

Sea and Littoral Localities' Economy: Exploring Potentialities for a Maritime Cluster - An Integrated Analysis of Huelva, Spain and Algarve, Portugal.

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ABSTRACT

As a littoral territory with more than 120 km of coast, Huelva (Andalusia, Spain) is a province that gives to marine and maritime activities a relevant role in its regional economy. The Algarve, the most southern region of mainland Portugal, bounded north and east by the regions of Alentejo and Huelva, also gives to the Sea importance in the main regional economic activities. In this article, we compare the emergence of policies for maritime clustering in both regions due to their geographical proximity that stimulate highly levels of cooperation. The relevance of the different type of policies being implemented in Huelva and the Algarve are analysed to a better comprehension of the similarities and the differences between these cases. The analysis of innovation actors, creating linkages between firms and scientific communities, focusing in marine sciences in scientific and technological networks, is crucial to understand the potential for the emergence of a dynamic trans-border cluster.

1. Introduction

The study of the maritime clusters is still not mature. However an effort is being made to improve the quality and quantity of scientific research in this area. In the last decades we have assisted to the emergence of the concept and policies to support clustering dynamics in the territorial development and regional economies. In the case of maritime regions, the sea has proved to be a decisive factor in building regional clusters around the activities that depend on or explore the marine, maritime and coastal resources.

The performance of regions depends on the economic and social environment and on the strong relationships that their agents establish among themselves. So, it is crucial to develop regional clusters based on this, and this creation is made through the increase of activities, the promotion of

labour mobility, attracting talents and skills and valuing each other mutual assets (Guerreiro, 2011), and promoting the high density of relations between those members.

In spite of the fact that several inland territories can have a powerful marine economy (Rodríguez et al., 1998)¹, derived from aquiculture firms and other enterprises which manage fishing products, the maritime economy is mainly concentrated in littoral territories, being the essence of the economy in these regions. Even though these territories have a high level of implication in agricultural economies, sea and land are strongly connected and probably a coastal region might not be competitive if it has not developed the maritime economy. Whereas an interior province can survive exploiting the agricultural areas, a littoral one could not without exploiting at the same time the sea, just because most of the resources are marine ones.

The Spanish province of Huelva in Andalusia is located in the margins of Atlantic Area and often called the Atlantic Door. It has currently little more than 510,000 inhabitants (INEM, 2010), distributed in 10,148 Kilometres squared,

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¹ Some provinces placed in areas with central markets, for instance Madrid, have a very important part of the demand concentrated in his hands, such Mercamadrid that commercialized a 50% of the fish and shellfish consumed in Spain. Madrid has a relatively short distance with the principal ports, that's why it is very close to the total fishing offer (Rodríguez, L. et. al., 1998)

where more than 120 Kilometres are uninterrupted coast bathed by the Ocean. Huelva and the Atlantic Ocean and the maritime areas are currently much connected, even though the importance of the sea in Huelva comes since the Romans who were the first one that found in the Huelva's coasts the best place to enjoy with the sea (ABC, 2011), or after that, since the America discovery and trade in the XVI century. Huelva is the sea and lives to the sea. The sea is in his past, in his present and it will be in his future, and of course, the sea is in the province and capital shield. In both appears the text: "Portus maris et terrae custodia" that's mean Port of the Sea and Land Defence. In the province shields, appears the Atlantic Ocean, as a symbol of the American discovery, and the anchor, representing the maritime efforts (BOJA, 2004; Campos, 2002). The important role of the sea has had in Huelva's History and evolution is also present in its economy and in all sectors that are connected with the sea.

