traditional distribution vehicle (cars and vans) to more green and efficient modes of transport, such as bicycles or electric motorbikes. Its purpose is therefore to **reduce the negative social and environmental externalities** generated by traditional models, such as traffic congestion and pollution, primarily. Graphically,

Figure 6. New urban logistics



Source: Prepared by the authors, based on the report *Logishub: Impulso de una red urbana de micro-hubs de consolidación*.

- **Logistics Marketplace.** It is a digital space or platform where a large number of transport and distribution companies are present and offer their services. It works as an **online trade portal** in which different **shipping management offers**, including prices, coverages and delivery times, can be evaluated. The purchaser of the logistics marketplace is a company that wants to supply itself to sell to its customers and can choose the most appropriate option depending on the product the company sells, their budget their commercial context. In short, a marketplace brings logistics companies into contact with companies operating in a given market. In this way, wholesalers make a transport application which is seen by the logistics companies that they themselves have designated, which must provide prices and road responses to this request. Logistics companies, for their part, place their weekly routes on the platform so that they are known and used by wholesale companies.

- **Drones and delivery of goods.** The technological development of these widgets (autonomous and unmanned aerial vehicles) along with evolving legislation could soon open the way for their large-scale implementation in the delivery of last mile products. The use of drones could **drastically reduce labour costs** and has been presented as a disruptive potential for the packaging industry. Online retailers and large distribution companies are already presenting patents that would allow the deployment of this technology in towns, cities and isolated locations. In recent years a great deal of research has been done on the potential use of drones for parcel delivery, mainly in the field of logistics optimisation. However, little is known about its potential market and its economic viability.



- **Electric and autonomous aircraft.** Fuel is one of the largest costs in air transport and the aim is to reduce it by developing **more fuel-efficient propulsion systems**, with more electric aircraft as a first step to a fully electric aircraft. However, this development still requires a great deal of research and development. Similarly, a new trend in aircraft design and operation is the implementation of **autonomous flight systems**, with the ultimate goal of launching unmanned flights as soon as possible. Aircraft are expected to be reduced to a single pilot, and subsequently there will be no cabin crew. In this sense, drone technology parallels this trend, although technology will have adapt to larger aircraft and longer journeys.

Professional profiles

The Mobility and Logistics sector has **more traditional professional profiles** (lorry drivers, forklift truck operators, warehouse managers, and cabin crew staff, among others) and also **more recent professional profiles** that have been created due to the established and emerging trends identified in the previous section of this report. However, whether we are talking about commercial distribution, passenger transport or the management of logistics supply chains for raw materials or commodities for the big industry, the increase in **trade** and the **transfer of people and goods is rising**. Therefore, having logistics supply networks and increasingly efficient passenger transport systems is a key factor in improving competitiveness, not only of the sector but of economic activity in a region or country. In this regard, we can generally expect to see **increasing employment opportunities** in the sector, as well as the **emergence of new professional profiles**.

According to a study by Foro de logística, logistics accounts for **14% of the GDP of the European economy and employs more than 11 million people**. Of these, almost 3 million are dedicated to freight transport in Europe. In Spain, more than **1,163,600 people are employed** in the field of logistics and, of these, 550,000 are employed in road transport. It should also be pointed out that **74.5% of goods in the European Union are moved by road**, while in Spain the percentage is rising to 94.5%, according to Innovación en Formación Profesional. Regarding the Aeronautics subsector, airlines carry **3 billion passengers and 50 million tonnes of cargo** worldwide per year in 32 million flights, according to data by the Escola Superior d'Aeronàutica. This source also foresees that these figures will increase considerably over the next 20 years, which will result in a high demand for employment, especially among the passenger cabin crew.

Below are the **professional profiles** that will be key to the sector's development in the near future:

Responsible for logistics and storage

They are the person who **coordinates, manages and supervises the warehouse**, controlling the reception and distribution of raw materials, semi-produced products and elaborate pieces. They ensure the management of the logistics chain between customer forecasts and delivery of products, and organises and coordinates the means of distribution. Due to the incorporation of digital technologies, continued training in fields such as the **digitisation of paperwork and the automation of management/warehouse operations** will be increasingly appreciated.



