



# **SUSTAINABILITY IN THE SPANISH PORT SYSTEM**

**Author: Samanta Guidi Sánchez  
Tutor: Miguel Ángel López Navarro**



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## 1. INTRODUCTION

The maritime industry -with 90% of global trade by volume and 70% by value- is one of the most globalised and largest industry sectors in the world (Asgari *et al.*, 2013). Within the maritime industry, port sector has a main role in the world business as this particular sector is a driver of economic growth. It is known that there is a strong connection between port and urban development thanks to the prosperity related to trade. Ports play a key role as they are located as the center link between land and sea transportation for international trade (Asgari *et al.*, 2015). Several economic historians have emphasized the importance of port-cities in the birth and development of the global, capitalist market economy (Braudel, 1979).

Nevertheless, ports have various impacts on their cities, both positive and negative. Whereas ports have many advantages all related to economic benefits. For instance: rise of employment, maritime services which are a value added to the city and port, innovations and technology, among others. The environment is being damaged while ports are carrying out their business by their economic activities. Globalisation has heralded burgeoning ship movements and maritime operations in ports alongside increased international concerns regarding potential environmental impacts (Dinwoodie *et al.*, 2012). Then, ports have one relevant drawback that is important to outline and it is the environment and the impacts received on it as land use and traffic impacts, to name a few.

On the other hand, environmental sustainability is now one of the growing social concerns (Frazem, 2013). The idea of environmental/ecological sustainability emphasize its multidimensional and complex nature (Charoenwatana and Rambo, 1988). But a well-known definition of sustainability is *“the development that meets the needs of the present without compromising the ability of future generations to meet their own needs”* (Brundtland, 1987). In other words, this idea claims to the economic growth without destroying the natural environment or compromising future generation’s life. Nowadays, problems involving environmental sustainability, the rising awareness of finite resources in the Earth, the difficulty to protect the environment, uncertainties about environmental conditions as climate change are several big concerns to everybody in the whole world -from people and customers to firms-.



Merk (2014) illuminates the existing of a mismatch between the drawbacks and the advantages in ports sector and this is the reason why it is interesting to build up this project in order to be aware of the negative impacts received on the environment by ports' activities and how Ports Authorities have to show their commitment with the environment as environmental sustainability has become a real problem and it is necessary to tackle it. Although shipping is considered one of the most environmentally friendly modes of transportation (Lirn *et al.*, 2013), reality is that some improvements have to be made in ports sector in order to achieve the goals of the environment sphere within the organisation.

Traditionally, ports have always been ready for change and improve their infrastructures, materials and implement different strategies to manage their business and not becoming an obsolete sector. As it is mentioned above ports help the economy to develop and grow. Leaving the strengths of ports aside, the environmental impacts in this sector are mostly related to the activity on the port itself such as shipping, port land and transport to and from ports. Also, "main impacts are within the field of air emissions, water quality, soil, waste, biodiversity, noise and other impacts" (Merck, 2014, p. 32). All these environmental impacts can have severe consequences as health risks and global warming as a result of port sector being highly contaminating –above all comparing to other kind of sectors.

Although sustainability is a typical concern in ports literature, the main focus of the academic research has been on the environmental dimension of sustainability rather than the social and economic dimensions. In fact, this study only considers the environmental aspect of sustainability too, but it is important to mention that the balance of the three dimensions is the right choice to promote sustainable development. This is also presented as the so-called triple bottom line: the equilibrium of three dimensions that integrate and combine the environmental, social and financial performance (Elkington, 1998). The question is no longer if they contradict each other but how to achieve this environmentally sustainable form of development (Lélé, 1991).

In addition, for several years the scientific literature has highlighted the various environmental problems associated with port activities (Darbra *et al.*, 2005; Peris-Mora *et al.*, 2005; Peterlin *et al.*, 2005; Saengsupavanich *et al.*, 2009; Mohee *et al.*, 2012). Consequently, ports performance has changed in order to take into account not only its throughput and efficiency, but also its green performance (Lirn *et al.*, 2013). Thus, this study attempts to identify the performance, attitude, behaviour and commitment with the environment by Ports Authorities. It is considered relevant to indicate that the reference

framework used to do the study is the Spanish Ports System because Spain is a key country for its geostrategic situation as a strategic gear assembly in international transport.

Moreover, Spanish ports have both significant economic impact and presence in the field of logistics in order to develop growth in Spain. Spanish ports are considered logistics centres of XXI century as they are origin, destination and traffic of flow of goods. It seems to be the perfect chance for Spanish ports to enhance reputation and image which can serve to differentiate them from their competitors. Through this research it is shown which Spanish ports will be found to consider themselves as green ports which have proactively engaged true commitment with the environment.

The literature has shown how the environmental sustainability performance in ports varies with the pressure exercised by stakeholders, one of which is precisely citizenship. For that reason population has been chosen as size variable –size also covers the income of the Port Authorities- in order to check if ports size has an effect on the environmental dimension of sustainability in ports. Company size has been found to be a strong indicator of influencing corporate social and environmental disclosures, also literature and studies claim that there is a positive association between company size and voluntary environmental disclosure (Choi, 1999; Cormier and Gordon, 2001; Hackston and Milne, 1996; Liu and Anbumozhi, 2009).

In this project the relationship between Spanish Port Authorities -which shape the Spanish Port System- and the environment sustainability is going to be analysed. The first goal will be focus on analysing the **behaviour regarding the Spanish Port System with regard to their environmental sustainability. On the other hand, a second goal will be in order to find out why some ports put more emphasis on sustainability than others, an analysis is made to know if there is any relationship between the ports' sustainability and their size due to the effect of firm size is a corporate characteristic which is significantly and positively associated with environmental disclosure in organisations.** This piece of work is based on a qualitative research method because it is more adequate to analyse the 28 Port Authorities in Spain as the complexity of port sector make it difficult to use quantitative techniques which would otherwise be unable to address.

This research project is structured as follows. Firstly, a review of the literature that will help us to understand better the analysis that it is making subsequently is presented. Thus, main concepts related to sustainability, environmental sustainability, voluntary disclosure information and environmental performance are explained as the rising of

environmental social awareness. Secondly, we analyse environmental sustainability in the context of ports. Thirdly, the Spanish Port System as it has been selected as the framework of the project. In the second part of the work, the focus is on the review of sustainability reports belonging to the 28 Port Authorities in Spain in order to analyse their environmental sustainability strategy. Finally, we show the results and the main conclusions of the study.

## 2. LITERATURE REVIEW

### 2.1. Sustainability

In the recent years, sustainability has attracted a lot of attention from both the academic and industrial sectors. This study only consider the environmental aspect of sustainability but it is considered important to explain how the term sustainability was born and the difference between Corporate Social Responsibility (CSR) and Sustainability in order to not misunderstand the true meaning of sustainability.

Corporate Social Responsibility (CSR) appears for first time around the middle of XX century in EEUU, understood as how businessmen take responsibility of their actions towards society (Bowen, 1953). According to Asociación Española de Contabilidad y Administración de empresas (AECA) Corporate Social Responsibility is the set of obligations, legal and ethical commitments with national and international groups of interest which are derived from the impacts of the existence, activity and operation of the organisations that are produced in the following dimensions: social, labour, environmental and human rights spheres. In other words, CSR activities should go beyond the law and exceed its “minimum obligations”.

Banerjee (2007) explains that the ideology of CSR in the 1950s was primarily based on an assumption of the obligation of business to society so was an attempt to cultivate civic virtue in corporations. However, the ambiguity around the concept of CSR and its divergent interpretations arise some confusion in the terminology. Nevertheless, researchers of CSR declare that there is not an universal definition accepted for CSR yet (Whitehouse, 2006), but there are some popular definitions of CSR from several specialists in this subject that are defined bellow:

- The firm’s consideration of, and response to, issues beyond the narrow economic, technical and legal requirements of the firm to accomplish social benefits along with the traditional economic gains which the firm seeks. (Davis, 1973, p. 312)
- Encompassing the economic, legal, ethical and discretionary expectations that society has of organizations at a given point in time. (Carroll, 1979, p. 500)
- Actions that appear to further some social good beyond the interests of the firm and that which is required by law. (McWilliams and Siegel, 2001, p. 117)



- The ways in which an organisation exceeds the minimum obligations to stakeholders specified through regulation and corporate governance. (Johnson and Scholes, 2002, p. 247)
- Societal expectations of corporate behaviour: a behaviour that is alleged by a stakeholder to be expected by society or morally required and is therefore justifiably demanded of a business. (Whetten *et al.*, 2002, p. 374)
- The commitment of business to contribute to sustainable economic development working with employees, their families, the local community and society at large to improve their quality of life. (World Business Council, 2005)
- A concept whereby companies integrate social and environmental concerns in their business operations and in their interactions with their stakeholders on a voluntary basis. (European Commission, 2005)

After this briefly review around the concept of CSR the main elements in CSR are highlighted, such as economic and legal requirements, strictly compliance of laws, policies, processes, societal duties, voluntary actions, values and ethics but it is only at the end that the environment is talked about (Banerjee, 2007).

On the one hand, in recent decades globalisation has raised concerns regarding potential environmental impacts. An increased sensitivity can be seen towards the future which is driven by the awareness both the fragility of the natural environment and man's fragility where environmental variations have been concerned, which have been manifested itself in environmental policies. Pollution, emissions to air, waste, climate change, finite resources available in the Earth, the negative impacts on the environment which is being damaged by business activities are few concerns among the population.

On the other hand, the environment and all the related issues with it have become popular as a result of people' awareness and public concern is created towards the environment in order to engage and commit with the future. As a result of this commitment to mankind's wish to persevere, endeavours to guarantee the future and welfare by accepting responsibility for future living conditions and doing so from the present, the term of **sustainability** has emerged. Then, until a few years ago a key theme of CSR, sustainability, was missing.