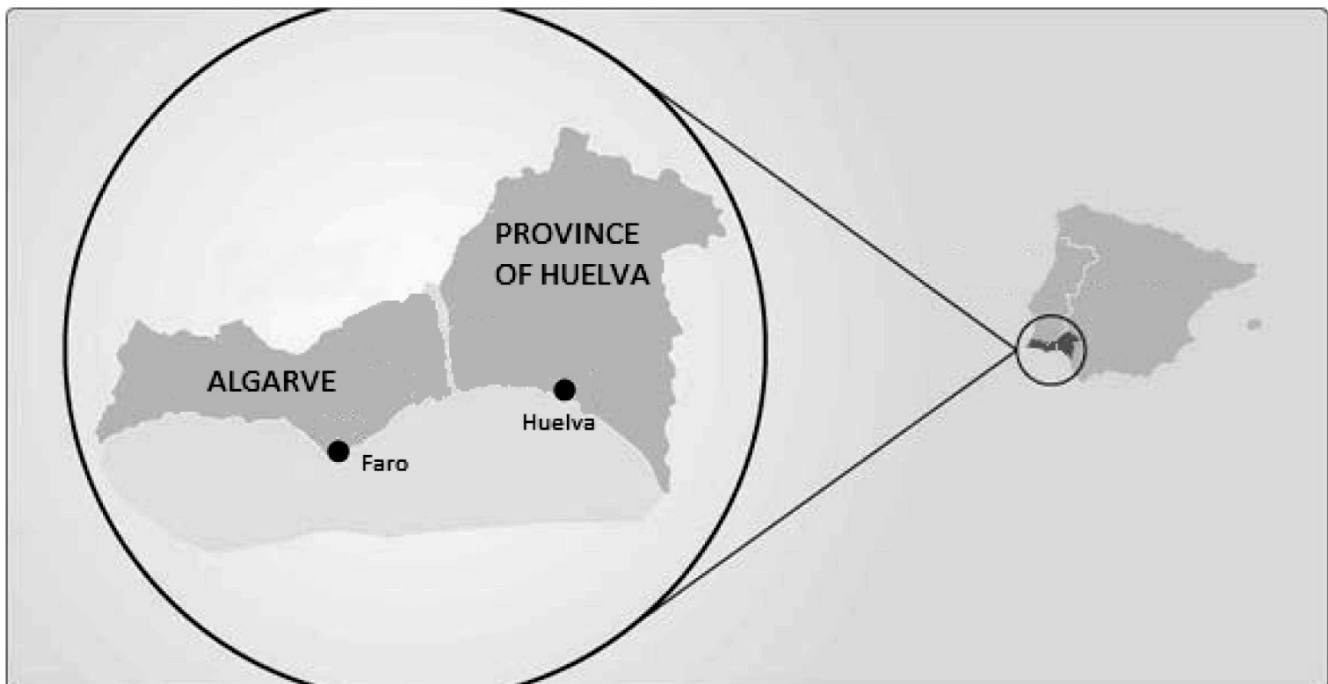
The region of the Algarve, with a coastline of approximately 220km has a particular affinity with the sea because of its excellence natural conditions. A famous example is the Nautical School of Sagres, created by Prince Henry, where the navigation pilots, who initiated Portugal's Age of Discoveries, received instruction, became the core of the Portuguese maritime expansion during the first half of the XV century, the most advanced centre for studies and research worldwide; historically, the fisheries sector in the Algarve has always been an important economy activity with a strong tradition; and more recently nautical activities, such as tourism and recreational boating, have been gaining increasing importance (Monteiro et al., 2011). Portugal has the largest Exclusive Economic Zone (EEZ) of the

European Union and the 11th worldwide, with more than 1,700,000km², which corresponds to about 18 times its land area. The Algarve is a region with a similar size of the province of Huelva, it is also a NUTS III level region in the EU context, having a equivalent population, reaching a little less than half million inhabitants.

Despite Huelva has developed some maritime activities more than other ones, it possesses a great range of activities related to the Sea, being each of them, independently, very strong, and turning the sea into an essential element of the Huelva's economy (Osuna, 1992). The Algarve regional economy is mainly based in coastal tourism, in particular "sun and sand". In the last years, after a convergence period to more developed EU regions, the GDP level has decreased and both regions are falling behind other comparable European and Portuguese regions. In the case of Algarve it is evident that the investments in traditional sectors like agriculture and fisheries, including aquaculture and agro-industry, were substituted in the region by investments linked with tourism with shorter economic return periods. Aligned with the National Strategy for the Sea, the region is trying to consolidate its maritime economy potential as a way to overcome the limitations of the few investments in the diversification of the regional economy (Pinto and Cruz, 2012).