Logistical Engineering Technician

They are the person involved in the **design, calculation and organisation of the logistics chain**. Accordingly, they design the application of new logistics processes, technology and infrastructure needed for optimal material and information flow. It has become a significant role due to the increasing impact of technology applied to logistics processes; this professional must know different **production and logistics software** and continuous improvement tools, as well as **overall quality management systems**. A **high level of English** is required, and often a second language is also needed depending on the degree of internationalisation of the organisation.

Smart mobility engineer

Specialist who focuses their activity on **developing applications for mobile devices** from large amounts of data (big data and artificial intelligence systems related to urban mobility management) and develops and adapts digital widgets. Trends like Maas are expected to increase the demand for these high-specialisation professionals with a highly technological component. In this professional profile, **knowledge in intermodality, Mobility as a Service, autonomous and connected driving, and storm water management** on roads will be increasingly valued, among others.

Airline pilot

They are the person **carrying passage and cargo through the air**, usually following pre-fixed routes and schedules. They manage what is called the pre-flight test, trace the flight plan in detail, and coordinate the rest of the crew, giving instructions to perform their tasks, among others. Airline pilots receive a **regulated** and closed **training**, where the pilot's knowledge is regularly updated according to trends.

Warehouse Operator

They are the person performing the tasks of **maintenance, storage and forecasting of orders**. With the hatching of flexible production systems, the warehouse has become a dynamic and mechanised centre where professionals working there must be familiar with new digital technologies. Professionals must receive ongoing training on safety, new storage techniques and new technologies, enabling them to optimise their functions.





Cabin crew member

These professionals **take care of the passengers during flight** and are responsible for **their safety, welfare and comfort**. A cabin crew member is the person who provides passengers with the necessary emergency information and manages the incidents that may occur during flight, among others. Currently, the skills profile requires certain **digital knowledge**, especially regarding online check-in (check-in and mobile boarding passes, among others) and the control of passengers through digital devices and language skills.

Runway agent

They are the person in charge of **guiding the pilot during the airplane take-off phase** and steering it in the track's circulation manoeuvres. These manoeuvres, called taxiing, are operations intended to place the aircraft on the track or return it to the parking area. To become a track agent, it is necessary to pass a selection process called Aena, consisting of theoretical and practical tests.

Forklift Truck Operator

They are the operator that performs the functions of **maintenance, storage, replenishment and product service** on the mount lines or in the warehouse. This professional must work in an increasingly dynamic environment, managed by technological systems (roads and elevator platforms) due to the automation of warehouses. They must be able to use **computer systems** to record and locate stored products (barcode, hand terminals) and perform material and product **placement and cargo operations** in accordance with established procedures.