The idea of sustainable is the necessity of achieving a new paradigm of development which is characterised by its **durability** and its **harmony**, the evidence of the environmental deterioration and the increased social sensitivity have acted as catalytic in the birth of this fundamental concept of sustainability.

Traditionally, sustainability has been considered the conflict between environmental and economic interests (Ditty, 2014). In fact, supporters of economic development stress sustainability in terms of unflinching economic growth, while ecological economic perspectives have mentioned that the natural capital (raw materials, ecological services) required for the production of goods and services is a finite resource belonging to a finite ecosphere (Rees, 2003). Here, the dilemma of sustainability and the relationship between the economic and the environmental dimension which sometimes tends not to be conciliated. Thus, the economic growth did not necessarily mean equity and, obviously, had several social and environmental consequences. Nevertheless economic growth does not mean compromising the future, and protecting the environment is the only way to develop and grow in an environmentally friendly way in order to not destroy the biosphere. Therefore, **sustainability fosters respect to environmental resources in order to preserve the world as it was known once.**

The most popularly accepted definition was the one made by **Brundtland** Commission (1987) which defines sustainable development as *“the need to urgently promote a change in the production and consumption patterns that is capable of meeting the needs of current generations without jeopardising future generations’ ability to satisfy their own needs”*. Definitely, do not do so overloads and compromises the future of coming generations. In other words, as Adams (1990) claims to meet the needs of the present without compromising the ability of future generations to meet their own needs.

Despite being Brundtland’ s definition the most socially accepted one, there are several authors that have pointed out that Brundtland definition does not elaborate on the notion of human needs and wants (Kirkby *et al.*, 1995; Redclift, 1987). Controversies came out, for instance, Taylor (2002, p. 101) claimed that *“it is often difficult to determine the future needs of people in the next generation which may be different from the needs of people today”*. He further added that the way the developed countries view the concept of needs, is completely different from the views of that of the developing countries. Also, Redclift (1987) points out that sustainability means different things to different people.

Actually, there are several definitions of the term sustainability. In 1992, there were more than 100 definitions of sustainable development (Holmberg and Sandbrook, 1992) and a few more have presumably been invented since then. The reason for this is that sustainable development have become the buzzword of the 1990s (Banerjee, 2007). Its popularity creates a problem because of the polemic with buzzwords, they tend to become disengaged from their original context and their true meanings are lost. Unfortunately, popular usage of the term tends to be broad and vague. However, what

researchers, authors and specialists agree is that the present is the responsible not only for the future in terms of anticipating, configuring future frameworks, but also for preventing and being responsible for how to prepare for addressing random phenomena and contingencies.

The speech of environmental sustainability has highly weight in XXI century society and it is important to mention that **the concept of sustainability goes beyond merely and exclusively environmental considerations**. Sustainability can be divided into three different areas (Banerjee, 2007). Firstly, the economic area which refers to the efficiency of business operations – “to produce goods and services that society wants and to sell them for a profit”. Secondly, the social area which alludes to the minimization of negative impacts on the community that results from business activities. Thirdly, the environment area which addresses the conservation of the earth’s resources for future generations.

Sustainable development has to incorporate the **three interdependent pillars** that serve to mutually support each other: environmental issues (natural heritage/assets, etc), social issues (health, life, expectancy, cultural and institutional heritage/assets, etc) and economic issues (employment, human resources, technology, etc). The **balance** of the three interactions promote sustainable development (Barton and Du Plessis, 2000). This is also presented as the so-called **triple bottom line**: the equilibrium of the three dimensions that integrate and combine the environmental, social and financial performance (Elkington, 1998). Saying so, the goal of sustainable development is to maintain economic growth without environmental destruction or minimizing the environmental impacts and maximizing the social well-being. It is seen how companies take responsibility of not only their economic sphere but also their social and environmental one.

Environmental sustainability is now one of the growing social concerns (Frazem, 2013) due to several pressures or driving forces, namely legislation, public concern, shareholders and others stakeholders, government regulation -very influential in US and Europe-, environmental policies, private organizations and ONG’s all of which guide companies towards sustainability. The basic reason why sustainability is receiving support from everyone is because of present concern about the effects that businesses have on society and how the damage on the environment is growing -look what is happening with Climate Change on the Earth-. A recent report published by the Intergovernmental Panel on Climate Change (2014a) claims that environmental commitment at all levels, from local to international level, is necessary to face climate change and other environmental impacts. These problems involve the whole world

because conserving the environment affects everyone else on the planet, especially companies which make their benefits from their business, what is more customers have the right to choose where they buy the product or service they wanted from. Finally, both economic reasons and ecological ones have make people concerned and **raised awareness of sustainability in business**. In fact, in the twenty-first century the idea of sustainable development claims to promote economic growth without destroying the natural environment or compromising the life of future generations.

The environmental commitment of companies has become an important issue for everybody in recent years. Efforts are made by countries, private organizations, non-governmental organisations and United Nations that have contributed significantly towards the public' s awareness of the world' s environmental issues and this has generated a consciousness at all levels in order to minimize the impact of economic activities on the environment. Despite intensifying, efforts are still needed, some levels of success have been achieved towards sustainable development through these awareness's and strategies. But it is vital to mention that these efforts can only be truly successful if environmental sustainability is not viewed singly but within the integration of social and economic impacts on the society (Nkechinyere, 2010). The idea of environmental/ecological sustainability emphasize its multidimensional and complex nature (Charoenwatana and Rambo, 1988).

This project is focused on the **environmental sustainability** as it is aforementioned in the Introduction. There are two fundamental notions that cover the definition of environmental sustainability:

- **The pressing problem of environmental degradation that result from economic growth**
- **The need for such growth to lighten poverty in society.**

It can be seen the highly relation between the environmental and economic dimension as a result of being influenced by one another. For that reason it is relevant to achieve sustainable development by balancing and improving environmental impacts without damaging economic performance (Williamson *et al.*, 2006).

The notion of **sustainable development** was born because of endangered natural resources and several negative impacts caused on the environment. So, the goal of sustainable development is to keep economic growth without environmental destruction. Furthermore, The World Commission on Environment and Development (1987)

described the need for balance between economic and environmental considerations as sustainable development. The concept embraces two main ideas:

- **Protecting the environment will require economic development**
- **But economic development must be performed sustainably. That is, in a way that does not sacrifice either economic or natural resources for future generations**

Nevertheless, the problem is as several authors point out that most times economic development remains a priority over the environment, and environmental protection simply becomes part and parcel of the development process. By this means, measurements of environmental protection must not interfere with or impede economic growth. Saying so, if the concern was truly about environmental sustainability an alter argument would be expected where environmental protection was considered a higher priority because economic development can only occur within the constraints and limits of the biophysical environment (Banerjee, 2007).

It seems that rather than reshaping markets and production processes to suit the natural world, sustainable development uses the logic of markets and capitalist accumulation to determine the future of nature (Shiva, 1991). Thus, the debate about biodiversity, resource scarcity, ecological limits and population is ultimately a debate about the *“preservation of a particular social order rather than a debate about the preservation of nature per se”* (Harvey, 1996, p. 148).

Now that it is understood the concept of sustainability which was born from an unsustainable situation where awareness of environmental deterioration among population have increased vigorously. Also it is known that to promote sustainable development is necessary to integrate and combine the three fundamental pillars of sustainability: social, economic and environment spheres. Only the equilibrium of these three spheres is the responsible for the sustainable development and sustainable growth which have the quality of durability and be sustainability in the long-term in order not to put in risk future generations' life. In the present situation with all attention on companies' behaviour and their performance with the environment, it impacts their business activities. Furthermore, how companies take responsibility towards society has emerged as a new subject which talks about voluntary disclosure that reflect companies' environmental activities and environmental performance of companies which show true values of companies' performance in their environmental sphere and reflects the actual events in the firm.



## 2.2. Voluntary Disclosure & Environmental Performance

What it is important to distinguish is the difference between disclosure and environmental performance. Ingram and Beal (1980) enlightened that the **environmental performance** is associated with measures on firm's environmental performances and the **environment disclosures** is contained in the firm's annual reports. Annual reports are a useful tool to define the strategies, processes and actions undertaken by companies and to publicize certain information about them. Thus, **transparency** become a key factor in the process.

It is logical to think that disclosure and environmental performance in firms coincide as the disclosure, to be useful, there should be clarify the correspondence between the disclosure in annual reports and the actual events which show the performance of a company. Most times, what is disclosed in firm's annual reports is different and there is no relation between these indices or actual measures and the content of their activities. In fact, Li *et al.*, (1997) claim that firm's environmental disclosures did not reflect their actual performance so it may appeared some inconsistencies in companies between companies' voluntary disclosure and their environmental performance.

Environmental disclosure is growing in importance due to the increased demand for environmental performance information and the prospect that such information will improve financial performance (Al-Tuwaijiri *et al.*, 2004; Porter and van der Linde, 1995). In fact, most companies think that taking care and being responsible for their business activities which can hurt the environment and cause negative impacts on it, is a great strategy to promote their companies as fighting towards sustainability. Saying so, corporate strategy is a driving force which puts pressure on companies to invest in environmental protection with the goal of being competitive in comparison with their competition. Nowadays, sustainability is a central issue for business and society. Hawken (1995, p. 11) suggests an "economy of restoration" as a solution to the global environment crisis, where corporations "compete to conserve and increase resources rather than deplete them".

Although scarcity of natural resources and the cost and financial value of them are crucial to business activity, more important is the protection of the environment. However, the initiatives that may be undertaken vary, the cost involved usually limit the motivation to undertake them (Emmanuel, 2013).