The main aim of this article is to describe the marine sector in these coastal regions, emphasizing sea's importance for the local development, to corroborate the hypothesis of which in localities placed in coastal areas, the economy is based on the sea and on marine sector, and to show the important role the ocean plays in many territories and activities (Morrissey et al., 2011). The paper starts with

Figure 1: Huelva and the Algarve.



a synthetic theoretical review, approaches to cluster theory and regional development. Then a reflection the national and regional contexts in which the maritime cluster emerge highlighting the main developed policy instruments, in both regions, Algarve and Huelva. Finally, the last section presents some concluding remarks.

2. Cluster theory and regional development

Cluster is a concept that has different meanings depending of the author and the sector where it has been analyzed; geography or new-geography perspectives, socio-cultural factors or territorial agglomeration (Chang, 2011). Focused in different aspects, it exist a large number of cluster's classifications and definitions. Clusters are geographically proximate groups of interconnected companies and associated institutions in a particular field, linked by commonalities and complementarities (Porter, 1998). In cluster theory, geographical proximity is the driving force for the creation of agglomeration and network economies even if it is accepted that other types of proximity are also relevant for inducing institutional and collective learning (Pinto and Cruz, 2012). These groups have four main elements that define a cluster: the cluster member, their interaction, the knowledge and innovation generated and the economical impact of the cluster activities (Rialland, 2009).

Clusters exist just because enterprises, like people, prefer to be physically close to other one whom, probably because are stronger, could help them in some concrete situations. When firms and institutions work together, the group can operate with a higher level of efficiency, react quicker, create more new ideas and innovative activities, share the clients and take the other enterprises like suppliers and not like competitors (Chang, 2011). Cluster exists because enterprises find beneficial their interaction, reducing the risk of failure.

To a better comprehension of the typology of this concept, it is possible to distinguish four types of clusters (Monteiro, 2011), namely:

- “Micro cluster” or “Local cluster” that is a set of geographically close companies and institutions, inter-related by common and complementary elements, that act in a specific field of activity, and are able to cooperate, although they compete in the market for products or services;
- “Industrial cluster” or simply “cluster” that is a set of interconnected companies that are active in different fields, using different but complementary technologies, and through the innovation that is generated by some, benefits are realized for the others and so all of them gain from improved global competitiveness;
- “Regional cluster” is essentially a industrial cluster, with the main joints functioning within a given regional area and these joints can be repeated in another place in a whole or in part of the same country, being important the effects of geographical proximity on the dynamics of interaction between actors

and at the level of competitiveness and innovation of the set; and,

- “Mega cluster” that according to the OCDE definition is a dissimilar set of activities, whose goods or services meet the demand using basic skills and exploring the complementary advantages of networking between themselves and with other entities.

The concepts of networking and cluster have gained considerable interest in both academic and industrial worlds (Rialland, 2009). Networking has existed for a long time, although known with a different name. However, networks and cluster are not necessary linked to the extent that networks can take place between firms located at different points, while clusters are geographically located in a country or region. Although they represent different concepts, clusters and networks are inter-related and both refer to valuable relationships between companies, being networks the essence for the functioning of cluster (Monteiro, 2011). Therefore is possible to say that a cluster is a group of overlapping networks.

Cluster is a new concept although not networking, that has been studied as a type of association. As Richardson already said in 1972 “Firms are not islands but are linked together in patterns of co-operation and affiliation” (Richardson, 1972, pp. 895) and the only common thing in all the different definition is the geographical concentration of related companies and his interconnection (Reve, 2006). Clusters could be considered associations just because they both are a group of different enterprises, firms and institutions working together to interact and generate economical impact. Nevertheless, associations do not work together to create knowledge or innovation, they just work together to be stronger and due to members help each other, and innovation is one highly recognized outcome of clusters (Porter, 1990) stimulated by the cooperation and the competition, resulting new products or services, new technologies or competitive solutions, among others.