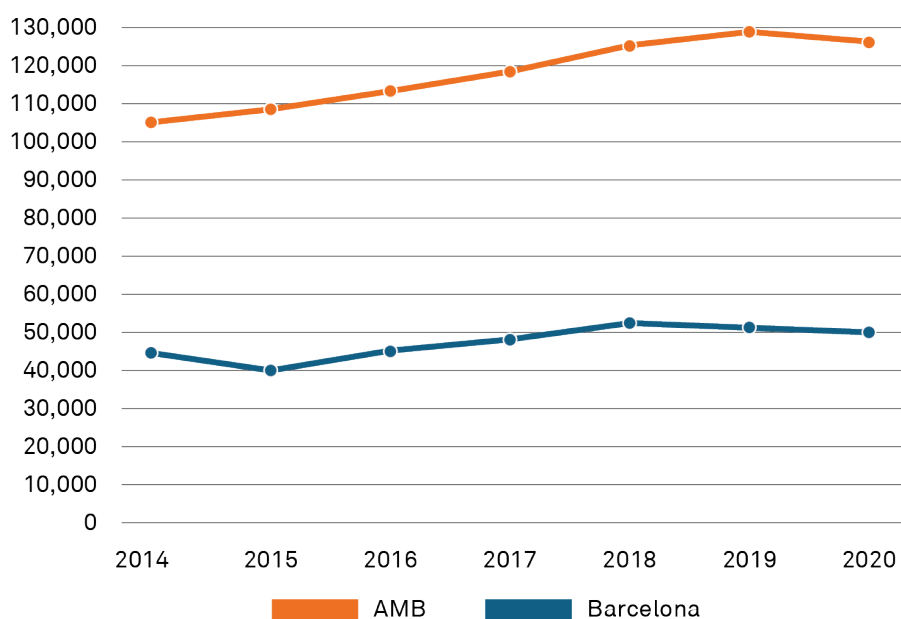
In addition, the impact that **technological change** will continue to create in the sector (increasing online trade, applying techniques from industry 4.0 to the management of logistics processes, improving sustainability and intermodality in urban mobility, among others) predicts an increase in logistics flows and mobility and the transformation of the existing mobility model in cities and territories into efficiency and safety, leading to the **foreseeable rise of other professional profiles** within the sector, such as the [Stock Control Manager](#), the [Route Preparation Technician](#), the [Rolling stock maintenance engineer \(trains\)](#), the [Lorry Driver](#), the [Expert Consultant on Urban Mobility](#) and the [Air traffic controller](#), among others.

The sector in figures

Mobility and Logistics, including Aeronautics, consist of economic activities serving other sectors. Within the Aeronautics, aircraft manufacturing can be considered as industrial production, but it has an irrelevant presence in the Barcelona and Catalonia area. In this way, the subsector of Logistics has become a key industry for the economy and **indispensable for the development of other important industries** in Catalonia such as the automotive, food, or chemical sector, among others. The subsector of the Aeronautics is aware of **sustained increases in the number of passengers and goods transported**, and data from the subsector of Mobility also show an upward trend as demand for the movement of persons and goods in urban areas and in the Catalan territory is steadily increasing.

According to data from the City Council of Barcelona, the Logistics Sector generates **5.7% of the metropolitan occupation** and offers **50,326 jobs** in the city. More than 21,000 jobs have been created since 2014, with a cumulative increase of +20.5%, higher than that of total metropolitan employment (+6.1%). Thus, by 2020 the logistics sector (including air transport) closed the third quarter with 126,464 people affiliated to the Social Security in the Barcelona Metropolitan Area. 75.4% of the metropolitan logistics occupation corresponds to salaried personnel, and 24.6% to self-employed work. Graphically,

Figure 7. Evolution of jobs in the Logistics Sector in Barcelona and its metropolitan area (AMB)