Information in annual reports as mentioned before is a great tool to be transparent and communicative with the different stakeholders. Financial reporting is vitally important for

disclosing crucial information about the different options that are available for adopting environment-friendly industrial practices and the related costs in order to attract investors. The disclosure of company environmental policies in annual reports would allow investors and other interested parties to make knowledgeable judgements about the efficiency and impact of managers' sustainability decisions and actions (Deegan, 2004). High quality disclosures would enhance managers' reputation and social profile due to the provision of a signal of transparency and reliability (Deegan *et al.*, 2006; Patel *et al.*, 2002; Simnett *et al.*, 2009).

Voluntary disclosure includes information that is not required by law or code of practice (for instance: annual reports and deputy statements) or what is essential, and is useful for stakeholder decision-making (Dawkins and Fraas, 2011). Companies should disclose information about their environmental plan of action and strategy leading to environmental-friendly products. But companies should provide accurate and reliable disclosures to avoid disappointing investors, attracting authorities' attention or receiving negative feedback from stakeholders.

There are two linear explanations for voluntary disclosure that are accepted as legitimacy theory and voluntary disclosure theory. On the one hand, voluntary disclosure theory (Dye, 2001; Verrecchia, 1983) is a strategy-based approach that predicts a positive association between environmental performance and the level of voluntary environmental disclosure. According to voluntary disclosure theory, superior environmental performers will try to distinguish themselves by disclosing information acclaiming their favourable performance relative to their competitors. Firms with inferior environmental records will disclose less in an attempt to avoid negative exposure. On the other hand, the legitimacy theory approach (for example: Patten, 2002) postulates that voluntary disclosure is a function of pressure by institutional and public stakeholders. Because disclosure is essential, as a reaction to this pressure, firms with less favourable environmental performance records use disclosure to explain their performance. Essentially, the voluntary disclosure approach focuses on acclamations of good performance, whereas the legitimacy approach is directed towards excusing poor performance.

There are number of reasons why poor environmental performers abide by request for voluntary disclosure. Firstly, disclosure of environmental activity is a potential source of **legitimacy** (Hooghiemstra, 2000) and because legitimacy substantially enhances company performance (Oliver, 1991), it is likely that poor performing companies will try to capitalize on the benefit. When companies meet environmental expectations they are

perceived to be higher in legitimacy (Bansal and Clelland, 2004). Conversely, companies failing to meet environmental expectations are perceived to be lower environmental legitimacy but can mitigate the negative effects by disclosing information and expressing commitment to the environment (Brown and Deegan, 1998).

By this means, poor environmental performance can lead to an expectations gap, which is a difference between the way a firm performs and how key external stakeholders believe it should perform (Wartick and Mahon, 1994). Thus, one reason that companies may use environmental disclosures is to reduce their exposure to social and political pressures in order to obtain legitimacy. Suchman (1995, p. 574) broadly suggests that *“legitimacy is a generalized perception or assumption that the actions of an entity are **desirable, proper** or **appropriate** within some socially constructed system of norms, values, beliefs, and definitions”*. Therefore, the concept of legitimacy allude to organizational actions that are **congruent** with overall social expectations (Mathews, 1993).

It is found that usually companies with low environmental performance are not searching for opportunities for the environmental performance in a proactive way, actually they are left to respond to concerns about legitimacy rather than execute a consistent environmental performance strategy (Dawkins and Fraas, 2011). Freedman and Patten (2004) argue that using voluntary disclosure in order to project a positive and more favourable picture of the company, may lessen the incentives for firms to work toward improving their actual future performance. Furthermore, recent studies have shown that firm environmental disclosure is negatively associated with firm environmental performance (Cho *et al.*, 2012). For instance, it is argued that firms with worse environmental performance are facing greater exposure to social and political pressures, therefore, they have an incentive to use disclosure in order to address these exposures (Patten, 2002; Cho and Patten, 2007) –worse performing firms make more extensive disclosures.

According to Emmanuel (2013), literature about voluntary disclosure points out how firms are inclined to report and communicate good news whereas they are discouraged to disclose bad news. This is followed by firms that are environmentally sensitive and adopt environmental policies they would be motivated to provide voluntary environmental disclosures to inform investors of their superior environmental strategy. On the one hand, good environmental performers would tend to disclosure “hard”, verifiable and difficult to mimic environmental information. Conversely, poor environmental performers may be

inclined to report “soft”, general and not easy to verify environmental information (Clarkson *et al.*, 2011a).

To sum up, it can be said that **firms’ environmental performance is reflected in perceptions of their environmental reputation** (Cho *et al.*, 2012) due to **firms’ image and brand awareness**. Despite the polemic found between firms which disclose environmental information and the ones which actually perform environmentally and their negative relation between them. The idea that remains is the importance of companies’ **duty to operate under good practices**, control their activities which have a negative impact on the environment. Achieving their business’ goals under environmental guidelines to operate in markets in an **environmental-friendly way to grow** “green” and to be competitive in their sector.

Companies need natural resources to keep up with their business activity but natural resources are finite which imply that some business activity will not be infinite and last for ever. This is the reason why it is relevant to not waste natural resources and protect the environment as, if people do not take care of it, the environment will be compromised in the future. Consequently, future generations will not find the Earth it was before. Moreover, some needs will not be met nor satisfied.

Several authors stated that economic growth happens thanks to companies’ activities but those activities usually have negative impacts on the environment. If the economy develops it is due to companies’ growth while firms damage natural resources which are used to carry on with business’ activities. Nevertheless, as it is aforementioned natural resources are finite and, nowadays, people are overusing them which means that in the future, economic growth could slow down because of companies’ behaviour. In fact, there will not be more natural resources to use as the Earth is being depleted of its natural resources, pollution and environmental degradation if it is not properly checked will result in a catastrophe in the future.

The essence is to work towards a new balance between the use and the preservation of nature’s potentials and resources. *“Growth or wealth must be created without resource depletion”*. The Financial Times defined sustainable growth as growth that is possible to continue without causing economic problems and economic growth that is possible to sustain without causing environmental problems as a result of having an economic and environmental consideration. The key is the integration of society, economy and environment as the three of them are equally important. Therefore, it should be kept in mind that the three areas are connected and they influence one another.

Even though the importance of the environment is recognised and this project is focused on that, it is also important to recognize that policies based solely on the environment without considering the other dimensions such as the economic and social impacts will not meet any nation's long term objectives. Although, finding the right balance may be difficult, the right approach to sustainable development is through the integration of economic, social and environmental policies –the so-called triple bottom line-.

Banerjee (2007) claims that **sustainable development** is about **managerial efficiency** and **rethinking the relationships between humans and nature**, re-examining current doctrines of progress and modernity and privileging alternate visions of the world. Finally, the notion of sustainability must be a **commitment** between environmental protection and economic growth, not compromising future generation's earth's resources. However, globalisation pervert the true meaning of sustainability, it is necessary to understand, believe and build on the essence of this concept. Business must operate with less harm to the environment, not degrade and plunder natural resources and not damage the environment. Thus, achieving the goal of sustainability.

Regarding voluntary disclosure, companies disclosed economic, social and environmental information in their annual reports -including social and environmental reports CSR reports, or sustainability reports- (Lu and Abeysekera, 2014). In general, larger companies are more likely to be subject to public scrutiny, and therefore will disclose more information to obtain public support for their continuing existence (Cormier and Gordon, 2001) in order to meet expectations of the public. In other words, larger companies have more shareholders who may be interested in corporate social activities and are more likely to use disclosure to communicate results of corporate social endeavours (Cowen *et al.*, 1987). **Company size** has been found to be a strong indicator of **influencing** corporate social and **environmental disclosures**, also literature and studies claim that there is a positive association between company size and voluntary environmental disclosure (Choi, 1999; Cormier and Gordon, 2001; Hackston and Milne, 1996; Liu and Anbumozhi, 2009).

Conserving firm size, several studies suggest that large companies made more social and environmental disclosure than small companies (Choi, 1992; Cormier and Gordon, 2001; Hackston and Milne, 1996; Mahadeo *et al.*, 2011), whereas Roberts (1992) found no relationship between firm size and the quantity of environmental disclosure. Consequently, it has seemed to be pertinent to observe if there is -or not- relation between the voluntary disclosures found in the sustainability reports –of Port Authorities- and the size of ports as it will be seen in results section.



### 2.3. Environmental Management Systems (EMS)

The **environmental commitment of companies** has become an important issue for the academic community in recent years. The literature has pointed to the adoption of **voluntary and certified Environmental Management Systems (EMSs)** as an indicator of companies' environmental commitment (Welch *et al.*, 2002; Jose and Lee, 2007; Clarkson *et al.*, 2008; Plaza-Úbeda *et al.*, 2009; Rahman and Post, 2012).

Regarding companies' activities and their strongly environmental impact as it is mentioned several times before and the difficulty, usually, to visualize the actions companies take to lessen their environmental impacts, it has emerged the possibility of adopting voluntary certified Environmental Management Systems (EMSs). So, in a context of growing public concern about environmental issues and their impacts, firms can opt to use certified EMS. These environmental management systems are a set of processes and practices that **enable an organisation to reduce its environmental impacts**, increase its operating efficiency and obtain a range of benefits for their business strategy -including reduced costs and enhanced stakeholder relations (Ammenbergh and Hjelm, 2003; Michael *et al.*, 2010). EMS acts as **a sign indicating the adequate environmental behaviour of companies**. By holding certifications such as ISO 14001, firms are seen to be making a commitment to environmental issues (Welch *et al.*, 2002; Plaza-Úbeda *et al.*, 2009). These kind of certifications enable firms to **achieve the social legitimacy** they need for **long-term survival** and **competitiveness**. This means, that holding these certifications negative thoughts in customers' mind about companies' behaviour are decreased while the **image** and **reputation** of these companies **get stronger**.

