

## CATALAN PORTS; FUTURE ALTERNATIVES

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### A PORT SYSTEM

The port of Barcelona is the main international-level sea infrastructure for Catalonia. It is, moreover, a major economic organization in itself in view of its high turnover (around 150 million euros a year), the large amount of people who work there (some 8,000 direct and another 8,000 indirect jobs) and its high annual investments (over 200 million euros each year in the last three years). The port traffic has increased by a huge amount in recent years, going from less than 17 million tonnes in 1987 to over 50 million tonnes in 2007.

But, despite the great importance of the main Catalan maritime infrastructure, it cannot be considered in isolation, but rather within the framework of a system which in a fairly free and uncoordinated manner has gradually been formed in recent history. The Catalan port system is now made up of different types of ports which can be classified in many different ways in accordance with their traffic, the importance of the infrastructure or their form of management. The following would be a simple and logical classification based on port administration and management but in which we can introduce the functions and traffic.

- Big international trading ports. These are the ports of Barcelona and Tarragona. They are administered by Port Authorities, integrated in the State Ports organization attached to the Ministry of Public Works. They are governed by the Ports Acts of 1992 and 1997. As big ports they carry out all kinds of commercial traffic and possess broad and diversified infrastructures.

- Trading ports of the Generalitat. These are ports which have recently carried out or which currently carry out some specific commercial operations in addition to having fishing and marina functions. They are the ports of Palamós, Sant Feliu de Guíxols, Vilanova i la Geltrú and Sant Carles de la Ràpita. They are managed, together with the fishing ports and marinas, by the public company Ports de la Generalitat.
- Fishing ports and marinas of the Generalitat. These are smaller ports than the above; they have exclusively fishing and marina functions and cannot receive big trading or passenger ships. They are also managed by the company Ports de la Generalitat. In total, there are 26 facilities managed by the Generalitat including the four ports above, although many of these infrastructures have almost exclusively marina and a few industrial functions.
- Marinas. These are dedicated entirely to sailing and water sports. They are administrative concessions which are built and managed privately. These ports, in addition to the sports docks of Ports de la Generalitat and those of Barcelona and Tarragona, make up a total of 46 nautical facilities with approximately 25,000 moorings, constituting the biggest provision in the whole of Spain and one of the most important in the whole of the Mediterranean.

All these maritime infrastructures make up a complex system which has a notable incidence on the organization of the Catalan coast. Even the smaller facilities have conditioned the urban structure of the coastal populations and, therefore, it is necessary to consider them in the territorial and, of course, environmental planning, given the effect that they have on the coastal dynamics, on the landscape and on the impact on the maritime environment. These small fishing facilities and marinas can also notably contribute with adequate policies to the development of the local economy. It is, however, obvious that the main impacts on the economy, on the territory and on the international positioning of Catalonia have been produced for many years firstly by the port of Barcelona, then by the port of Tarragona and, to a much lesser extent, by what we have called the trading ports of the Generalitat. The

rest of the maritime facilities – although important for their populations – have an incidence reduced exclusively to the local or at the most to the regional level.

## **THE FUTURE OF THE MEDIUM-SIZED FACILITIES**

The four main ports of the Generalitat which maintain or which until recently had some commercial traffic - Palamós, Sant Feliu de Guíxols, Vilanova i la Geltrú and Sant Carles de la Ràpita – may play an important role in the future of ports in Catalonia. It will be difficult for them to become port infrastructures on the same level as Tarragona or Barcelona without causing environmental and coastal occupation problems which are unacceptable from a sustainable development point of view. They do, however, have a good chance of obtaining infrastructural improvement, of promoting new traffic and, above all, of organization in relation to their towns. In all these aspects the medium-sized ports, managed by the Generalitat, can considerably improve and decisively contribute to a new urban and economic development of their populations. Furthermore, with adequate planning they can complement the activity of the two main Catalan ports for the development of specific traffic in a similar way to how Girona and Reus airports have grown considerably parallel to and without coming into competition with Barcelona airport. The location of the medium-sized ports in the north (Palamós, Sant Feliu), in the centre between Barcelona and Tarragona (Vilanova i La Geltrú) and in the south (Sant Carles de la Ràpita) is another supplementary advantage which would allow a policy of territorial rebalance to be implemented.

In all four ports (maybe with more difficulty in Sant Feliu de Guíxols which is the smallest) it is possible to promote policies promoting development of some traffic (as has being done recently with cruise ships in Palamós), and infrastructure adaptation projects which allow traffic to be attracted and expanded with minimum environmental impacts and, above all, to improve how the urban development relations fit into and are organized with their towns. All this will require planning and

coordination on the level of the so-called "Catalan port front", a concept periodically demanded but for which no specific programmed action has ever been carried out, its true development possibilities not even having been studied.

