LOGISTICS IN CATALONIA

CATALONIA IN THE GLOBAL LOGISTICS CHAIN


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PART I. LOGISTICS IN CATALONIA – A HISTORICAL OVERVIEW

Catalonia is an outstanding trading point in the Western Mediterranean thanks to its position as a natural gateway to southern Europe. Phoenicians, Greeks and Romans all settled on the Catalan coast and started the territorial planning and structuring of the Iberian Peninsula which two thousand years later is fully consolidated.

During the Roman Empire, the gigantic road network of the Via Augusta, which linked Cadiz and Rome across some two thousand seven hundred kilometres, formed part of a system that spread across Europe, the Middle East and North Africa in which land and sea transportation complemented each other.

In the Middle Ages, Barcelona's prosperity was linked to the fortunes of its merchants and traders, so the routes that crossed Catalonia and extended from the city's ports were absolutely crucial.

However, this flourishing economic activity was brought to a halt by the War of Succession which led to the abolition of self-government. In the new political and social context of the 18th century, Catalonia experienced a profound transformation which heralded in a new economic upsurge with the industrial revolution of the 19th century.

Maritime and rail transport

The Port of Barcelona has always been one of the most important economic hubs in Catalonia. Ever since the first artificial harbour started being built in the middle of the 15th century, its expansion and mechanization have been ceaseless. Its dynamism led to the initiative to set up a customs-free area, the Zona Franca, in the 19th century. Today, this area has become the biggest centre of industrial and logistics activities in southern Europe.

Despite the fact that the first railway was laid in Catalonia back in 1848 and that Barcelona's main railway station was situated next to the port, the arrival of high-speed rail transport has been slow.

The radial design of the Spanish railway network has made connections with the rest of Europe somewhat complicated. However, the progressive implementation of the international-gauge Mediterranean rail corridor for goods transport between Almeria, Lyon and Milan and the new high-speed passenger lines may definitively resolve this situation.

Aviation

Air travel revolutionized the outlook of Catalan people at the beginning of the 20th century. In 1920 the first commercial flights started between Barcelona and Mallorca; in 1939 scheduled services with Madrid were established, and in 1970 the air shuttle between Barcelona and Madrid started. Barcelona-El Prat Airport reached one million passengers in 1963 and has grown continuously ever since, surpassing five million passengers in 1977. Barcelona airport was the only major Catalan airport until the opening of Girona (1967), Reus (1992) and Lleida-Alguaire (2010) airports.

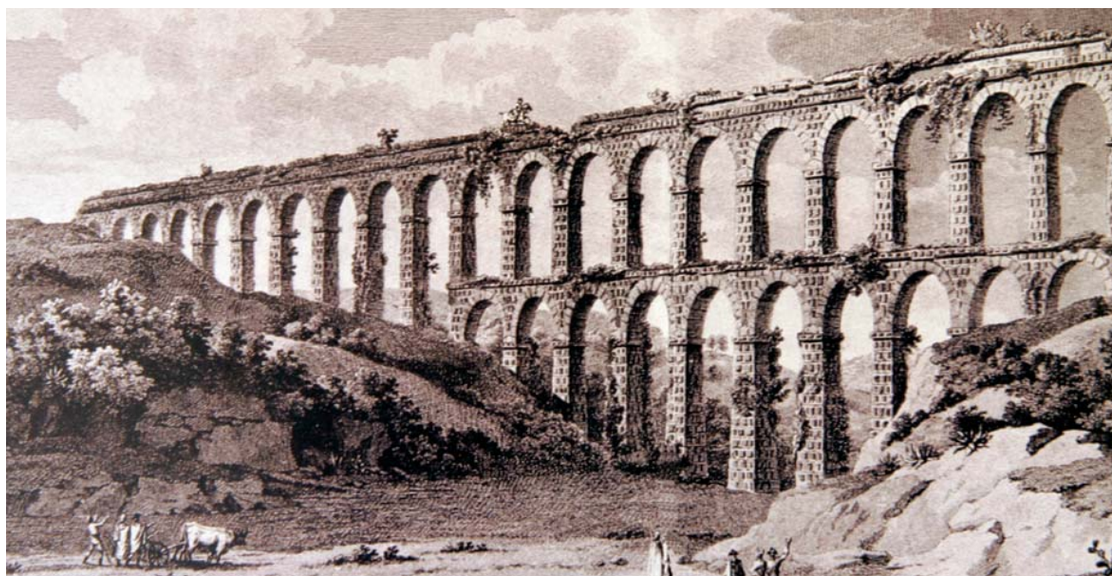
Urban logistics and the road network

In the last 150 years, Catalan cities have witnessed all kinds of innovations in the transportation of passengers and small merchandise, from pony-and-trap to stagecoach, then to omnibuses, horse-driven trams, steam trams and finally electric trams. From the start of the automotive era, private cars, taxis, trolleybuses and buses dominated urban and interurban mobility until, in the 1920s, the Metro was introduced in Barcelona.

The first proper planning of the road network did not take place until the middle of the 18th century, when the radial roads fanning outwards from Madrid were designed and in Catalonia construction started on the roads from Barcelona to Lleida, Girona and Valencia.