Here, it is going to be explained the meaning of Environmental Management System (EMS). According to Ministerio de Fomento, Industria y Comercio it is a structured management system that includes organisational structure, planning activities, responsibilities, practices, processes, procedures and resources to develop, implement, put into effect, review and update the commitments with environmental protection in organisations. Moreover, Le *et al.*, (2014) claims that EMS is an instrument to manage environmental performance of a company using a comprehensive, systematic and document approach. It points to improve environmental performance through pollution control, waste minimization, design, training, reporting to top management, and the setting of aims (Melnyk *et al.*, 2003). In essence, EMS attempt to promote cleaner production through systems reviewing production processes and procedures. In general,

the main purpose of EMS is determine which elements should be considered about environmental protection by organisations to ensure that the development of their activities are taken into account the prevention and minimization of the effects on the environment, so the goal of EMS is to **find solutions for better efficiency and reduced environmental impacts** (Le *et al.*, 2014).

According to United States Environmental Protection Agency (EPA), EMS is a framework that helps an organisation achieve its environmental goals through consistent review, evaluation, and improvement of its environmental performance. There are formal EMS approved models which are audit by third parties and certificates. An EMS endorsed facilitates the establishment of a set of methodical patterns of environmental behaviour that have already been tested by other organisations and allow measuring the performance of a company with internationally accepted criteria. The environmental management systems are based on **reference standards**. The most widespread is the International Standards Organization (ISO). Also, there is the Eco-Management and Audit Scheme (EMAS) which is similar to ISO 14001 but with additional requirements - among others: public environmental statements.

With respect to the continuously increasing concern about the **quality** of firms' Environmental Management System (EMS), these systems are starting to be seen and used as a device for **standardizing firms' environmental management practices**. As a process standard, the ISO 14001 specifies the sets of internal organisational management practices and creates an EMS for certification (Boiral, 2007; King *et al.*, 2005). Companies can use the certified EMS to standardize their environmental management practices, increase internal efficiencies, and improve environmental performance (Darnall and Sides, 2008; Potoski and Prakash, 2005a).

In fact, environmental management systems strive for making them steadily worldwide and in an attempt to promote EMS, the International Standards Organization established the ISO 14001 series as international standards for EMS. Then, some transnational corporations require their suppliers and retails to be ISO 14001 certified, which could result in environmental improvements (Banerjee, 2007). Moreover, residents located in wealthy regions may demand companies adopting ISO 14001 as a commitment to the environment (Perkins and Neumayer, 2010). As a result ISO 14001 certification provides a tool to improve firms' environmental performance, as well as a device to indicate their higher environmental performance to their customers, suppliers and other stakeholders –also shareholders-.

By adopting EMS, organisations may be able to confer **greater moral legitimacy** for their environmental practices (Darnall *et al.*, 2008; Zeng *et al.*, 2010). Regardless of the lack empirical studies showing a positive relationship between ISO 14001 certification and improvement in organisations' environmental performance (Anton *et al.*, 2004; Barla, 2007), many empirical results support the argument that ISO 14001 certification has a **proactive effect on the organisational environmental performance** (Arimura *et al.*, 2008; Iraldo *et al.*, 2009; Potoski and Prakash, 2005b).

It is true that the company may have a fully environmental management system and completely functional as it is required by ISO 14001 but without being certified. The certification must be valued by the organisation, as the company is the only one who knows if it will economically benefit from the implementation of the standard certification process. The certification is not always beneficial for the organisation, especially for small and medium enterprises. Nevertheless, having a certified environmental management system in the company supposes a number of benefits of market, economic, image's company improved and its regulatory status, such as:

- Elimination of barriers in international markets (ISO 14001 is an internationally recognized standard)
- Compliance of requirements of some customers who care about the environment -and may demand environmental certifications
- The possibility to attract customers who are sensitive to environmental issues
- Reduction in costs on electricity, fuel, water and raw materials
- Savings in the treatment of emissions, discharges and waste through reduction plans
- Possibility of obtaining merit (points) in public competitions (in some cases certification is a mandatory requirement)
- Ensuring control and compliance of a large number of legal requirements related to environmental issues
- Decreased amounts of certain insurance policies
- Certain legal exemptions (for instance: exemption of the presentation of financial guarantees in the future law on environmental liability)

Whatever the decision taken by the organisation, should be take into account that having the certification does not automatically make a company in a respectful organisation with the environment neither ensures that the company will continually improve its performance with regard to the environment. However, it shows that the company has a

proactive attitude of prevention and preservation with the environment. But also the company must put lot of effort to achieve the desired benefits of having the certification.

Stated bellow there is a brief description of what ISO 14001, EMAS and PERS consists each one -certifications that have been selected for the study of this project.

### International Organization of Standardization: ISO 14001

The ISO 14000 series is a set of international standards published by the International Organization for Standardization (ISO), including **ISO 14001** which provides the necessary requirements to implement an environmental management system. The certification is on the environmental management system itself and not on the environmental performance of the organisation.

ISO 14001 is known as a **generic management system standard** because it can be applied in **every business organisation** (Saengsupavanich *et al.*, 2009; Tompson *et al.*, 2008). By ensuring that nothing important is left out and that everyone is clear about who is responsible for doing what, when, how, why and where, it has a vital role in helping a certificate holder manage pollution created by his activities (Ammenberg and Hjelm, 2002).

The main requirements in order to obtain the ISO 14001 standard call for the company to create an environmental plan which includes: environmental objectives and targets, policies and procedures to achieve those goals, defined responsibilities, staff training activities, documentation and a system to control any changes and progress made (Mohee *et al.*, 2012). The ISO 14001 standard describes the process to be followed by the company and demands respect for laws of national environmental. Nevertheless, it does not establish specific performance goals of productivity.

Companies that hold the ISO 14001 certificate seem to be concerned about the negative externalities that have significantly environmental impacts on the environment caused by their business activities. In fact, there is a **positive relation** between the ISO 14001 certification and improvements made in environmental performance of organisations. The certification have **an effect on the performance and behaviour of organisations regarding the environment**, being more proactive and aware of the true meaning of sustainability and/or sustainable development.

### Eco-Management and Audit Scheme: EMAS

Eco-Management and Audit Scheme (**EMAS**) is a voluntary norm of the **European Union** which recognizes those organisations which have implemented an environmental

management system and have acquired a commitment to continuous improvement, checking through independent **audits**. EMAS identifies environmental issues and risks related with such issues.

Organisations which have the well-known EMAS certification –whether they are industrial organisations, small/medium size companies, business of the third sector, administrations and international organisations -including the European Commission and the European Parliament- have a defined environmental policy, also they have an environmental management system application in the company and periodically check the operation of the system through an environmental statement which is **verified by independent organisations**. These entities are recognized with the EMAS logo which **guarantees the reliability of the information provided by companies**.

In other words, the acronym EMAS is a management tool for companies and other organisations of voluntary application. The EMAS is designed to **evaluate, improve and announce** the environmental performance in companies, also it ensures the **honesty and accuracy of environmental information** provided by these organisations.

In addition, there are some basic requirements such as carrying out an assessment that considers all the environmental aspects linked to the activity of the organisation, also the compliance of environmental legislation which can be applied and the existence of procedures or good environmental practices. Moreover, it is an established effective management system –according to the results of the evaluation- and it is focused on the compliance with environmental policy defined by the top management of the organisation. Carrying out an environmental audit to ensure that the management system adapts and responds to the requirements of environmental policy and the aims defined by the organisation in the environmental plan -which must be integrated into the management system of the organisation- and it is structured according to the EMAS regulation. Finally, holding an EMAS certification is **making a public statement of environmental performance of the organisation** reflecting the compliance to environmental goals and future actions which allow to continue with the process of continuous environmental improvement.

This certificate helps to **minimize the negative effects of business practices**, that is, it helps to improve the performance and behaviour of the companies in its environmental dimension.



## Port Environmental Review System: PERS

The Port Environmental Review System (**PERS**) certification is a **port-specific standard** for environmental management systems, which defines the good practice standards for reviewing and reporting significant environmental aspects of port activities (Le *et al.*, 2014). PERS is the **unique tool for port sector in Europe** and it is developed by the European Sea Ports Organization (ESPO). Being, moreover, considered the star product of the networking EcoPorts –project which is promoted by the ESPO-. PERS is useful to **certify** those **ports** that have the requirements and comply with the demands that enable the access to obtain the certification. Additionally, it helps to implement environmental management systems by developing mechanisms that serve to **increase the efficiency through sustainable development**.

Regarding the structure and content of the PERS, included in the profile of the port, an environmental policy statement, records of environmental issues, legal requirements and indicators of ports' performance. Responsibilities and resources related to environmental aspects and compliance with the review of legal requirements. Last but not least, an environmental statement of the port situation with selected examples of best practice.

The PERS certification is developed **by ports for ports** because it is an initiative that seeks to **inspire** ports in order to **cooperate** with each other and, thus, to create **exchanges of inner experience** within port sector, helping each other to cope and face up to the problems that may arise. It also incorporates the concept of ISO 14001. By this means they retain initiatives for preserving the environment. Furthermore, PERS was designed as a relatively simple first step in the implementation of EMS; it is **less demanding than ISO 14001 or EMAS**, and can be used for the development of a full-fledged EMS (Darbra *et al.*, 2004). It is important to mention that the certificate is voluntary and is **valid for two years**.

To sum up, PERS is designed to help to reduce costs and improve control, compliance with the law, promote **fair competition in port sector**, meet the needs and expectations of customers, improve environmental performance and raise awareness and personal motivation for the future and its commitment –moreover- to monitor the quality of environmental management and development. For doing all this, PERS certification executes an environmental review and a periodic report.

## 2.4. Sustainability in Ports

In the previous section the meaning of sustainability is talked about and it can be said that the term sustainable is an abstract and complex concept, difficult to define. It is time to present the **framework** where the concept of sustainability is going to be studied. This framework is the **port sector**. Port management studies have focused mainly on ports' competitiveness and efficiency (Murphy *et al.*, 1989; Lirn *et al.*, 2003, 2004; Walter and Poist, 2004; Wu and Lirn, 2008; Wu and Goh, 2010). Nevertheless, education for sustainability management and training is moderately becoming an important part of courses in the business schools of European and American universities (Wu *et al.*, 2010). Then, sustainable transportation has become a vital element in the global industry (Lirn *et al.*, 2013).