In some countries, like Spain, where the cluster theory is not completely consolidated, cluster refers commonly to specific economic sectors or enterprises linked by the industrial field, like Robles did in his study “*Key Sectors and Clusters in the Spanish Economy*”. There are many associations and interactions in a field or a sector, and since in Spain there are no specific clusters, this paper refers a cluster like a concrete sector within the maritime sector in Spain (Robles and Sanjuán, 2008).

3. Maritime cluster emergence

3.1. National, Regional and Local Policies for Huelva Maritime Cluster

Despite the large number of enterprises that develop their activities in many different marine sectors in Huelva, like tourism, fishing, aquaculture, canned and salted fish industry, shipping or shipbuilding, there is not a maritime cluster

recognised as an official cluster. There are many different associations constituted by a groups of interconnected companies and associated institutions in a particular field, like Porter established in 1998, but in Spain, and concretely in Andalusia, most of the groups are not considered Cluster association in the perspective showed by different theories.

There are no formal regional maritime clusters in the country, the only one is the Spanish Maritime Cluster, located in the capital (Madrid), which is an institution born by the collaboration and cooperation between all the Spanish activities-enterprises related to the sea (www.cluster-maritimo.es). On the other hand there are many marine associations that include firms in concrete fields inside the marine activity, like for example Association of Shipbuilder of the Shell Fishing Fridge Ships, Shipbuilder Association, Aquiculture Association, Gatherers Shellfish Association, National Association of Fridge Ships of Shellfish Fishing, South Atlantic Shipbuilding Association of Siege Ships.

All these associations are not real clusters just because in relation to the four elements specified by Riialand, they do not focus specifically in innovation and knowledge, but mainly work together in concrete situations and have different initiatives to promote the collaboration between enterprises in each area. They join the enterprises' efforts to provide an environment in which the information and the common interests could be presented, discussed and transferred to benefit the members. Although there are more associations, which are including the innovation and education in their nature to improve their knowledge and actions, most of them are born from top-bottom approaches at the authorities' level or at the educational one. There exist a lot of research and educational centres connected with enterprises and organizations in marine, which aim is to develop and increase their knowledge and to share the results of the researches made in the heart of these educational centres to improve the competitiveness of the enterprises, improving the process production, creating new products and services and developing innovative actions. Most of these centres are part of the university or initiatives from regional authorities. The concept of cluster is extremely related to technological development, research and innovation, therefore, it has a direct relation with the research centres and institutions (ICEX, 2009).

At the local level, a high number of organizations and associations exist, an outcome of the large activity in marine issues, like for example the Trade, Industry and Navigation Chambers, private institutions that give services to enterprises from the maritime and other sectors, such as the creation of new companies, the management of funding, education activities, and in case of Huelva, it exists the Onubense Entrepreneurs Federation (*Federación Onubense de Empresarios* – FOE), a private organization created by businessmen to promote and defend business interests. They are neither cluster nor association but they work giving support to enterprises and offer some services like courses to improve innovation and knowledge.

The *Junta de Andalucía*, Regional Government, created

other institutions to transfer the knowledge like the OTT-Technology Transfer Office, which promote the collaboration and the cooperation between public and private entities, nationals and internationals, to join the efforts in research. Andalusia is too a part of the Mobility Centres Network, trough the public enterprise Innovation and Technology Transfer Centre in Andalusia (CITAndalucía). It tries to create a net where the Andalusia residents and foreign people could move through different centres transferring the knowledge.

As Navarro Arancegui stressed the less accuracy there is in the definition of cluster, the less clear it is the existence of a cluster policy. He says that there is not any new policy dedicated to cluster, only a rewritten policy with technological and industrial policies based in previous mistakes like the not enough investment in knowledge (Navarro, 2003). A cluster policy must be affected by other different policies, related to the main things which define a cluster, like policies related to the education, innovation or competition, and affected by policies from different sectors, because each cluster has different needs in relation to the sector, although on the other hand, cluster are regulated in by the geography. So, the cluster policy is a decentralized one and has different actions and regulations at local, regional or national level (Navarro, 2003). Mixing policies is the best way to create positive conditions to develop clusters.