## **THE RECENT EVOLUTION OF THE TWO MAIN CATALAN MARITIME INFRASTRUCTURES**

There is no doubt that, despite the possibilities of improvement of the four medium-sized ports indicated in the previous section, the maritime connections, international trade and its expansion is continuing and will continue in the future almost exclusively through the ports of Tarragona and, above all, Barcelona. Moreover, now and in the coming years, port traffic and functions will present different characteristics and conditions to those of the past.

The two most important ports of Catalonia developed independently in the past. From the 18<sup>th</sup> and 19<sup>th</sup> centuries to the 1960s, the port of Tarragona was specialized in agricultural products (oils, wines and brandies, nuts and dried fruit...) and in products from local industry. From the 19<sup>th</sup> century the port of Barcelona was the base for importing raw materials necessary for industry (mainly coal and cotton), and food products for the population. Both ports, although especially Barcelona, basically grew in two periods. The first major works of the industrial era were carried out in the second half of the 19<sup>th</sup> century, shortly after the creation of the Works Councils, the first of which in Spain was that of Barcelona in 1868 and the second that of Tarragona in 1869. With these works, both ports were equipped with new dikes and counterdikes. The second period of major works was at the beginning of the 20<sup>th</sup> century with the extension of the dikes and counterdikes and the construction of new inner quays. Both ports then remained with a certain stagnation in traffic – especially from 1930 – and in infrastructure until the 1960s. In the new industrializing era of the Catalonia of the sixties, the port of Tarragona became specialized in Bulk Liquids for the petrochemical industry and the refinery which were located nearby and that of

Barcelona in the so-called General Merchandise for the new manufacturing industry and the consumption of the metropolitan area. It has also continued to be an importer of energy products such as natural gas and oil by-products. The works promoted in that decade (1960s) and the following one (1970s) corresponded to these new types of commercial traffic and thus the dike was extended in Tarragona and the system of unloading piers for crude oil and other chemical products was built (in addition to the big quay for coal for the thermal power station of Andorra...) and Barcelona was equipped with an inner dock for containers and cars, the inflammables quay and then the new South quay, all protected by the extension of the dike. Functions, traffic, infrastructures (and even administration and management with the creation of the Autonomous Port of Barcelona) changed profoundly, especially at the end of the 1970s.

In a few years, the goods traffic grew extraordinarily in the two big ports. Tarragona went from moving 4.4 million tonnes in 1970 to having total goods traffic of 21 million tonnes in 1985. In the same years (1970-1985), the port of Barcelona grew from 10 million to 18 million tonnes.

In addition to the changes of products and to the growth in traffic, it should be highlighted that the two big ports gradually specialized in different types of goods: Bulk Liquids and some Solids in Tarragona, General Cargo and other Bulk Solids and Liquids in Barcelona. Thus, the traffic in these two ports covered the main goods transported by sea. The sum of both ports, located at a distance of just over 90 kilometres from each other, was what we should have compared with the main European diversified ports, so that at the time the situation of Catalan maritime traffic was at the very top level in the Mediterranean and very high on a European level.

## **CURRENT SITUATION AND EXPANSION WORKS**

From the major works of the end of the 1960s and of the 1970s to the present, the ports of Barcelona and Tarragona have experienced a certain stagnation in their infrastructures and, at the same time, a huge growth in traffic. This is a relatively normal and logical situation as the port infrastructures do not grow physically in a continuous manner in time but rather on a few occasions and in very determined short periods. Thus, in the last century and a half, the port of Barcelona has only had the following periods of major infrastructure works: 1869-1874, 1901-1912, 1966-1978, 1998-2010. In each of these periods of works, the port has at least doubled its land and sea surface area and the length of its quays in relation to the previous period. From 1985 to 2007, the total goods traffic of the port of Tarragona has gone from 21 million to 36 million tonnes. In the same period, 1985-2007, the traffic in Barcelona has increased from 18 million to 50 million tonnes.

Such important growth in traffic, especially that of the port of Barcelona, would have exhausted the capacity of the infrastructures built, mostly, over thirty years before. An initial Master Plan was already prepared for the expansion of the infrastructures of Barcelona in 1989, which proposed considerable growth which required the diversion of the River Llobregat. This Plan was updated and adapted to new conditions of traffic in 1998. The works which are currently being carried out and which should be completed in 2010 (after a serious incident which involved the collapse of an important part of the works) are those proposed in this 1998 Plan. With these works the port will again double the sea and land surface areas and will increase the length of the quays by 20%, the protected maritime surface area going from 374 hectares to 714 ha, the land surface area going from 558 ha to 1,331 ha and the length of quays increasing from 19.7 Km to 23.7 Km. The port of Tarragona also has important projects of growth - although less ambitious - of its dike and of its quays for the coming years.