A **port** (or sea port) is a place at which the transfer of cargo and passengers to and from waterways and shores occurs. The transfers are made to and from vessels. There are different kinds of ports, the port can be a cargo port (handling only the transfer of cargo), a passenger port (handling only the transfer of passengers), or a combination of both: cargo/passenger port (handling the transfer of both cargo and passengers) (Talley, 2009).

A port is a **node in a transportation network**. A transportation network is a spatial system of nodes and **links** over which the movement of cargo and passengers occurs. A node is a center in a transportation network from which cargo and passenger movements emerge. A link between two transportations nodes is the transportation way (e.g., waterway, highway, railway, and airway) and the distance between the nodes. Regarding important determinants in the location of transportation nodes are accessibility and capacity to hold cargo and passengers. For ports, nevertheless, it will often be physical geography that determines whether a particular location will be selected for a port node (Talley, 2009).

The interface infrastructure between land and sea transport, the port, is now analysed (Conama, 2004) from different point of views: as a **connection node**, as an **infrastructure** -that has to provide new requirements, the demand for new land and new traffic, increase in the size of the resources-, as well as in its **urban and territorial relations**, and as an offsetting element for its social hinterland.

One has to be devoted to living and persevering, and ever since their origins, ports have undoubtedly shown that they are **committed to continuance**. These **infrastructures** have known how to **reinvent themselves**, demonstrating their **usefulness** to humanity

by providing responses to a growing number of needs: trade, fishing, sport, defense, to name a few, and the **dynamics of change** experienced by each one of them.

The fact of how these infrastructures know how to reinvent themselves is valid for the sector as a whole, however, this statement does not apply to all ports. There is evidence in history that shows full of examples of ports that were unable to persevere, incapable of adapting to a changing environment; decisions taken by ports that had a negative impact on their future in the short-, medium-, and long-term (compromising the future). Mostly like the world at the present time which predominates with dynamics and processes of change that are becoming increasingly rapid, deep and far-reaching, also the environment in which ports develop are highly complex and fraught with growing uncertainty.

But, in general, ports are **key elements** in the **development** of the production **economy**. Moreover, ports have the capability to adapt and position on the networks of the transport and world trade through their **resilience** to the technological and strategic changes in the transport sector as it is mentioned before. Prieto *et al.*, (2012) says that ports are a transcendental support for **enhancing foreign trade** and the competitiveness of countries in a global economy such as the present one. Additionally, they also presented a series of activities with great added value, capable of making a positive impact on their environment by generating **employment** and **wealth** (Prieto *et al.*, 2012) Ports have the ability to **create value** and **to be valued**, contributing, at the same time, to the sustainability of their social and economic environment. Nevertheless, sustainable development is achieved by the integration of not only the social and economic spheres but also with the environment sphere in order to complete the **triple bottom line** (Elkington, 1998).

This means that the present and the future of ports play out on three fronts which include three different areas but necessarily incorporated to promote sustainable development. Here, it is going to explained briefly these three fronts. Firstly, the environmental front, the one which its eventual goal is to make the health of the natural environment compatible with the health of port activity, and where concepts such as the following are used and applied: resources, impact, risks, processes, waste, landscape, ecological/carbon footprint, to name a few. Secondly, the social front, the area in which port sustainability is associated with the extent to which ports are committed to human development, whether this be within the organisation itself (employees, labour relations, etc) or with their external social environmental, especially with local communities. Finally, the third front is the ports' survival, their ability to compete. Ports are subjected to the

threat of growing competition that, coming from other ports or modes of transport, can partially or totally jeopardise their future, eventually leading to their extinction. This is the economic area, where the key sustainability factors are linked to such concepts as competitiveness, productivity, innovation, among others.

In a world where environmental sustainability concept has gained considerable recognition (Denktas-Sakar and Karatas-Cetin, 2012), it is relevant in port sector to **engage proactively with initiatives to promote environmental awareness** (Dinwoodie *et al.*, 2012) and **implement strategies** where sustainability has to be a differential and competitive value in order to be distinct from competitors. This is a great opportunity to establish a link between company success, social progress and protecting the environment. Consequently, “**sustainability** should not be a strategic aim, it **must be the strategy itself**” (Prieto *et al.*, 2012, p. 42). Thus, the major transformation in the company perspective supposes the incorporation of **the environment as an active agent**.

Although shipping is considered one of **the most environmentally friendly modes among all the transportation modes**. Traditionally, ports have developed a business' activity which is **potentially contaminating** while, recently, sustainability has become an important standard to assess port activities (Asgari *et al.*, 2015).

Only the existence of the port and any possible expansion of its installations could imply a loss of habitat (Darbra *et al.*, 2004). Ports tend to develop and grow as they are a transcendental support for enhancing foreign trade and the competitiveness of countries in a global economy such as the present one. Developing ports without an adequate environmental and ecological preservation policy could hurt both the residents, fauna and flora close to the port (Lirn *et al.*, 2013).

Ports being key elements in the development of the production economy. Globalisation has heralded burgeoning ship movements and maritime operations in ports whereas has increased international concerns regarding potential environmental impacts which are growing every day (Dinwoodie *et al.*, 2012). In order to mitigate the potential risks **Port Authorities are encouraged to engage with sustainability commitment and manage development proposals proactively**.

Typical of many industries, ports adopted a combination of awareness training and tougher regulation to fill the gap between environmental aspirations and practice (Tilley, 1999). In fact, Port Authorities have willingly **influenced environmental legislation** through consultation, agreements which support guidelines and best practice, and assisted in developing benchmarks, management schemes, training, monitoring,

research and collaborative involvement (Paipai, 1999). Later initiatives (EcoPorts) encouraged continuous improvement through implementing tools and methodologies to encourage better performance. The EcoPorts Foundation aims to help develop practical solutions for ports searching for improving their environmental performance and sharing knowledge and expertise (ESPO, 2003).

Saying so, port sustainability is defined as “business strategies and activities that meet the current and future needs of the port and its stakeholders, while protecting and sustaining human and natural resources” (AAPA, 2007). It is argued that sustainability performance of ports will vary from port-to-port even if a universal sustainability framework is adopted (Goldman, 2007) but this is normal as **each port** must be considered **as an unique case** as each one has their own characteristics and strategies. Regarding port’ s performance it is important to mention that not only its throughput and efficiency are taking into account, but also port’ s performance with the environment. In fact, ports have a significant impact as an economic agent in the territory, they have the ability to integrate the environment as an active agent as it is mentioned before, also their presence as a socially important party, make **ports perfect places where sustainability can be promoted**. Ports’ strategies and activities will be able to have a lasting effect on their environment, in other words, to be sustainable in time.

In this era of sustainability and sustainable development where environmental issues have become significantly more important in sustainable strategies of port administration a **new model of doing business** has emerged. This considers the feasibility of operations that go beyond a mere quest for profit. Taking into account other factors such as social and environmental viability in decision-making (Prieto *et al.*, 2012). The development and implementation of this new model of port planning is characterized by the following features: **flexibility, not strangling change**, models based on **knowledge** and **expertise**, on an understanding of **a changing reality**, with capability of creating **value** and being valued, also to **protect** natural resources thereby committing with the expectations in the **future**.

In essence, the current port management model is based upon promoting the principle of sustainability. Subsequently we are going to mention the three levels that have been developed for promoting sustainable port management: the planning level, the awareness or status level and the information level. The tools used in those levels are the Strategic Environmental Assessment, the Sustainability Balanced Scorecard (SBSC), the Sustainability Indicators and, lastly the **Sustainability Reports** (Esteban, 2012) which are documents that are integrated with the aim of ensuring transparency,



involvement with the social environment and assessment of the activity in order to establish a stable framework in which **information can be exchanged with society**.

According to Esteban (2012) these reports, which ports now submit once a year, are based on the recommendations made by the Global Reporting Initiative and contain information about the port and its environmental management system, the environmental indicators and the management of natural resources (water, energy, fuel and paper consumption), also the state of the environment related to waste, emissions into the atmosphere, noise, waste disposal and water quality, dredging management, land management, visual impact, among others, plus the R&D&I projects in which the ports are participating, the training that has taken place, recommendations for improvement and green accounting, combining economic, social and environmental vectors.

In fact, in the second part of this project how ports use one of the above tools which is Sustainability Reports is studied. In a subsequent section it is going to be seen how useful they are in order to provide information related to air quality, water quality, acoustic quality and waste management, among other environmental magnitudes. Also, these reports sometimes show true values of environmental performance. In other words, they provide evidence of the actual events of the company, actions plans, objectives and aims, processes, procedures, strategies, behaviour and attitude with the environment by Ports Authorities and other interesting information related with the business' activities.

Regarding business' activity in **ports**, traditionally, ports have on occasions been conducive to marginal development in their immediate environment. However, nowadays, this situation is changing and this is the result of new opportunities that are created and provided for people to enjoy the zones that were once marginal and, now they have become places that are ideal for **coexistence**, **filling public life** and **company activity** with **dynamism**. Furthermore, ports can also **play a role in research**, **culture**, **innovation** and **training**, as a driving force for **knowledge**. In this context, the local community has forsaken its once reactive attitude and adopted a new and **participatory position**. (Prieto *et al.*, 2012).

Consequently, there is a crossroads between ports and the environment as a result of being the challenge of the present. This ecological challenge should be led in a responsible and balanced way in front of issues such as the society, the economic and the environment –economic growth and protection of the environment and society jointly and in a supplementary way, without sacrificing either sphere- the end being to achieve the goal of sustainable development in port sector.