In 1868 there were 1,700 kilometres of roads in Catalonia, a figure which by 1900 had already reached 4,000 km, more than 10% of the entire road network in Spain. But it was not until the mid-1960s when the definitive modernization of the road network started, with the construction of the first toll motorways. The resulting development of trade and road transport was what led the autonomous government, in the last decade of the 20th century, to build the modern Integrated Goods Centres (CIM).

Today, Catalonia is one of the main production and consumer centres of southern Europe; it has consolidated itself as the logistics gateway for southern Europe, and its innovative tradition is still very much alive and well at the beginning of the 21st century.



The Berà Arch on the Via Augusta in Tarragona, according to an engraving published in *Voyage pittoresque et historique de l'Espagne* by Alexandre de Laborde at the beginning of the 19th century.

(Previous page) The *Llibre del Consolat de Mar* was one of the most important compilations of maritime law in the Mediterranean during the early Middle Ages to modern times. The image is a cover of a edition made in Barcelona dating from 1645.

PART II. CATALONIA IN THE GLOBAL ECONOMY

Domestic and foreign markets

Catalonia is well-known for the strength of its industrial and commercial sectors, which drive a gross domestic product (GDP) that in 2010 reached 209,727 million euros, representing 19.74% of the Spanish GDP. In terms of population, territory and economic power, Catalonia can be compared to Belgium, Austria or Denmark.

With a population of around 7,500,000 in 2011, the region continues to act as the economic driving force of Spain.

Per capita income in Catalonia in 2010 was 27,914 €, comparable with that of Germany or the United Kingdom. This per capita income drives the Catalan domestic market, with domestic consumption representing 56% of GDP.

Of the 619,678 registered companies in Catalonia in 2010, 7.2% were in the industrial sector, 15.5% in construction and 77% in other kinds of service industries. The Catalan economy is characterised by the diversification of its industrial fabric in sectors such as motor vehicles, pharmaceuticals, consumer electronics, food, petrochemicals, capital goods and transport, amongst others.

In terms of GDP share, the service sector predominates with 65.5%, followed by industry and energy with 17%. Construction represents 8.4%, while agriculture only represents 1% of GDP.

In the services sector, a key role is played by both the retail sector, representing 13% of GDP, and the tourism sector, with 12%.

Exports and imports

Catalan exports in 2010 amounted to 48,599 million euros and represent almost one third of Catalonia's GDP. Some 72% of exports were to Europe, with France and Germany being the recipients of one third of this figure. Catalan products are also exported to North, South and Central America and emerging nations. China currently represents 1% of Catalan exports.

By sector, the most important exports are motor vehicles, transport materials, chemicals, electronics and plastics.

Meanwhile, imports in 2010 amounted to 67,246 million euros.

Traditional, specialist and emerging sectors

Motor vehicles, food and textiles

Motor vehicle manufacture is the flagship of the Catalan economy, representing 10% of the whole industrial sector, founded on the Seat and Nissan factories and a large auxiliary industry.

The food and drink sector represents 17% of the manufacturing industry.

The food sector is made up of companies that produce a very diverse range of products. Of particular note are the production of wines and cavas, stockbreeding and organic farming.

In the textile sector, internationalization, design creativity and excellent logistics management have turned Catalan companies into world-famous brands, including Mango, Desigual and Custo Barcelona.

Specialization in pharmaceuticals

Catalonia is the origin and headquarters of the six main Spanish pharmaceutical companies. This tradition, and the dynamic nature of the region, have attracted the world's main pharmaceutical groups, with the result that almost half the pharmaceutical laboratories in Spain are located in Catalonia.

Emerging sectors

Among the emerging sectors, information and communication technologies contribute 3% of the Catalan GDP.

Biotech companies specializing in biotechnology, biomedicine and medical technologies are notable for their creativity and the added value they bring. Other noteworthy sectors include telecommunications, aeronautics, food technologies and technologies for renewable energies. In the services sector, logistics and social services stand out.

The axes of development

- Increase the internationalization of companies.
- Strengthen the industrial sectors, following the example of France and Germany.
- Increase companies' size.
- The use of information and communication technologies.
- Collaborative logistics, with the aim of reducing costs, optimizing assets, and improving the management of goods flows.
- Increasing the intermodality of logistics chains.
- Improving training standards.

World trade and logistics networks

The global economy and emerging markets

European Union countries are being forced to compete in markets with emerging countries whose labour costs are considerably lower. These countries have access to the same technologies and organizational designs, the same clients and the same capital suppliers.

In this context, the volume of exports from the United States, Japan and the European Union is declining, while those of China are increasing. Experts are recommending that Europe should not only concentrate on innovation and technological skills, but also that they should exploit logistics as a key area.

The geography of logistics networks

Globalization and the delocalization of production to emerging markets, with the consequent reorientation of the centre of gravity of the world's economic activities, are associated with the reorganization of international logistics networks, based on maritime transport.

In this respect, 80 % of the biggest ports in the world are in Asia, headed by Singapore and Shanghai. Half of the world's biggest airports can also be found in this region.

The new physiognomy of global transport is structured on connections between the regions that generate traffic: North America, Latin America, the European Union, with the Rhine axis as the most dynamic region and the Mediterranean as the port of entry for Asian products, and finally the Pacific Rim with the huge impetus of China.