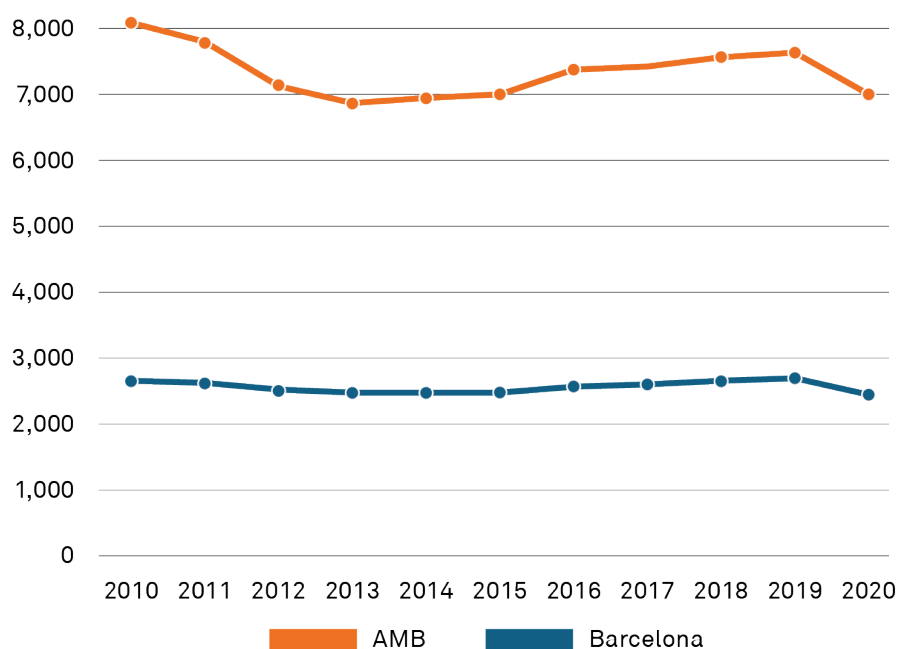


Source: Prepared by the authors, based on data by the Barcelona City Council – Barcelona Activa.

In relation to the evolution of the number of companies, **6,961 logistics companies operate in the Barcelona Metropolitan Area**, of which 2,444 are located in the city of Barcelona. The metropolitan business fabric of the sector has been reduced by fewer than 616 companies in relation to the pre-pandemic values of 2020 – 2021, with a percentage reduction (a 8.1% drop) similar to that of the city, which has generally affected all economic activity.

Graphically,

Figure 8. Evolution of the number of companies in the Logistics Sector in Barcelona and its metropolitan area (AMB)

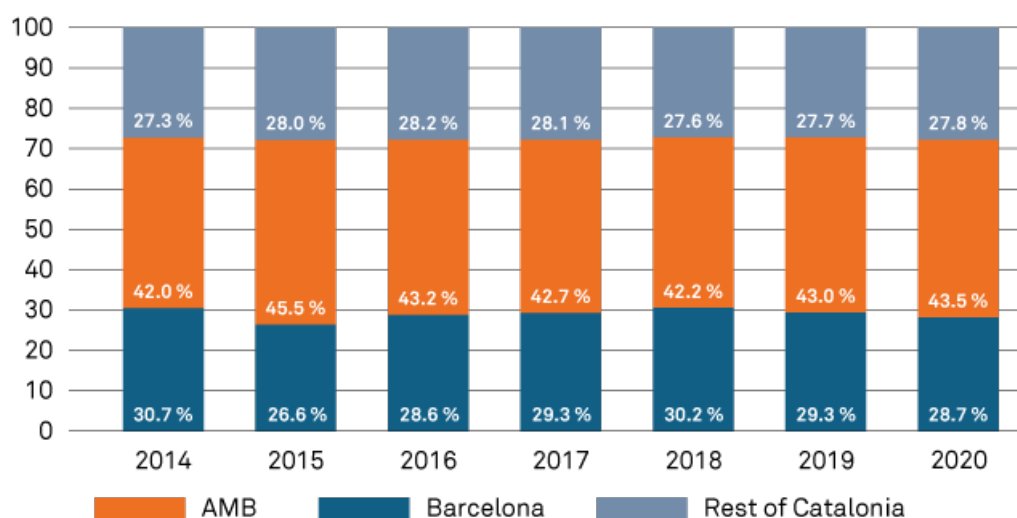


Source: Prepared by the authors, based on data by the Barcelona City Council – Barcelona Activa.

Furthermore, looking at the subsector of Logistics in the Catalan context, it must be said that the metropolitan area of **Barcelona is the central core of the Catalan logistics sector, and concentrates 72.2% of the jobs** of this activity in the area. The city concentrates 28.3% of logistics jobs in Catalonia.