## **THE FUTURE OF THE BIG PORTS**

The size of the works and the investments should not prevent a more in-depth analysis of the current situation, of the projects and the works of the major international maritime infrastructures of Catalonia.

The conditions of maritime traffic and of the major international transport have been changing very quickly in recent years. Until recently, the most important ports and port towns were measured exclusively by the size of their infrastructures and by the quantity of goods which passed through them. Nowadays these two issues continue to be very important but it is necessary to add the capacity that the ports can have to develop the so-called logistic activities in the area around them, that is to say the added-value functions apart from goods traffic, such as the post-industrial or pre-commercial activities. These create wealth and employment at a good technological level in the town and develop the loyalty of international commercial traffic of vital economic importance in the ports.

For Barcelona and Catalonia, the logistic activities linked to the reception, preparation, processing and distribution of goods between the European continent and the rest of the world is essential for the future of their economies. Taking on logistic functions and developing them is an extremely important task for the country, but it is difficult, as for this it has to compete with the major North Sea ports (Hamburg, Bremerhaven, Rotterdam and Antwerp...) which currently attract the majority (maybe 80%) of the traffic of industrial products with origin/destination in the European continent (and with destination/origin the rest of the world). Barcelona is probably the only big city and big port in the Mediterranean and in Southern Europe with capacity to dispute part of the traffic in the two directions Europe-Asia with its related logistic activities, which are currently concentrated mainly in the North Sea ports. It is thus difficult to understand that the Catalan and the state institutions do not have a very clear and decisive policy of support for this option and of strategic backing.

Major infrastructures, facilities, companies and trained technical staff are necessary to promote Barcelona's strategic role as a major logistic centre for the Mediterranean

and Southern Europe. In 1990, the port of Barcelona began to plan Spain's first Logistic Activities Zone. In 1992, the company was established which was to build and manage this logistic area which has had 60 hectares in operation since 1995. Here, as in many other issues, the port was a leader in Spain and the whole of Southern Europe. The expansion of the port, which will be complete in approximately two years, 2010, foresees extending the Logistic Zone up to 200 hectares, which will continue to maintain it as the most important in the Mediterranean area. However, although this proposal is very important, it is not sufficient to compete with the major North Sea ports. Just Rotterdam currently has over 300 hectares on its 3 big logistic estates and is planning a further 1,200 hectares (in the large area won over from the sea, Maasvlavke II) in the coming years.

The works that are being carried out in the port of Barcelona and those planned for Tarragona are very important, but if we compare them with those that are under way in the North Sea ports and those carried out or scheduled for the near future in the major Asian ports it can easily be concluded that they will soon be insufficient.

The periods of activity and of growth in traffic between the stages in which the port expansion works are carried out, that is to say the periods in which the new infrastructures are used until they are fully occupied and they again become insufficient, are becoming shorter. It was described how the works of 1869-1874 created the new industrial port which considerably expanded the one which had existed since a century earlier, the works of Charles III which ended in 1772, when the dike and the precarious quays reached the current Clock Tower. The next major works were carried out in 1901-1912, that is to say 35 years after the previous ones, and they again more than doubled the port infrastructures. The works of the modern port were carried out between 1966 and 1978, some 60 years after the previous ones. The current infrastructure expansion will end in 2010, practically 30 years after the last one. If the rates of growth in traffic of the last few years are maintained in the port of Barcelona, in a maximum of 15 years, that is before 2025, the port infrastructures will again be insufficient. Bearing in mind that some 15 years pass from when it is decided to study and plan an important expansion of a port, such as

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that of Barcelona or Tarragona, until the works are completed and in service, it is time to begin thinking about new and more important expansions and improvements of our port infrastructures, about what characteristics they should have and, above all, where they should be carried out in order to contribute the most to the country's economy with the minimum impact on the land and maritime environment.

## THE GROWTH ALTERNATIVES

Tarragona still has many more possibilities of growth than the port of Barcelona, once the current expansion work has been completed. The logical growth of the port of Tarragona (like that of Barcelona) is in the western direction. The form of growth is with new large surface-area quays built by reclaiming land from the sea starting from the coast, as has occurred recently. As this will undoubtedly entail new extensions of the dike, another possibility, although smaller in size, will be that of building or extending the quays attached to the dike. These are a more limited alternative in relation to growth in surface area, but have the advantage of greater depth, which is always an important issue in the future planning of quays, given the important growth in vessels currently being experienced and which it is foreseen will continue in an important manner in the coming years. This growth in the port of Tarragona has physical limits which it will be very difficult to overcome and, in any case, if it does it, it will be with serious problems for the organization of the coast. Indeed, beyond the planned Logistic Activities Zone, there is La Pineda beach and tourist residential estates on the sea-front almost as far as Cape Salou which are a certain barrier to the expansion of the port to the west.