Traffic between Asia and Europa accounts for around one third of the world's maritime trade; in other words, some 40 million TEU (20-foot containers), which is very positive for the future of Mediterranean ports.

Intermodal nodes and logistics infrastructures

The ability of different modes of transport to access logistics nodes is vital for regional economies in order to coordinate maritime transport with land transport by road and rail.

Although up to now road transport has absorbed up to 86% of traffic in Catalonia, with the forthcoming European-gauge rail corridor between Algeciras (Cadiz) and the French border it seems that the time has come for intermodality in Spain, with railways as the connecting element. The ports of Barcelona and Tarragona will now be able to increase their level of market penetration and expand the connectivity of Catalan companies.

When considering road transportation, the road network is the infrastructure that has the most significant impact in terms of the volume of investment it requires and its effect on the natural environment. Efforts are being made by the European Union to promote the development of rail infrastructures to mitigate these negative effects.

In the area of maritime transport, the major intercontinental ports are promoting non-coastal facilities with intermodal road-rail services connected to the maritime terminals by rail. In this respect, the Port of Barcelona is involved, in southern France, with the Toulouse Maritime Terminal (tmT), thus extending the hinterland of the port into the Midi-Pyrénées region.

Meanwhile, in accordance with territorial planning criteria, the Generalitat of Catalonia is promoting, through its company Cimalsa, a network of integral goods depots which is intended to address the logistics network needs of companies operating in Catalonia.

Variables of change in the logistics sector

Environmental, social and economic factors

- The new models of demographic growth that affect demand, territorial planning and investments in infrastructures.
- Increased consumption in emerging markets and sectors.
- More efficient management of scarce economic resources.
- The strengthening of European policies focusing on the environment and safety.
- The importance of information and management systems via the internet.
- New distribution and sales models.
- The need for an overall offering that engenders business integration and collaboration.
- The new strategic objectives: value, innovation and competitiveness.

PART III. THE LOGISTICAL SCOPE OF CATALONIA

Logistics management in companies

The management of logistics operations has evolved from a vision of isolated processes to an integrated activity thanks to the development of computer tools and manufactured execution systems (MES) which allow a factory's status to be ascertained in real time as well as anticipating bottlenecks. The idea is to create a harmonious system in all the company's operations, to which end it is essential to have real-time control and the information and tools available to interpret the process.

Every industrial or services sector has its own unique characteristics deriving from its business activities and needs its own logistics chain that has elements in common with the rest. Thus the pharmaceutical, food, electronics, hazardous materials and iron and steel sectors obey very different needs in terms of product volume, distribution characteristics or legal restrictions. It is difficult to determine how many logistics chains exist, though the experts have distinguished up to twenty different types.

The culture of logistics and the incorporation of new trends

The culture of logistics in Catalonia is heterogeneous, although most companies see logistics as a process whose costs and inefficient areas need to be monitored.

Logistics has been integrated in corporate strategies from both the supply side and the manufacturing and distribution side, optimizing the potential of infor-

mation and communication technologies (ICT). People are aware that logistics is not simply about physically articulating materials throughout the production process, but also managing flows of information in a shared value chain.

Companies tend to make a systematic evaluation of their suppliers and jointly optimize costs, seeking improvements in packaging, handling, use of B2B technologies, standardization of information systems and, above all, by the maximum transparency of stocks, the status of orders and consignments.

Production departments, external suppliers and logistics operators are all connected by a shared information system that specifies the need for materials; this is essential for tightening up the activities in a chain, keeping a continuous flow and reducing delivery times as part of the *lean production* concept.

In most sectors, it is not possible to keep stock on hold waiting for a hypothetical demand, so companies need to base their business on a *pull* strategy, whereby the market pulls the manufacturing and not the other way around.

Meanwhile, management techniques have been developed to optimize processes and take advantage of the capacities of facilities. Some of these include *just in time* (JIT) and the *theory of constraints* (TOC), which aim to identify bottlenecks in production processes to take the maximum advantage of the true capacities of the factory and improve any weak areas that have been identified.

Finally, forecasting tools allow predictions to be made as to the demand for a particular product within a certain period of time.

In the field of logistics subcontracting in Catalonia, according to the *Barometer of Logistics Costs* of 2008 by the Barcelona-Catalonia Logistics Centre (BCL) and the Cerdà Institute, companies subcontract more than 55% of their transport operations. With regard to storage, some 31% of companies completely outsource it, while 25% subcontract part of this activity.

The logistics of services

Logistics is becoming increasingly interesting to companies that offer service in the healthcare and medical sectors, technical support, restaurants and tourism. In all these sectors, costing and materials management play a crucial role in guaranteeing the efficiency of every movement.

A policy of suppliers who meet the company's particular circumstances reduces external costs, while a reorganization of internal flows, establishing logistics centres or subcontracting certain actions are options that should be considered in the planning process. The rationale of logistics needs to be incorporated in purchase management and internal procedures, with the client as the target at all times.

In the field of health services, public administrations are progressively incorporating management models that rule out inefficiencies and abide strictly by organizational parameters.