Although there are no direct policies relating to the creation of clusters in Spain or in relation to the marine economy, there are different initiatives in the creation of collaboration networks and in knowledge transfer, and many policies relating to the maritime sector and maritime activities. These policies are largely in the form of laws, focusing sectors such as fishing and shipping but also covering university involvement and networking. For the most part, these laws are at the regional, at Andalusia level.

At European level, regarding marine policies, the most important policies are the European Community ones, because if we go down in the levels, we cannot find any law that contradicts the articles of the highest-level policies. Besides, there is no special law in relation to the global marine sector at the national, regional or local level. In this case, there is the *Integrated Maritime Policy* (2007), which gives some tools to create strategies in maritime ordination, vigilance and new information systems to assure the navigation security, the protection of the frontiers, the control of the maritime pollution, the impel of the maritime research and which aimed to benefit the maritime economy, protect marine environment, strengthen research and innovation, foster development in coastal and outermost regions, address international maritime affairs, and raise the visibility of Europe's maritime dimension. The management of the fisheries in the European Union has a concrete policy tool, *The Common Fisheries Policy* (CFP). The EU countries have decided to manage their fisheries in collaboration through the CFP and this policy brings together a range of measures designed to achieve a thriving and sustainable European fishing industry, ensuring the sustainability and not damage

of the marine environment, providing national authorities with the tools to monitoring the size of the European fishing fleet and preventing it from expanding further, providing funding and technical support for initiatives that can make the industry more sustainable and scientific research and data collection.

At national level, the Spanish Constitution (SC), in this 149.1.19 article, gives to the State (National Authority) the exclusive competences in maritime fishing, without affecting the competences given to the Regional Authorities (Autonomous Regions) in relation to the sector's regulation. There is no concrete policy in relation to the maritime cluster or marine economy but there are many policies related with the maritime sector or activities. It exists the Ministry of Industry, Tourism and Trade and the Directorate General for Small Medium Enterprise Policy (DGPYME), responsible for the implementation of an approximation of a "cluster" policy at national level (Müller, 2007). The DGPYME is a management centre, which promote and support business initiatives and the growth and competitiveness of the enterprise sector. This Directorate works with national and international institutions and agencies to improve business innovation and support some enterprise promotion and development programmes (Müller, 2007).

Moreover, in the frame of the *Junta de Andalucía*, is created in 2007 the Andalusia Research, Development and Innovation Plan 2007-2013, which aims to impulse the labour of the Andalusian universities and the access of the society to the knowledge, promoting the education and the technological infrastructures. It intends to create a new economy of the knowledge, innovation and human resources. Inside this plan, it was created the R&D knowledge system as the scenario of the interaction of different agents in the creation, planning and execution of research, technological development and innovation policies in this region.

At local scale, there are some rules that concrete the execution of the other laws, decrees and rules in a higher level, which gives specific regulations in relation to the concrete case of Huelva's areas.

3.2. National, Regional and Local Policies for Algarve Maritime Cluster

In the first quarter of the century XXI, there are five specific domains that Portugal can explore and develop according to the resources at its disposal: tourism, environment, enhancement of cities' role as centres of development, the value-added services and the economy of the Sea (SaeR/ACL, 2009). If these five domains were exploited in an integrated way, they have enough potential to constitute a platform of modernization that drag other more traditional sectors, through their interconnections and by the dissemination of good business practices and appropriate social behaviours. Moreover, they have a strong potential for job creation, viewed as a relevant condition to support the transition phase between the development model of the

national economy and the development model of competitiveness (*ibidem*).