With the current expansion the port of Barcelona will use up all the territory available up to the new mouth of the River Llobregat. To continue growing as always, that is to say to the west, a new diversion of the Llobregat would be necessary beyond the airport together with the disappearance of the last lagoons of the delta, something highly unlikely due to the high environmental costs and the considerable opposition that it would generate in the Baix Llobregat and probably throughout society. Does this mean that Barcelona and Catalonia would have to renounce the growth of the most important infrastructure for their international trade? Will we have to abandon the important future project of being a Logistic Platform for Southern Europe? The answer should be No. Throughout history the port of Barcelona has encountered serious technical difficulties to advance (the last just two years ago when the new quays that were being built collapsed) and it has managed to overcome them.

If the land up to the mouth of the River Llobregat will be exhausted for future expansions, it will be necessary to find alternatives other than the traditional ones for the port to continue growing. One of these alternatives should be to consider building a big new quay completely in the sea starting from the current East dike and the adjacent quays. The big new quay would be connected to land via the current bridge and if this is not sufficient by means of a fixed crossing in the same place. At the same time it would be necessary to study an improvement in the arrangement and use of the current quays. This alternative presents some problems (high cost, technical difficulty on working at great depths) but also significant advantages such as its lower environmental impact. Alternatives of this type are common in the Japanese ports (Tokyo, Osaka, Kobe) to solve the problems of growth when dense cities completely surround the port infrastructures and block their expansion. This is obviously a possibility which should be studied and which may be rejected. But, in any case, it is already necessary to begin to study alternatives and to discuss the future growth of the port of Barcelona if we do not want it to be marginalized and left behind in the tough European port competition to attract major traffic in the coming years.

The current most advanced idea considers modern ports not only as infrastructures linking the maritime and the land means of transport, but also, fundamentally, as infrastructures in the long logistic chains which, in addition to the above function (link between means of transport), have an important impact on the location of economic activities, especially of a logistic nature, and on the organization of the surrounding territory. Starting from this idea for the ports of Tarragona and Barcelona, it is necessary to consider, also starting straight away, two significant issues for the Catalan economy: 1) the growth of the economic areas – mainly of logistic but also industrial activities – closely linked to the ports; 2) the land transport infrastructures connecting with the maritime infrastructures.

As regards the first subject, it is also clear that the ground dedicated to economic activities closest to the ports has been exhausted. It will be necessary to consider the possibility of new estates further away and to connect them efficiently with the port

infrastructures in the same way as the so-called “dry ports” are planned. The second issue is even more urgent. There is a complete lack of connection and lack of coordination between the planning of the port growth and the expansion of land transport infrastructures. The major growth of the ports of Tarragona and Barcelona has not been accompanied by a proportional growth in the roads and the dual carriageways entering/leaving the ports. Problems of congestion of the land transport infrastructures are beginning to be detected around the ports. It is urgent to solve this problem.

There is an even more serious problem, extremely important for the future of the Catalan economy (and even for the whole of the Spanish economy): the area of Barcelona cannot become a true Logistic Platform for Southern Europe (and if Barcelona is not, there will not be any in Catalonia or in Spain) if there is no international gauge railway connection for the goods which pass through the port. The railway is the most efficient means of transport from all points of view (economic, environmental) for medium and long land distances (starting from 500 kilometres).

The ports of Hamburg, Bremer–haven, Rotterdam and Antwerp have connections to railway networks which mean that, in some cases, over 50% of the containers which pass through them use this transport system. The whole Central European market (some 150 million people with high consumption and with good possibilities for economic growth) is therefore served mainly by the above 4 North Sea ports despite the port of Barcelona having clearer geostrategic advantages (less sea distance from the Asian and Middle East markets). The railway is an essential factor of the international competitiveness of the European (and in general worldwide) ports.

Without an international gauge railway, it will not be possible to fully obtain a major Logistic Platform for Southern Europe and this intelligent and important alternative will not be able to give all the positive results that it could offer our economy.

PROPOSED IMAGES

Text commissioned for <http://www.idees.net/>

- PORTS OF THE GENERALITAT: Map of the Catalan coast with the ports managed by the Generalitat and their fishing, marina, industrial or haven functions.
  
- DEPARTMENT OF TOWN AND COUNTRY PLANNING AND PUBLIC WORKS: Map of Catalonia indicating all the marinas.
  
- PORT AUTHORITY OF BARCELONA: Diagram of the Master Plan with the port expansion works.
  
- PORT AUTHORITY OF TARRAGONA: Diagram with the current port expansion proposal.