Hospitals should be seen as service production centres with patient-orientated processes aimed at curing them, but these processes can only be regarded as efficient when this is achieved at the lowest possible cost. Hospitals, as logistics entities, need to evaluate their external supply processes as well as their internal ones – the so-called intra-hospital logistics chain. The aim is for supply to meet actual consumption needs without losing the user-orientated facet.

Distribution in Catalonia

In 2007, commercial activities in Catalonia employed almost 640,000 people (20% of the working population) in more than 165,000 establishments.

The everyday self-service sector, which in 2009 accounted for 4,156 establishments, is the largest sector, led by groups such as Carrefour, Eroski, Mercadona, Condis and Bon Preu. The food corporation Guissona is also notable for its progressive growth in this sector.

On the other hand, Catalonia is one of the communities with the lowest density of hypermarkets, which has undoubtedly benefited small local retailers.

Municipal markets

These markets are the embodiment of the traditional capillary distribution of fresh produce and enjoy great social recognition as the guarantors of the Mediterranean cuisine. There are 170 municipal markets

Ergonomy virtual applied in the Seat factory of Barcelona.

in Catalonia with a total of 10,485 establishments, of which almost 9,000 handle 10% of all food distribution. In terms of their geographical distribution, 80% of these markets are in the province of Barcelona.

Distribution depots

Companies design their logistics networks by setting up distribution depots across their geographical region. These depots are productive logistics centres that bring added value to the logistics chain.

The central markets play a key role in purchase management together with direct negotiations between the manufacturers and major food outlets. In Barcelona, Mercabarna is the benchmark for supplying traditional local shops and hotels and restaurants.

The role of central buying consortiums is also an important one, as a method whereby associations of small retailers can compete with the major distribution groups. These central buying consortiums offer a means of negotiating with manufacturers and distributors and also offer other services to their members, such as marketing and technological and logistics support.

Urban logistics

In the metropolitan area of Barcelona, which covers an area of just 628 km², there are more than six million traffic movements every day, of which 32% are by private vehicle.

With regard to commercial distribution, the metropolitan ring is home to 66.78% of the Catalan population, 61.74% of self-service establishments, and 61.53% of its commercial footprint.

Given the saturation that all this inflicts upon the road network, one of the options is to supply establishments by night. This considerably reduces distribution times and fuel consumption and hence the environmental impact. Other options entail setting up loading and unloading bays that do not interfere with the mobility of other road users and creating urban consolidation centres specifically for concentrating and distributing products for a particular municipality, district or neighbourhood.

Logistics operators and services

The move towards subcontracting strategic activities is growing at the same pace as the capacity of logistics providers to provide new services, becoming strategic partners of their clients.

In 2010, there were 200 companies operating in the logistics sector in Spain, employing some 22,000 staff, though the five largest companies represented 37.5% of the market and the top ten companies 52%.

The main users of logistics services are from the food sector, which accounts for one third of this business, followed by the automotive sector, electronics, household appliances, textiles and footwear. With regard to subcontracted activities, the storage and handling of merchandise accounts for 43% of turnover.

Logistics operators in Catalonia

Due to Catalonia's status as a logistics platform for southern Europe, and given that it is Spain's leading producer and consumer, the region is of particular interest to multinational logistics operators.

All the leading operators in the Spanish market work in Catalonia: DHL, DSV, DB Schenker Spain-Tir, Gefco, Rhenus Logistics, Kuhne + Nagel, Norbert Dentressangle Gerposa, Alfil Logistics and Luis Simões.

While it is true that the major logistics operators originated abroad with foreign capital, and that the main companies based on Spanish capital such as Logista and Acciona Logística have a relatively small presence in Catalonia, there are a significant number of freight forwarders with Catalan capital, often family enterprises, whose activities include logistics. Some of these are: Intertransit, Aduanes Pujol Rubió, Aduanes Ginjaume, Bas y Pujol, Bofill & Arnan, Lo-Trans, Transnatur, Nadal Forwarding and Airfarm, this last company specializing in air transport and logistics solutions for the pharmaceutical sector. These names bear witness to the long-standing tradition of Catalan trade and at the same time demonstrate the ability of traditional Catalan companies to adapt to market demands.

The financing of logistics systems

Logistics infrastructures and projects entail significant investments which can be an obstacle to setting them up.

In the case of major infrastructures, their costs are quite often supported by various public administrations and major corporate groups.

Meanwhile, companies that wish to set up in logistics or industrial parks can either opt to buy the land and build warehouses with their own resources, or rent the facilities they need.

If they have difficulty getting financing from banks, there is the possibility of seeking finance from the public administration, especially if they are introducing projects that involve the qualitative improvement of processes and internationalization. The Official Credit Institute (ICO) and the Catalan Finance Institute are the main public bodies in this respect. Support may also be found from municipal development promotion offices and chambers of commerce.

Logistics training in Catalonia

The development of logistics requires professional staff from every educational level. There is expected to be an increase in jobs associated with the areas of purchasing, logistics, transport, warehouse and customs management in the coming years.

The range of training courses in logistics has taken shape in accordance with companies' needs; this has led to a lack of homogenization and a tendency for private enterprise to be one step ahead of university education.