Finally, designing the idea of **sustainable ports** it is found that one of the key aspects for development in the coming decades (Estrada, 2012) will involve making transport and the transport infrastructure greener –especially ports. Therefore, there will be a **conciliation** in port/nature/environment relationship as it is viewed not only from a proactive position but also **sustainable in the long-term** in order to **engage with the environment**.

### 3. THE SPANISH PORT SYSTEM

Ports are facilities whose main function is the transfer of passengers and goods between sea and land and vice versa. They all have, however different mercantile uses and infrastructures. **The port environment is unique, complex, dynamic and extradimensional.**

**Spain** is the E.U. country with the longest coastline (8000 km). Also because of its **geographical location**, near to one of the most important shipping lanes in the world, Spain benefits from having become a **strategic area** in international shipping and the **logistics platform** of Southern Europe.

Spanish maritime-port activity faces its challenges from an open and competitive perspective taking into account both inter and intra-port competition. The entry of private capital has accentuated the rivalry and competition between ports.

The importance of ports as links in the logistics and transport chains is reflected in the following data which is provided by State Ports Agency: 60% of exports and 85% of imports, accounting for 53% of Spanish foreign trade with the E.U and 96% with other countries, pass through them. It is also important to mention that the activity of Spanish State ports **contributes nearly 20% of the GDP in the transport sector** accounting for 1,1% of Spanish GDP. It also gives direct employment to more than 35.000 people and indirectly to 11.000 which confirms that the **port sector contributes favourably to the economic development** of not only the area in which the ports are situated but also the economy of the **whole country**.

#### 3.1. Features of the Spanish System of ports of General Interest

The **Spanish Port System** is characterized by a wide variety of types of ports. There are, however, two main types; those which are the competence of the central government and those which are controlled by the different autonomies regional governments. The ports of “general interest” are the exclusive competence of central government whereas those of which the regional governments have assumed central are only those which are not considered as being of general interest. They are normally marinas, small harbours and have little commercial movement.

The system of ports of general interest is composed of a **total of 28 Port Authorities** which includes 64 ports of general interest. The Port Authorities are **run individually but co-ordinated and supervised by the State Ports Agency** which is responsible for putting into practice the policies designed by the government.

The Spanish Constitution -act. 149, 1- states that ports of general interest are the exclusive competence of central government. Therefore the Spanish Port System depends on the State Port Agency which has three functions: as mediator, administrator and collaborator. As previously mentioned the “State Ports Agency” is responsible for co-ordinating and controlling the ports. Nevertheless **each Port Authority has a wide degree of independence in its management and business strategy.**

The Spanish Ports System is distributed in four coastal areas:

- **The Cantabric Sea area** runs from Gijon to Pasajes, including the ports of Aviles, Gijon, Santander, Bilbao and Pasajes.
- **The Galician coastal area** is divided into five Port Authorities and six ports: San Cibrao, A Coruña, Vilagarcia de Arousa, Marin and Vigo.
- **The Southern Atlantic and Mediterranean Meridional zone** includes a large number of both Mediterranean and Atlantic ports bays; such as the Port Authorities of Huelva, Cadiz, Seville, Algeciras, Malaga, Motril, Almeria, Cartagena, Alicante, Valencia, Castellon, Tarragona, Barcelona and the Balearic Islands, to which we also have to add the ports of Ceuta and Melilla. In total 24 ports.
- **The ports of the Canary Islands** include 7 bays, grouped under 2 Authorities, those of Las Palmas and Santa Cruz de Tenerife.

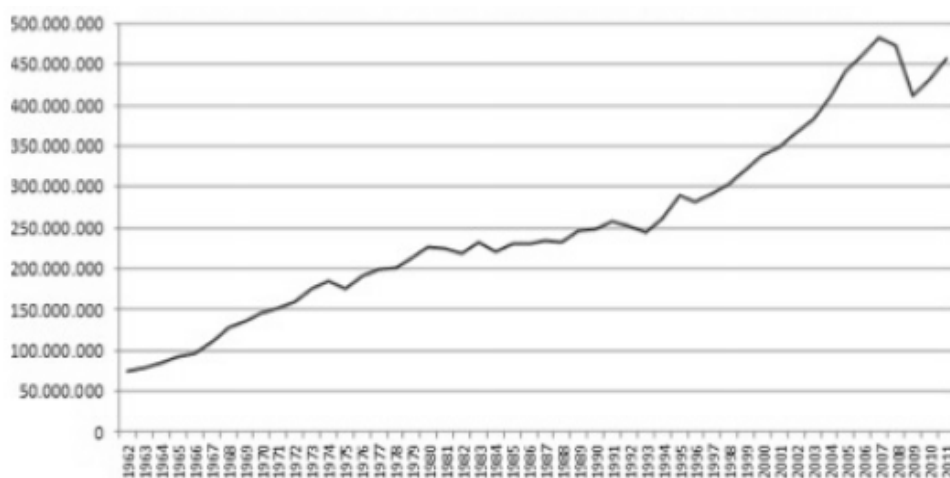
The Spanish Port System has an ample infrastructure and now, more than ever, is **committed to sustainability**. Thus port sector growth and economic remain or attempt to remain within acceptable parameters showing their sustainability and environmental concern. Increasingly the port sector is aware of the importance of the environment and aims to preserve the limited resources it offers. The **law no. 33/2010** requires the Port Authorities to **prepare a report on sustainability** including annual monitoring of environmental indicators. Likewise, conscious that the infrastructures and port activities have an important impact on the environment and understanding that it is their responsibility to protect it; the State Ports Agency is committed to promoting the

development and implantation of Environmental Management Systems (EMS) in the Port Authorities to achieve the objective of acting under guidelines of good practice and sustainability both environmentally and in economic growth. The struggle is to achieve a sustainable balance between environmental and economic aspects of the sector so that the Spanish Port System can remain increasingly competitive in all its facets.

The recent financial crisis (2008) affected all sectors and companies worldwide worsening their economic and financial situations. The port system, before the first signs of the financial crisis and the Port Law of 2010 itself, opted for the entry of private initiative, public-private co-operation and liberalisation processes of technical-nautical services.

As shown in the graph below the historical evolution of port traffic in Spain dropped between 2007-2008 and experienced a great drop in 2008, coinciding with the recession, and maintained this descent until 2010 when it began to recover slowly although without recovering the levels prior to the crisis. Despite not having reached those levels it can, however, see clearly that the tendency tends to be positive. Graphic 1: Historical development of port traffic in Spain

**Graphic 1. Historical development of port traffic in Spain**



Source: González (2013).

In fact, the turnover of the Spanish Port System has increased noticeably in recent years (González, 2012) it has passed from earning of 632 million euros in 2009 to 1.001 million in 2010. Turning the Spanish Port System into a set of agencies which, through their taxes obtain ample revenues. The aim of the Spanish System is to turn the Port Authorities into profitable businesses and thus be able to judge them as such.

Therefore, ports are already companies that are profitable and generate added value to the services they provide. In addition, they are endowed with advanced autonomy in their

management; economic and financial self-sufficient; greater possibility of more liberalised port services; a more pragmatic regularisation in the public domain thereby strengthening links with the city; encouragement of competitiveness; possession of mechanisms that allow for flexible port taxes (González, 2012).

In short the Spanish Port System provides a stable legal framework, especially in recent years, which has strengthened the autonomy of ports which have higher levels of coordination and regulation by the State Ports Agency.



## 4. METHODOLOGY

The objective during the data analysis was to identify to what extent the 28 Spanish Port Authorities under study adopted an attitude to engage and commit with the environment that will allow them to increase their environmental behaviour and performance while, at the same time, the quantity of information disclosed by the Port Authorities has –or not- in relation to their firm size.

The port industry is a vital part in Spain's economy whereas it is also a highly contaminating sector. This has been a driving factor to build up this project and to limit this research to a single industry –**port sector**-. Since the 28 Port Authorities in Spain are studied regarding their sustainability performance with respect to environmental aspect, four environmental magnitudes –**air quality, water quality, acoustic quality** and waste management- has been selected. In addition, since **annual reports** provide information related to environmental sustainability and they seem to be a tool in order to know which is the ports' performance, it is going to study if Spanish Port Authorities tend to voluntary disclose more as the **size** of the port is larger as it is found in several cases (Liu and Anbumozhi, 2009; Lu and Abeysekera, 2014) that companies' environmental sensitivity and firm size are significantly and positively associated with environmental disclosure.

Content analysis is *“a research method that uses a set of procedures to make valid inferences from text”* (Weber, 1990, p. 9) such as annual reports –sustainability reports-. Annual reports are prime material to study organizational behaviour, companies' strategies (Bettman and Weitz, 1983; Raisch and von Krogh, 2007) and the interaction of the company with its organisational field (Dirsmith and Covaleski, 1983). Annual reports offer an easy access to comparable set of data (Bettman and Weitz, 1983) and, more importantly, annual reports describe what initiatives, strategies, procedures, processes and actions the corporation has adopted or will adopt to resolve new or emerging organisational milieus –environment- (Salancik and Meindl, 1984).

The use of annual reports has been criticised because these documents can be used to depict the best image of the firm and/or are targeted to specific audiences (Escobar and Vredenburg, 2011). Companies tend to disclose the good news of their performance in the market. Several authors suggest that annual reports are a valuable source of non-evaluative information (Fiol, 1995; Abrahamson and Hambricks, 1997; Duriau *et al.*, 2007). In summary, annual reports can be used for studying corporate behaviour and

performance especially when the focus is, as in this case, on non-evaluative, descriptive themes (Escobar and Vrendenburg, 2011) such as actions and initiatives taken to address air quality, water quality, acoustic quality and waste management –these dimensions were chosen as ports’ activity have a negative impact on them and jeopardize the environment.

Since this research is preliminary with regards to the environmental ports’ performance, environmental magnitudes such as air quality, water quality, acoustic quality and waste management have been selected for the research as they have heavy weight within the sector and they are salient in order to find out ports’ performance. Also other variables such as having annual reports published and holding certifications such as **ISO 14001**, **EMAS** and **PERS**.