Graphically,

Figure 9. Percent distribution of jobs in the Catalan territory



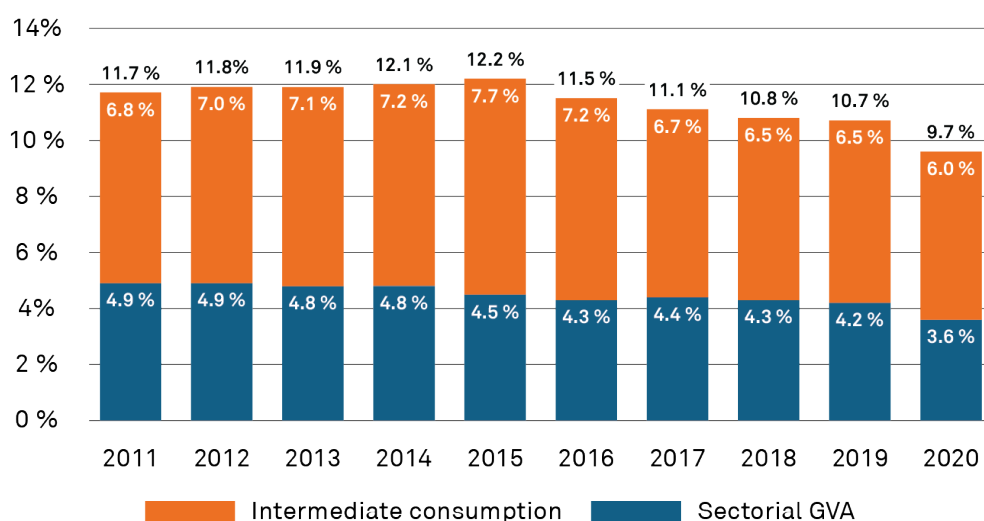
Elaboració pròpia a partir de dades de l'Ajuntament de Barcelona – Barcelona Activa.

On the other hand, Catalonia is the state's leader in terms of area dedicated to **logistics warehouses**, with more than **8 million square metres of usable** warehouse surface available. Only the province of Barcelona has almost 6 million m², thanks to a privileged industrial and logistics environment that has enabled Catalonia to be differentiated and placed as a **leading logistics region in southern Europe**. However, other studies alert the low rates of availability of finalist warehouses, especially in the metropolitan area of Barcelona. As an example, the available soil is estimated to be just over 3% in the whole Catalan and 1% in the Barcelona area and its first metropolitan area in 2021. In view of the great activity of the logistics subsector, we also note the need for public administrations —in cooperation with the real estate sector— to facilitate the placing on the market of land projects for logistics activities.

In terms of the contribution that the subsector of Logistics makes to the whole Catalan economy (Gross Domestic Product, GDP), the **weight of GVA fell by 1.21 percentage points in 2020**, from 4.86% to 4.65%, and the weight of intermediate consumption fell to a lesser extent, by nearly 0.8 percentage points, from 6.81% to 6.03%.

Graphically,

Figure 10. Weight of GVA and Intermediate Consumption of the logistics activities in the GDP



Sectorial GVA: It is based on data published by the Idescat concerning the VAB of logistics activities. The logistics activities corresponding to CCAE 49 (Earth transport; pipe transport), 50-51 (Mail and Air Transport) and 52-53 (Storage and transport-related activities, postal activities).

Intermediate consumption: it is based on the data from the Input Output of Catalonia (MIOC) published by Idescat. In this context, the concept of intermediate consumption refers to what logistics activities consume in other sectors. These consumptions are associated with logistics because they are activities with a high logistics component or activities that would be unfounded without the logistics sector.

Source: Prepared by the authors, based on data from "Contribució de la logística a l'economia", by PIMEC Logística.

As for Mobility, almost 27,458 companies are concentrated in Catalonia, and this subsector **weighs 14.4% of the GDP on the Catalan economy**. Specially in the metropolitan area of Barcelona, the **collective public transport** stands out, as well as its impact on the economy of the region, which moves more than 928.9 million people (2022) and collects more than 700 million euros per year. Graphically,

Figure 11. Urban mobility in figures

Urban mobility	Catalonia/AMB
Weight of Mobility (%GVA)*	14.4 % (CAT)
Number of companies	27,458 (CAT)
Number of road transport operations	36,876,194 (CAT)
Public income (millions of euros)	693.81 (AMB)
Number of journeys in collective transport (millions)	928.9 (AMB)

*Based on data by Transport, Information and Communications regarding to the services sector by IDESCAT.