In terms of qualifications for management staff, there is no specific university degree in logistics, though universities do have a wide range of masters and postgraduate courses, in addition to which there are courses provided by business schools and sector-related associations. One of the most notable of these is the ICIL Foundation which has proven training experience. It offers a Masters course in Integral Logistics which is now on its sixty-second edition, as well as numerous specific courses and seminars.

PART IV. MOBILITY AND SUSTAINABILITY IN CATALONIA

Territorial planning and logistics management

In Catalonia, territorial planning, mobility, housing and the environment are the responsibility of the Ministry of Territory and Sustainability. This ministry seeks to maintain a balance between regional development and environmental sustainability, rationalizing its resources in every area of action.

The history and geography of Catalonia have determined the placement of its major infrastructures. Strategic passes such as the narrows of La Riba, in the county of Alt Camp, and Martorell, in the county of Baix Llobregat, as well as the River Llobregat valley, have concentrated the main road, port and airport infrastructures. The inland depressions and plains such as Vallès-Penedès depression, the inland basins in the Central depression, and the La Selva and Camp de Tarragona corridors have channelled the main transport infrastructures on a Spanish and continental scale.

Today, certain economic and social entities believe there is a lack of connectivity which is restricting the development of trade and leading to the delocalization of companies, loss of competitiveness and a decline in the economic influence of Catalonia in Spain as a whole. In this respect, the Barcelona-Catalunya Centre Logístic (BCL) association presented a study in 2011 entitled *Agenda logística 2020* which proposes a series of priority actions that should be tackled within the next ten years to guarantee the competitiveness of the Catalan logistics system.

Infrastructures for mobility and sustainability

The region and its population

In 2010 Catalonia had a population of seven-and-a-half million people in an area of 32,106 km², a density of 234 inhabitants per square kilometre.

This population is primarily concentrated in the metropolitan rings around Barcelona, with population nuclei extending towards Girona in the north and Camp de Tarragona in the south.

Economic, industrial and service activities are concentrated in the most densely-populated areas where the transport infrastructures allow better connections, such as the coastal and pre-coastal strips.

The region and its merchandise

The internationalization of small and medium-sized Catalan industries and the activities of a large number of foreign industries, representing more than 50% of exports, have made Catalonia an exporter of manufactured products and an importer of consumer goods and goods for production purposes.

Catalonia's logistics infrastructure system channels around 400 million tonnes of goods, primarily by road (80%), followed by maritime transport with a market share of around 20%, rail with just over 1.5%, and finally air freight, with just 0.02% of the total.

With regard to exchanges with Europe, which represents almost 20% of the volume of Spanish goods trade, this is also essentially transported by road with a share of over 75%.

In terms of goods traffic beyond European borders, shipping is the most common form of transport, representing 99% of the total.

New infrastructures

The main objectives of Ifercat, the public company responsible for the Generalitat of Catalonia's railway infrastructures, are to complete Line 9 of the Barcelona Metro and develop several new rail axes: the Orbital Rail Network, the Transversal Rail Axis, and the implementation of light railway systems (train-tram).

The Transversal Rail Axis is intended to facilitate passenger and goods transport by high-speed trains and will link Lleida, Mollerusa, Tàrrega, Cervera, Igualada, Manresa, Vic and Girona, with connections to the high-speed railway network (AVE) in Lleida and Girona.

Meanwhile, the Orbital Rail Network will link Vilanova i la Geltrú to Mataró along a 120 km line providing a service to 39 stations.

Mobility in Catalonia

In Catalonia people make around 24 million trips a year on weekdays (according to data from 2009), with an average of 3.8 trips per person per day.

Some 10.3% of the population, over 659,000 people, belong to the population group that does not make any trips, while 1.3%, more than 83,000 people, are actively involved in transport-related jobs (haulage companies, messengers, salespeople, technicians, taxi drivers, etc.). The remaining 88.4%, almost 5.7 million people, make around 22.7 million trips per day.

Public transport is most heavily used in the metropolitan region of Barcelona, while the highest use of private vehicles is in the province of Girona.

Mobility in the metropolitan region of Barcelona

In Catalonia, and especially in the metropolitan region of Barcelona, policies have been developed to put a greater emphasis on public transport, especially the railways.

The region covers an area of 3,236 km², has a population of 4.2 million people and 164 towns, and there are more than 17 million trips made on weekdays, with an average of four trips per person. Over 91% of the population travels somewhere every day. Of this figure, 47.7% go on foot or by bicycle, while 33.5% go by private vehicle and 18.7% by public transport.

PART V. INFRASTRUCTURE NETWORKS AND MODES OF TRANSPORT IN CATALONIA

Road transport

The road network

There are almost 12,000 km of roads in Catalonia, 90.2% of which are standard roads and 9.8% motorways.

Catalonia has two state-owned toll motorways: the AP-7, or Mediterranean Motorway, and the AP-2, or Northern Motorway.

Most of the toll motorways, freeways and roads in Catalonia end or begin in Barcelona and link its metropolitan region with other areas.

Goods transport

Goods transport by road contributes more than 2% of the Catalan gross added value, a similar figure to that of the food, textile and metallurgy sectors.

In terms of the type of goods transported, minerals and construction materials occupy a large proportion, followed by machinery, vehicles, manufactured goods, food products and fodder, agricultural products and live animals, chemicals, fuels and metallurgy products.