The reasons for delimiting the research and development of this project are diverse, but one big reason is the vast amount of heterogeneous information that is available in the annual reports –which belong to Spanish Port Authorities- and it is characterised by its complexity and dynamism.

Depending on the core business activity of the port can have different impacts due to which effect those activities have on the environment. In order to take responsibility for the repercussions, Port Authorities -in general- and ports -in particular- adopt and undertake measures in order to protect the environment. Naturally, all ports pollute due to their business activity but there are reasons to think that there are ports which contaminate more than others. There are several kinds of ports -industrial ports, bulk carriers, containers, fisheries, tourism, trade, oil and multi-purpose, among others-. It is not the same quantity of pollution produced by each port and this is due to the nature of business. For instance, one small port where there is no traffic at all or this is the only dilemma for the managers of the port do not contaminate as a fishing port which impacts of pollution will be found are flakes, chunks of fish, oil, grease, fecal material, detergent residues, among others. Or a commercial port, for example, where every week thousands of people travel in cruise ships –leftovers of food, packaging, heces, among many other polluting elements-. Neither a port with industry will not be contaminating the same as the sole port. The port itself has a negative impact on the environment only for being established in a specific place, but in the case of a port with industry, besides the pollution by the ports there is also to add the pollution by the industry. Moreover, industrial pollution is caused by the emission of harmful, toxic or hazardous substances. An example is the chemical industry which is one of the most polluting industries using a wide range of resources such as solid, liquid and gaseous fuels, lime, salts, animal and

vegetable products, to name a few. All of those elements with their respective impacts on the environment. By this means that each port is a unique and special case.

Knowing the port activity it has become easier to tell which was the extent of each environmental magnitudes mentioned before and where they can be more adversely affected. On the other hand, ports ready for change and adapt to a constantly changing environment adopt and take measures and actions to prevent damage and harm to the environment. Therefore, the depth of this research has been limited by its own characteristics of the port environment –the environment of the port present features as being unique, complex, dynamic and extra-dimensional-. Also, the vast quantity of heterogeneous information found during the revision of various sustainability reports that covers a 4 year period (2010-2013) of the 28 Port Authorities.

Regarding the information collected from the annual reports it is **vital to distinguish** between **environmental initiatives disclosure** and **environmental performance disclosure**. There will be Port Authorities that dedicate a section of their sustainability reports to incorporate information about issues like air quality, water quality, acoustic quality and waste management in order to provide information about those environmental magnitudes as they are subject of concern among the population. Nevertheless, there will be other Port Authorities that –besides incorporating information about the environmental magnitudes mentioned before, will also provide information about their environmental performance, their measures and strategies in order to act responsibly with the environment, showing true commitment to the future. Conversely, sometimes sustainability reports disseminate and disclose information about their environmental performance just to improve the image and reputation in order to obtain more legitimacy whereas other sustainability reports present approaches based on evidence of the present situation in those Port Authorities through their values of environmental performance. When the information about environmental initiatives disclosed in sustainability reports match with the environmental performance disclosure by Port Authorities, it means that the information provided by the annual reports coincide with the actual events on the company and you can see the true engagement and commitment with the environment by Spanish Port Authorities.

#### **4.1. Data Collection**

This project covers the analysis of 28 Port Authorities which shape the Spanish Port System during the period from 2010 to 2013. The reason why this was the temporal framework chosen for the project is because it is close to nowadays –moreover in 2014

there are few annual reports published and available to the public- it is also important to mention that in 2010 the increase of sustainability reports published by Port Authorities in Spain is visibly appreciated. This can be as a consequence of a change in the regulatory framework this same year by Law 33/2010 which compelled Port Authorities to elaborate a Sustainability Report in order to show their sustainability performance. This change was due to **a bet for the sustainability**.

In order to check the environmental sustainability performance in Spanish ports, there have been various sources of information that were necessary to develop the project in order to understand and collect the knowledge needed about the subject. Saying this, the sources of information which back the composition of this project are secondary data. Subsequently, a variety of sources used is presented:

On the one hand, a review of Sustainability Reports 2010, 2011 and 2012 of the Port System of General Interest drafted by Ministerio de Fomento and State Ports was conducted. This review helped to select the variables and magnitudes that were considered adequate to analyse in this project.

On the other hand, to analyse the four environmental magnitudes selected –air quality, water quality, acoustic quality and waste management- has been exclusively used the information available in the Sustainability Reports. Sustainability reports belonging the 28 Port Authorities -which are both annual reports with environmental dimension of sustainability and the sustainability report *per se*-.

In order to find out which Port Authorities are holding certificates such as ISO 14001, EMAS and PERS, both information in sustainability reports and information available in the website of the respective 28 Port Authorities has been used.

Moreover, research into the State Ports' website looking for information related to the port, infrastructure, growth, sustainability, competitiveness, among others has been done.

## 5. DIMENSIONS ANALYSED

This study is going to be developed in four points which include four different dimensions with environmental magnitudes that will provide information related to the Port Authorities' commitment with the environment. These four dimensions can be structured in 2 levels: the **first three dimensions are directly related to disclosure**. And the fourth dimension, **certifications** are being seen **as a guarantee of good environmental practices**.

### 5.1. Sustainability Reports

One objective of this project is to find out which Port Authorities have published -or not- their sustainability reports, also to know how long they have these reports published, at the same time, to know for how many years they have published a sustainability report.

Firstly, both annual reports and CSR reports which always dedicate a section exclusively to their environmental dimension is known as a sustainability report. Also, the sustainability reports per se, therefore, documents published as annual reports but they only cover environmental issues.

Various factors must be taken into account because, despite knowing which Port Authorities have published their sustainability report -and this can be a plus for those authorities as they present an attitude more transparent and communicative with the different stakeholders' groups. It is vitally important to distinguish between environmental initiatives disclosure and environmental performance disclosure as it is repeatedly mentioned before. This means that despite publishing sustainability reports do not mean that those Port Authorities are developing sustainable performance, in other words, they do not show environmental evidence of the actual events. Somehow, to dedicate a section in sustainability reports to treat the environmental magnitudes analysed –air quality, water quality, acoustic quality and waste management- is a way to prove that those specific issues characterised by their environmental nature are topics that matters in port sector and raise awareness and concern among the population. Nevertheless, if what is disclosed in sustainability reports does not coincide with the actual events of ports' performance, it will mean that there is a gap between what it is and what it is expected to be.

## 5.2. Environmental Initiatives Disclosure

Environmental initiatives disclosure are found in sustainability reports, it is **information related to environmental magnitudes** that were selected for this study – air quality, water quality, acoustic quality and waste management. These four variables related to the study have a heavy weight within the port sector due to the negative impacts produced in those spheres –air, water, noise and waste- as a consequence of the activity carried out by ports, which is highly contaminating and damage the environment.

Subsequently, below there is a brief explanation of each environmental magnitude in order to understand the involvement of each one in the environment.

### AIR QUALITY

Air quality is an indication of when the air is free of atmospheric pollution, and therefore, suitable for breathing.

The air quality in areas near ports requires a permanent and qualified set of variables used to qualify the risks associated with the activities carried out in ports. Moreover, there are controls in order to be within the admissible ceilings for air pollutants, this acceptable limit is used as a referential value to define whether some environmental values are adequate –or not-.

Air pollution means the presence in the atmosphere of undesirable substances in concentration, time and circumstances that may harm the health of living beings or the stability of the ecosystems or even affect some material goods.

Some focus of pollution that are essential to know are: fossil fuels, transport, industry chimneys, chemical industry, waste deposited in an open pit for landfills -which generate a high level of contamination of the zone- industrial plants or power plants that run on with carbon or petroleum, chlorofluorocarbons, among others.

### WATER QUALITY

Water quality refers to the chemical, physical, biological and radiological characteristics of the water. To assess the quality of the water it is related to the health of ecosystems, human security and potable water.

To say that water is contaminated -or not- is a concept somehow relative, and the reason is because you cannot make a firmly absolute classification of the "quality" of the water. That is, because the level of water quality must be related to the purposes for which is



intended to be used and, therefore, determining the state of water quality will be referred to the intended use for it. The same applies to the concept of pollution. In this sense, the Spanish Water Law, article 85 establishes that regarding the meaning of pollution is the action and effect on introducing materials and energy forms which involve harmful alteration of the water quality in relation with possible future uses of the water or its ecological function.

Ports, due to the use of coastal areas as a result of the activities inherent in their role, alter the natural conditions of water quality, sediments and soils. They are generally shared with other activities such as fishing and recreation, among others, port areas are receiving discharges of systems wastewater treatment of industrial effluents, domestic sewage or runoff.

### ACOUSTIC QUALITY

Noise conditions are based on the intensity, exposure time, the characteristics of the environment and the distance from the source. It should be noted that noise –unpleasant sound- has been increased with the development of mankind, industry and urbanization.

The excess of sound that alters the normal environmental conditions in a given area is called noise pollution or acoustic pollution. Therefore, the term "acoustic pollution" refers to noise (understood as excessive and annoying sound) caused by human activities - transport, electrical installations, traffic, industries, construction of buildings and civil engineering, entertainment, among others-. This term is closely related to "noise" due to it is considered contaminating by being an annoying sound that can produce harmful physiological and psychological effects on people. Although noise does not accumulate, moved or maintained over time as other pollutants, it can also cause great damage to the quality of life of people if it is not properly controlled.

### WASTE MANAGEMENT

This is especially solid waste made up of packaging of a variety of forms, paper, metals, textiles, plastics, glass, wood, waste of cleaning products, ropes, rubbers, among others, as well as food remains –leftovers- and fishing activity. Waste management covers solid, liquid or gaseous substances. It must be noted that waste not only can be very varied, but also that is very different depending on the vessels in which they have generated – probably because of the economic activity of each port.