In fact, the strongly specialized development assumed in the Algarve region in recent decades, has led major regional traditional sectors, such as coastal fishing, canning industry, shipbuilding, and naval repair to a situation of general decline. This happens due to an inability in adapting to new operating logics of market, along with a deeply unbalanced territorial occupation. Algarve is currently the Portuguese region more penalized by the economical recession, and unemployment is the main social scourge affecting the region. In this context, based on a redefinition of priorities aiming the promotion of a more diversified and sustainable regional economy it is imperative exploring a new strategic plan, which is the strengthening of the association between the Region and the Sea. A maritime cluster may facilitate articulation, synergies and economies of scale, and at the same time contribute to build a sustainable and integrated view of the Algarve marine resources, of its assets and of the various activities associated with this, emphasizing its importance as one of our main economic resources and projecting it as an basilar engine for the economical development of the Algarve (Monteiro et al., 2011).

The study of the innovation actors and institutions in the Algarve (Cooke et al., 2011) revealed that the creation of a maritime cluster needs to be supported by a central actor, surrounded by public institutes, R&D centres from the University of Algarve, spin-offs and established companies. It is also crucial to create an association to structure and coordinate the activities. Moreover, a maritime cluster should focus economic activities and needs to anchor in a relevant knowledge base. It is crucial to highlight the relations between research centres and private companies. The role of research units is to produce new knowledge and translate this knowledge into action. Research must solve basic science problems to enlighten the possible interventions. It is fundamental to link sustainability and environmental quality with private preoccupations. More specifically in marine sciences, there is a relevant knowledge base but there is lack of firms that can valorise it. The potential exists and the territorial conditions are great and it is necessary to focus on sub sectors like offshore aquaculture, transformation of fishing products and energy. One first limitation is that this transfer is not being stimulated by the municipalities, another one is the limitation of funds due to the Algarve's phasing-out status in European structural funds. The kinds of support are very limited, focusing training and completely constrained by the access to the European structural funds that co-finance the thematic operational programmes that the region cannot access (Cooke et al., 2011).

In a more general way, before the analysis of the policies being implemented, the ALGARVE 21 – Regional Operational Programme for 2007-2013, gives relevance to the marine cluster, highlighted by the 2007's Regional Innovation Plan. There were three potentially relevant organizations in the linkages of the cluster emergence: CCDR

(*Regional Development and Coordinating Commission*), UAlg (*University of Algarve*) and IPMA (*Instituto Português do Mar e da Atmosfera*), and these three organizations must work together and build strong linkages with each others to increase the potential emergence of a maritime cluster in the region.

In a more specifically way, it is important to explain the policy framework in national and regional level. The Portuguese cluster policy is relatively new. The subject of Portugal's potential for innovative development was particularly popular after Michael Porter's study (1994). Nowadays, as the Portuguese economy aims for sustained growth and the capability to compete at international level - objectives which are reliable with the creation of added value, regional qualification and employment- it faces some challenges and constrains. This fact requires a strategy for acknowledging competitiveness as a systematic reality and required the State to play a dynamic and leadership role in creating business attitudes and behaviours that value innovation and knowledge. This strategy is reflected in the *National Strategic Reference Framework 2007-2013*, whose aim is the qualification of population through an emphasis on knowledge, science, technology and innovation, as well as the promotion of high and sustained levels of economic and social-cultural development and territorial qualification. The achievement of this strategic framework is ensured with the support of structural funds and Cohesion Fund by the concretisation by all Operational Programmes during the period previously referred (Cooke et al., 2011).

Clusters are specifically framed in the Operational Agenda for Competitiveness factors under the so-called "*Collective Actions – Collective Efficiency Strategies*". These strategies are presented in two different typologies: Clusters and Territorial based Economic Valorisation Strategies. Under the cluster typology exists a distinction between "Technology and Competiveness Centres" (TCC) and "Other clusters". TCC are partnerships that have national scope and value international projection of the projects, whilst Clusters and mainly regional partnerships, aggregating companies and other institutions that must share a common vision of territorial economy and show the key role of physical proximity in the innovation process (Cooke et al., 2011). A cluster emerges because there is an institutional context that creates advantages based on the physical proximity and created social capital (Pinto and Cruz, 2012). In the end of 2006 the *National Strategy for the Sea* became a central political instrument to permit Portugal to care for and make the better use of the invaluable resource of the sea. In defining for the first time priority strategic guidelines for the "Maritime Affairs" the Portuguese government dedicated in promoting novel ways to use the ocean resources in a sustainable way, contributing to the development of the maritime economy and industries. This recognition lined the way to the implementation of a new strategy for the Sea at regional level too (Cooke et al., 2011).