A congested network

The Catalan road network represents 7.5% of the Spanish network, even though Catalonia has 15% of the population and 18% of the county's vehicles.

The business sector and civil society are calling for a reduction in this saturation of the road network, instead promoting the use of railways and intermodal goods transport and improving the productivity of urban distribution systems to ensure transport becomes a sustainable activity.

Rail transport

There are three track gauges in use in the Catalan railway network: the Iberian or broad gauge (1,668 mm), the metric or narrow gauge (1,000 mm) and the standard gauge (1,435 mm); and there are two networks, one run by ADIF, which reports to the Spanish Ministry of Public Works, and the other by Ferrocarrils de la Generalitat de Catalunya (FGC), covering 1,600 km.

Passenger railway lines

The *suburban network,* used every year by more than 110 million users, covers the province of Barcelona, extending to a radius of 75 km.

The *regional network,* which is used by 11 million users every year, covers a radius of 350 km from Barcelona.

The *mid-distance network* connects Catalonia with Aragon and the Region of Valencia.

The *long-distance network* covers other national and international routes.

FGC

The FGC is in charge of Catalan railway services and infrastructures with the goal of improving mobility and offering citizens affordable and profitable recreational services.

The FGC is divided into the Railway Business Unit, which includes the metropolitan lines of Barcelona-Vallès, Llobregat-Anoia and Lleida-La Pobla de Segur; and the Tourism and Mountain Business Unit, which manages operations in Montserrat, the Nuria valley and La Molina, as well as the Alt Llobregat Tourist Train.

The 271 km FGC network has 13 lines and 103 stations and carried 80 million passengers in 2010. It includes the Vallès Metro, which links Barcelona with the towns of Sant Cugat, Sabadell and Terrassa; the Baix Llobregat Metro, which runs from Barcelona to Sant Boi and Martorell, and the "county metros" which link Barcelona with Igualada and Manresa.

High-speed trains

The high-speed rail network links Catalonia with other Spanish cities, the main connection being with Madrid which in turn links to Malaga and Seville.

The high-speed line between Madrid and Barcelona continues up to the French border and forms part of the Mediterranean Corridor.

Goods terminals

The main intermodal goods terminals are at Portbou (Girona), Barcelona (Morrot and Granollers), Constantí (Tarragona) and El Pla de Vilanoveta (Lleida).

The Port of Barcelona has an European-gauge rail terminal for bulk goods, containers (TCB terminal) and vehicles.

The Port of Tarragona is notable for its rail traffic in bulk goods.

Of the four intermodal platforms being developed in the logistics centres of Empordà, Vallès, El Prat and Penedès, two are being developed by Cimalsa, the Generalitat of Catalonia's public company responsible for developing logistics centres.

Maritime transport

The Port of Barcelona

The Port of Barcelona is the main transport infrastructure in Catalonia: it channels 78% of Catalonia's and 24% of Spain's foreign trade. The biggest logistics areas in Southern Europe are within a radius of five kilometres of the port: the airport, the customs-free zone and the logistics zone.

It is a central intermodal distribution and logistics hub for goods traffic on the Atlantic, Asian and Eastern Mediterranean routes and a departure and entry point for the Iberian Peninsula, Europe and North Africa.

The Port of Barcelona has 450 lines operated by over 115 shipping companies that connect with over 850 ports around the world.

China is the main trading partner of the Catalan port, with 24% of the market

share in container traffic, followed by Turkey, Brazil and Italy.

Almost 44 million tonnes of goods traffic passed through the Port of Barcelona in 2010.

An intermodal railway port

Barcelona is a pioneering port with regard to railway traffic, with a balanced flow of traffic in and out. The main destinations of railway container services are Zaragoza, Madrid, Lyon, Lleida, Tarragona, Burgos and Vitoria.

Rail transport of vehicles occupies a significant percentage due mainly to the FGC Autometro line which carries vehicles form the Seat plant in Martorell to the port.

Port terminals

The Port of Barcelona has various terminals for the different types of traffic: two container terminals; two for short sea shipping traffic; one multipurpose terminal for multipurpose vessels; two for vehicle shipments; one fruit terminal; three coffee terminals; various terminals for bulk liquids and solids; seven cruise ship terminals, and two ferry terminals.

In 2010 the TCB and Tercat container terminals handled two million TEUs. The two terminals account for over 3,000 metres of berthing space with draughts of over 16 metres, seventeen cranes and a rail infrastructure.

The Port of Tarragona

Located at the confluence of the Mediterranean Arc and the Ebro Corridor, Spain's main petrochemical complex falls within its catchment area, coexisting with the commercial and tourist activity in the region.

The Port of Tarragona has a wharf area of 433 hectares, draughts of 20 metres, 15 km of berthing space and over two million square metres of storage areas. It covers an area of 10,000 hectares and also has huge esplanades next to the terminals.

In 2010, Tarragona was the fifth most important port in Spain, handling 32.5 million tonnes. Its main traffic includes the energy sector, food and agricultural products, the chemicals sector, general merchandise and fertilisers. Container traffic, through the DP World Tarragona facility of 212,000 m², is one of the growth vectors in the Port of Tarragona.