Source: Prepared by the authors, based on data from "Indicadors de competitivitat del Sistema Logístic Català" (2020) and Transmet (2022)

Regarding **Aeronautics**, this is a key subsector in the world economy and also in Spain, since it is directly linked to the development of the tourism sector and the construction of aircraft, with an enormous capacity for drag and intensive knowledge and technology.

Aeronautics represents a **weight of over 12% of Spanish GDP** and an estimated **440,000 jobs** are directly and indirectly generated. The aerospace industry is a key sector for the development of the economy of states, both strategically and in terms of the consequences for the civilian population and everyday life. According to the Association of Industrial Engineers of Catalonia (2017), the Catalan territory has 22 companies that develop activities associated with aeronautics, 21 companies that supply Airbus services and two related to the aeronautical and space construction and machinery. In total, the sector generates more than **1,000 direct jobs**.

Graphically,

Figura 12. Aeronautics in figures

Aeronautics	Spain/Catalonia
Weight of Aeronautics (%GDP)	9.3 % (ESP)
Employment created	49,600 (ESP)
Number of companies*	49 (CAT)
Number of annual passengers	19,399,194 (CAT)
Freight volume	136,212 (CAT)

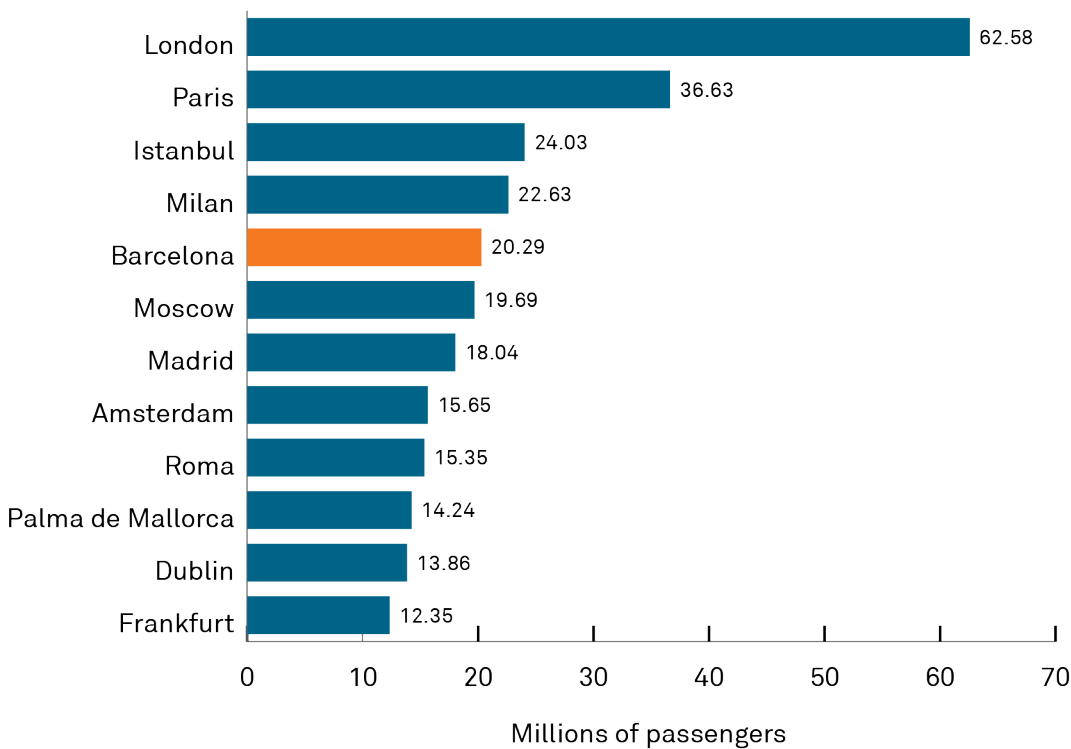
*For data analysis, the following areas by the Insistut Nacional d'Estadística (INE) have been taking into account: 51 Air Transport, 511 Passenger Air Transport and 512 Freight air transport and space transport

Source: Prepared by the authors, based on data by ICEX, Idescat and Generalitat de Catalunya.