At regional level, the ALGARVE 21 reinforces the necessity to invest strategically in the Algarve Sea providing

the opportunity to support specific projects or economic activities associated with it, or others that compete indirectly to consolidate the strategy around the Sea Algarve. Beyond this programme, the development of a Sea Regional Agenda, in December 2008, intended to optimize the use of resources linked to the sea, ensuring their protection, their linked operation with scientific research and innovation, ensure sustainable use of marine, coastal dynamics monitoring and diversify tourism products, combining all this in an integrated policy of governance. The top priorities of this Agenda were the bet on a network of efficient port infrastructure, support for the fishing, aquaculture and other economic activities linked to the assets of the sea, the fleet support and sustainability of resources, exploitation of sea products, training and research and innovation (Cooke et al., 2011).

At the clusters level, technology and knowledge transfer, innovation, networking and association activities are mostly seen as a transversal issue. This means that there are no explicit policies at cluster level on these topics. Although clusters conform to the national and regional policy guidelines, clusters define their own programmes of action, according to their activity sectors. Therefore, each specific programme of action may define a strategy concerning technology and knowledge transfer, innovation and networking issues according to their reality. Similar strategies are adopted by different clusters (Cooke et al., 2011).

4. Conclusions

Marine sector and maritime activities related to the sea are important in localities placed in coastal areas. In Huelva and in Algarve, the economical and regional development is based in the sea's economy, so it is crucial to create dynamics in the sectors and economic activities related to it. This development will benefit from knowledge transfer of academic actors to the society, innovators actors and systems, with strong linkages between research centres, like universities, and corporations, specialized programmes, among others. Nevertheless, the analysis showed in this paper reinforces the hypothesis related to the linkage between the economy and the marine activities in coastal areas. Most of the economical activities in both regions are connected in almost one sense with the Atlantic Ocean, which has given to the region the opportunity to exploit some activities.

Many economical activities, with an important economic impact, have a direct connection to the sea and the marine resources, which are the base of the economy in littoral provinces. So naturally, in relation to policies, it's vital to create some specific strategies based on the European policies to the cluster emergent. More than regional and national laws, the region of Huelva, need various policies that will be able to generate more efficiency and innovation and most of all, the capacity to increase and fortify the emergence of a maritime cluster. In fact, each State has to

have his own marine strategies to each region and that strategies and policies must be linked to the European guidelines, for together develop the region economy based on the sea.

It is urgent to rethink the model for future development in both regions. Only the strengthening of the regional competitiveness will ensure its economic success in a society increasingly globalized and competitive. Making the Algarve and Huelva region an innovative community, respectful of the environment and socially cohesive, should form the main components of a strategy for sustainable regional progress.

Finally, in a context of global economic crisis, it is fundamental to provide the regions with competences to response to the global context, the regions should be resilient. 'Strategic resilience' refers to the continuous adaptation though proactive policy development and implementation to global drivers of change, enabling a region or another system to support crises and disturbances without collapsing. Resilient regions are less vulnerable and more prepared to deal with change, complexity, crises and multiples disturbances (economic, social, environmental, technological), being more sustainable in long term. In the current context of turbulence and uncertainty this may be a critical capacity for regions to face the future. A crisis is a period of time full of dangers, changes and perturbations; however these periods of crisis can also be an opportunity to modify renovate and reconsider a system, allowing reinforcing its resilience and the emergence of the maritime clusters in territories located at seaside can be a factor to improve the economical resilience of the regions. The regions that structure regional interconnected systems of dynamic innovation will be more competitive. However there are some structural limits for the innovation that can condition the sustainability of the region's development and that's the main aim of the emergence of a maritime cluster, endue the Huelva and Algarve regions with some tools to improve its economy and guarantee their sustainability.

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