Maritime services for passengers

The ports on the Catalan coast have a long-standing tradition of passenger transport with the rest of the world. These maritime services are classified as coastal shipping lines (between Catalonia and the Balearic Islands), short distance (between Catalonia and the rest of the Mediterranean and North Africa) and cruise lines.

Short sea shipping

The Port of Barcelona was a pioneer in this form of traffic, with services connecting the Catalan capital with some of the biggest ports in the Mediterranean and North Africa.

The port is visited by the ferries of Acciona Trasmediterránea, Grimaldi Lines and Grandi Navi Veloci, sailing to Morocco, Civitavecchia and Livorno.

Cruise ships

Barcelona is the biggest cruise ship port in Europe and the fourth largest in the world. Fifty cruise lines operate from the port, including Royal Caribbean Cruises, Costa Crociere, MSC Crociere, Norwegian Cruise Line and Pullmantur.

It is worth mentioning that Barcelona, which handles two-thirds of all Spain's cruise ship traffic, is a base port – in other words, more than 55% of its passengers either embark or disembark here because it is the starting or finishing point of their cruise.

The second biggest cruise ship port in Catalonia is at Palamós.

Air transport

Catalonia has four airports: Barcelona-El Prat, Girona-Costa Brava, Reus and Lleida-Alguaire. In 2009, these airports accounted for 18.54% of all Spanish airport operations.

Barcelona-El Prat Airport

This is a Category A airport with the capacity to operate transoceanic flights. It serves more than 175 national, European and international destinations through flights operated by more than 135 airlines.

In 2010, some 29.2 million passengers passed through Barcelona-El Prat Airport, which has a catchment area of more than seventeen million people; of these, 2.06 million passengers were on intercontinental flights.

In terms of capacity, the airport can handle up to 90 movements per hour and 55 million passengers per year.

Girona-Costa Brava Airport

This is the leading airport in the Euroregion formed by Catalonia, Aragon, the Balearic Islands, the Midi-Pyrénées and Languedoc-Roussillon, and the fourth largest in Europe in terms of the volume of traffic of no-frills airline passengers.

It is a very important airport for the tourist industry, handling almost five million passengers in 2010.

Reus Airport

Reus Airport is just five kilometres from Tarragona and provides services for the western part of Catalonia and as an entry point for tourists visiting the Costa Dorada, given its proximity to the resorts of Salou and Cambrils. In 2009 it was used by 1.7 million passengers.

Lleida-Alguaire Airport

This airport was opened in 2010 at the instigation of the Generalitat of Catalonia. It provides services for a catchment area of one million people.

Barcelona Air Cargo Centre

This is managed by Centros Logísticos Aeroportuarios, SA (Clasa) which reports to the public corporation AENA (Spanish Airports and Air Navigation).

In 2010, Barcelona-El Prat Airport handled 104,280,309 tonnes of cargo.

The centre's facilities, which cover an area of 60 hectares, are structured into two operating divisions which run 24 hours a day, 7 days a week. It has a border inspection point and a general services building housing the offices of over 130 companies.

Infrastructures for industrial and logistics activities

Logistics and transport areas

The logistics and transport areas in Catalonia are divided into three radial rings according to their distance from Barcelona. The first extends to a radius of 10 km from the capital, where companies specializing in parcel services, minor distribution and goods storage can be found. Parcel service companies and logistics operators can be found in the second ring, at a radius of between 10 and 40 km. And finally the third ring, extending from 40 to 100 km, includes the coastal axes that link Girona towards the north and Tarragona towards the south, and the inland axis that reaches as far as Lleida.

Logistics areas

The ZAL of the Port of Barcelona

The intermodal logistics terminal of the Port of Barcelona, covering an area of 208 hectares, is home to the main logistics operators. It is one of the biggest logistics centres in southern Europe and the Mediterranean and has provided a model that has given a generic name to this kind of facility.

The ZAL of the Port of Tarragona

With an area of 150 hectares, this ZAL plays a key role in the development of the Port of Tarragona, especially the business generated by the DP World container terminal.

The CIM of Cimalsa

Cimalsa is the Generalitat of Catalonia's public company responsible for the development and management of integrated goods centres (CIM).

CIM Vallès

Covering an area of 44.2 hectares, this is a high turnover logistics platform within the metropolitan region of Barcelona. It has 209,000 m² of warehouses and yards, accommodates over 80 companies, and generates more than 242,000 vehicle movements per month.

CIM Lleida

This CIM stands in the industrial area of Lleida and covers an area of 42 hectares. It has 244,587 m² of logistics plots, 11,262 m² of which are devoted to services and facilities, and accommodates over 30 companies.

CIM La Selva

This CIM is located next to Girona-Costa Brava airport and covers an area of 22.5 hectares, housing more than 20 companies.

CIM El Camp

This CIM lies 3 km from Reus airport and 5 km from the Port of Tarragona. The first phase, of 42.2 hectares, has 159,238 m² of logistics plots and 90,207 m² of services and facilities.

Logis Bages

This centre is located in Sallent (Barcelona) and has an area of 8.7 hectares and a modular warehouse of 53,000 m².

Logis Empordà

This centre is located at El Far d'Empordà (Girona) and covers an area of 73 hectares, with an area for logistics plots of 522,470 m². It stands next to the intermodal station of Vilamalla which is equipped for the transport of containerized goods, bulk goods and motor vehicles.