Airports have become a **strategic infrastructure** in a world that is hyper connected and globalised by economic and technological processes, as they are an international gateway and exit. In 2021, more than 138,045,890 passengers were registered at Spanish airports, about 20 million in Catalonia, especially at El Prat airport (more than 90%). As for the movement of goods, almost 140,000 tonnes per year are recorded in Catalonia.

At European level, Barcelona remains the **fifth city in terms of passengers by origin/destination**. This figure shows the positioning of Barcelona as an attractive destination compared to other European cities, being one of the best connected cities in Europe. Graphically,

Figura 13. Main European cities in O&D traffic (February 2022 - February 2023)



Source: Prepared by the authors, based on data from Barcelona's Air Traffic Observatory Summer Report 2023.

Projection

and future scenarios

The following outline presents a summary of trends that will mark the future scenarios of the Mobility and Logistics sector:

Weaknesses

- **There is a lack of curricular adaptations for new professional profiles** (especially those in digitisation of logistics processes and urban mobility). Besides, greater visibility should be given to vocational training studies related to this sector.
- In order for innovations in urban mobility to move forward (e.g. MaaS mobility platforms or microhubs) it is necessary **to grow and consolidate a culture of public-private collaboration** between companies, citizenship and public administrations.
- It is necessary **to transform public transport networks** by applying **more intelligent and accessible operating models**, to address the need to minimise the use of the private vehicle and to ensure mobility as a universal right.

Threats

- Due to competition between companies, **the public consumer becomes increasingly demanding** in product quality and purchasing conditions, especially in personalisation and delivery times. This results in more **tension in logistics chains**, to which the sector will have to respond.
- Due to the process of digitisation and technological change, **some traditional occupations** (drivers, warehouse operators preparing orders, and fleet management, among others) **will have to be converted or adapt to new trends**.
- **Supply chains may cease to operate for unforeseen reasons of geopolitical, economic, health or other types**, which would impact on the economic activity of the other sectors: lack of materials, delivery times, and production shutdowns, among others.

Strengths

- The Mobility and Logistics sector presents **sustained growth indicators in employment**. The **non-seasonality** of the sector should also be highlighted: the few fluctuations favour high rates of job stability.

- The **growth of online commerce** as an established trend in new cultural patterns becomes an accelerator of the digitisation process that impacts logistics areas and creates direct and indirect jobs.
- This sector is open and **willing to transit to a model with less environmental impact**. This is made clear by the consolidation of sustainable technologies such as electric (public and private) vehicles, sustainable packaging or zero waste flights.

Opportunities

- The very nature of logistics and mobility activity offers a broad **margin for the implementation of new technological solutions** arising from the digital transition, which must allow the sector to improve the efficiency of its processes.
- There is a clear **social demand for more sustainable mobility** (without CO2 emissions, noise, accidents or traffic jams) and European regulations are pressing in this direction, so there is an opportunity to rely on the **start-up ecosystem**: smart mobility solutions, connected vehicles, self-employed vehicles, MaaS, and the Internet of Things, among others.
- **Reverse logistics**, traditionally understood as the return processes of inventory surpluses, customer refunds, obsolete products, now applies to the creation of **separate collection channels of material waste** that still have a value that can be recovered through reusing or recycling.

In short, the Mobility and Logistics sector becomes a key sector in the Catalan economy with optimistic growth expectations, thanks among others to the consolidation of online trade, digital transformation and the incorporation of high added value technological solutions.

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