Inland maritime terminals

These are goods terminals connected to ports by rail, and are intended to improve export and import operations. In these cases they are connected to the Port of Barcelona.

Zaragoza Maritime Terminal (tmZ)

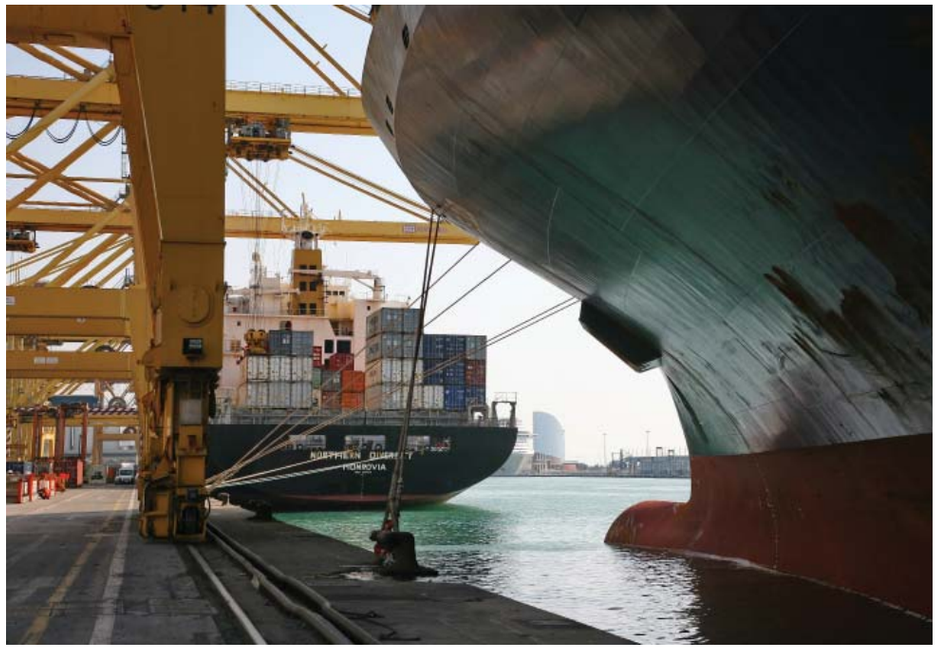
This is located in the Mercazaragoza logistics park and supplies and distributes goods in the Ebro valley. It has a container depot of 21,000 m².

Toulouse Maritime Terminal (tmT)

This terminal covers an area of 20 hectares in Toulouse (France). It services an area with a radius of 300 km and a population of 19 million people, facilitating international maritime trade for importers and exporters in the Midi-Pyrénées region and its catchment area.

Central Maritime Terminal

This has been developed by the Port of Barcelona in Yunquera de Henares (Guadalajara) to strengthen its presence in the Iberian Peninsula. It has a logistics zone of 90,000 m² and a rail terminal of 135,000 m².



Containers ships anchored in the TCB terminal in the port of Barcelona.

CIM El Camp is located next to Reus airport and the Port of Tarragona.

Urban distribution centres

Mercabarna

Mercabarna lies ten kilometres from the centre of Barcelona and is surrounded by road, rail, maritime and air transportation and logistics and industrial infrastructures. It covers an area of 90 hectares and more than ten million people live in its catchment area.

At Mercabarna some 800 companies deal in 1.3 million tonnes of products which are distributed all over Spain and shipped to many other countries around the world. More than 25,000 people work there and some 15,000 vehicles access the facility every day.

Mercabarna is made up of four wholesale markets: the Central Fruit and Vegetable Market, the Central Fish Market, the Meat and Slaughterhouse Sector, and Mercabarna-flor, as well as an area of complementary activities (ZAC) with more than 600,000 m^3 of conventional refrigeration and freezing facilities.

The other distribution centres in Catalonia are Mercolleida, Mercagirona, Mercavallès, Mercat del Camp de Tarragona and the Flower and Ornamental Plant Market of Catalonia (Mercatflor).

Customs-free zones, industrial estates and technology parks

The industrial estate in Zona Franca

This lies seven kilometres from the centre of Barcelona and its airport, next to the port and the Can Tunis railway terminal. It plays a key role in the Catalan economy and it is the largest industrial area in Spain and one of the most dynamic in Europe, accommodating more than 300 companies.

It covers an area of six million square metres and has a road network of almost 30 km and more than 80,000 m^2 of green zones.

The area houses the Zona Franca Customs, with 84,000 m^2 of warehouses and 9,000 m^2 of offices of the companies authorized to operate in the customs-free zone.

It also encompasses the Zona Franca Logistics Park with a logistics area of 285,000 m^2 and a business park of 120,000 m^2.

New areas for logistics and industrial activities

Amongst other assets, the Logistics Parks Consortium, an initiative of the Barcelona Port Authority and the Abertis corporation, has developed the Abertis Logisticspark Penedès in Sant Sadurní d'Anoia (Barcelona).

Another key player is the company ProLogis which is developing four projects in Catalonia: ProLogis Park Sant Boi, ProLogis Park Penedès, ProLogis Park Valls and ProLogis Park Sallent.