While waste occupies an important volume, as a result of the space in ports' vessels is always limited, this is nourishing the temptation to discard and throw waste overboard.

Waste management is the collection, transportation, processing or treatment, recycling or disposal of waste material, mostly produced by human activity, in an effort to reduce the harmful effects on human and animal health, additionally, to the aesthetics of the environment. But it is vitally important to say that, currently, working not only to reduce the harmful effects on the environment caused by waste, but also recovering the resources themselves such as recycling them -remember that the natural resources of the planet are limited, as has been said before.

To sum up, the information included in the environmental dimension of reports is related to the current state of air quality, water quality, acoustic quality and waste management of each Port Authority. This is completely well documented information inform and raise the knowledge among the population, updating information about the present situation of those environmental magnitudes.

Hence, it has been considered important to check which Port Authorities show measures and actions to justify what they disclose about environmental magnitudes in order to know how the performance is carrying out by the authorities.

### **5.3. Environmental Performance Disclosure**

The environmental magnitudes selected to carry out this study are air quality, water quality, acoustic quality and waste management in order to show the **environmental performance** in Spanish ports. These variables were chosen because they represent four major spheres receiving, constantly, negative impacts on the environment by ports' activity. Regarding the environment represent one dimension of the fundamental pillars of the so-called triple bottom line which integrate the three interdependent dimensions: economic, social and environment in order to achieve sustainable development. Besides air quality, water quality, acoustic quality and waste management are the main elements with more impact received by the ports' activity. They also are the best indicating the state of ecosystem health and quality of people's life who share space with these facilities –both within the port and nearby urban areas: the relationship port-city.

It is vital that these elements mentioned before are adequately addressed and treated, also that their pollution warning sign are within the parameters minimum allowed to avoid seriously altering the environment, fauna and flora -the ecosystem. Emissions into the atmosphere (air) or the dumping of waste waters, noise and waste are negative

externalities that have a negative impact on the environment and, therefore, the population. Moreover, it is relevant to say that if these elements are adequately addressed as a result of this, another goal of the triple bottom line will be achieved in order to promote sustainable development by their responsibility towards society in order to ensure and protect the quality of human life. On the other hand, these magnitudes have indicators which are used to measure how pollutant those environmental magnitudes are during ports' activity. Regarding the indicators: if they are not found within those permitted and acceptable minimum established -thus having high indicators outside the maximum allowed- it is considered as an unacceptable situation for the number of effects on humans' health as humans can contract diseases such as physiological, psychological, sociological, pathological, etc.

Occasionally, companies disclose environmental information related to environmental magnitudes and this information does not reflect the actual environmental performance in companies. It is vitally important to be aware that the information disclosed by firms to be useful it has to match the environmental initiatives disclosure about the environmental magnitudes and the events of the current situation of the company.

Nevertheless, what usually happens is that the information disclosed by companies regarding their responsibility to the environment does not reflect the true environmental action and performance carried out by the company -as will be seen later in this analysis when the time comes to check which Port Authorities incorporate information related to the environmental magnitudes in their reports and, then, which Port Authorities besides doing that, they incorporate environmental performance disclosure –so both sources of information match.

Sometimes Port Authorities' sustainability reports depict true values of environmental performance in order to show their engagement and commitment with the environment and the future –in order to protect both. Regarding this: environmental performance disclosure is provided through numerical data and measures adopted by ports in their sustainability report. In this case, ports' performance will coincide –match- with the actual events of the companies that are disclosed through their evidence provided by the available data in their sustainability reports.

#### **5.4. Certifications**

Three certifications were chosen for this project: the International Standards Organization ISO 14001, Eco-Management and Audit Scheme (EMAS) and Port Environmental Review System (PERS). By holding these kind of certifications, Spanish

Port Authorities are seen to be making a commitment to environmental issues (Welch *et al.*, 2002; Plaza-Úbeda *et al.*, 2009). The possibility of adopting these voluntary certified Environmental Management Systems (EMSs) in order to **lessen companies' environmental impacts has emerged**. In other words, these certifications being seen as a **guarantee of good environmental practices**.

These certifications are characterised for their **international nature** and for being **suitable for any kind of organisations –except the PERS certificate which is exclusively for port sector**.

These systems are used as a device for standardizing firms' environmental management practices. However, companies can have a full EMS and be completely functional as is required by ISO 14001 but without being certified. Holding these certifications does not automatically make companies a respectful organisation with the environment neither ensures that the company will continually improve its performance with regard to the environment. Nevertheless, it shows that the company has a **proactive attitude of preservation to the environment**. But also, the company must put in a lot of effort to achieve the desired benefits of holding these certifications.

## 6. RESULTS

### 6.1. Sustainability in Spanish Port System

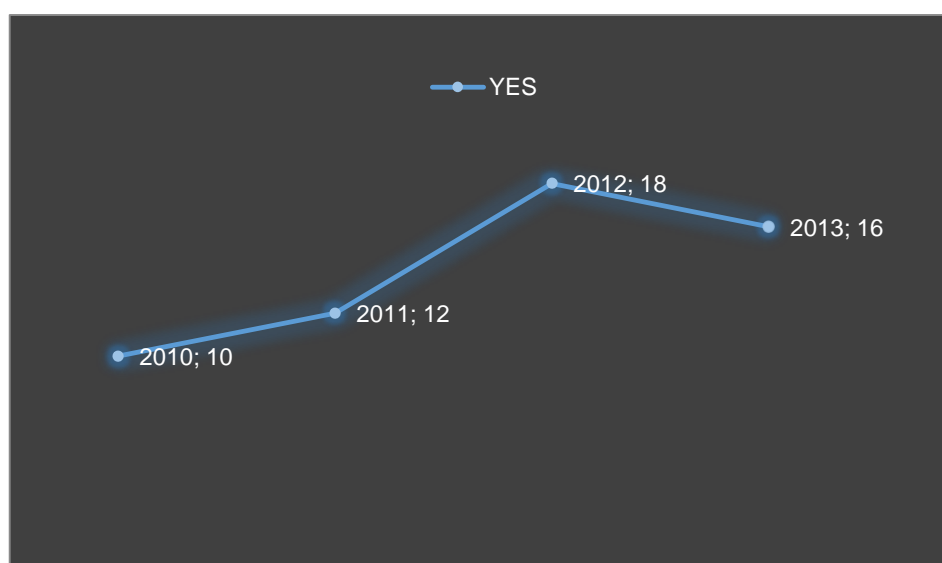
Subsequently the results of the Spanish Port System that have been obtained during the study is presented. This section analyses different concepts but all of them are related to the environment and the impact on it. The analysis is developed in **four dimensions** and each one of them present their respective graphics and tables in order to show the information in a more visible and simple way to understand.

On the one hand, which Port Authorities have published their sustainability reports is checked. Also which Port Authorities incorporate information related to the environmental magnitudes analysed -air quality, water quality, acoustic quality and waste management- in their sustainability reports. Going further in the analysis –besides investigating which port authorities include environmental initiatives disclosure- the question is which Port Authorities show environmental performance disclosure by their sustainability reports. Last but not least, which port authorities hold certified environmental management systems such as ISO 14001, EMAS and PERS.

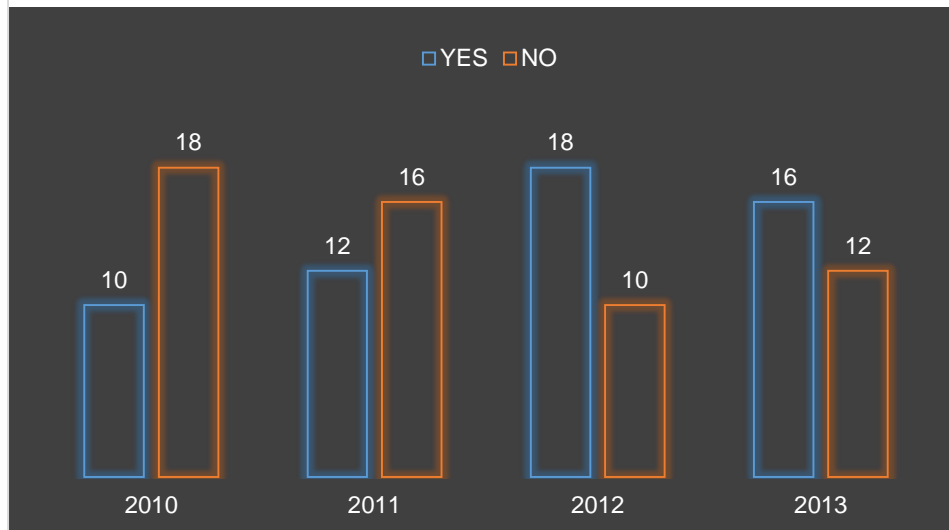
#### 1. Port Authorities whose sustainability reports are published

As shown in both graphic and table the horizon time of analysis is from 2010 to 2013. Within this range different behaviours are found by Spanish Port Authorities.

Graphic 2. Sustainability reports published (2010-2013)



**Graphic 3. Port Authorities with sustainability report (2010-2013)**



As shown in the graph, there is a **positive evolution** if it is compared year 2010 and 2013 with regard to more sustainability reports have been published since the first year of the analysis. The highest peak is in 2012 with 18 out of 28 Port Authorities, however, in 2013 there is a slight decrease in publications of sustainability reports.

**Table 1. Port Authorities whose sustainability reports are published (2010-2013)**

PORT AUTHORITY	2010	2011	2012	2013
<i>A CORUÑA</i>	1	1	1	1
<i>ALGECIRAS</i>	0	0	0	0
<i>ALICANTE</i>	0	0	1	1
<i>ALMERÍA</i>	0	0	0	0
<i>AVILES</i>	0	0	0	0
<i>BALEARES</i>	1	1	1	1
<i>BARCELONA</i>	0	1	1	1
<i>BILBAO</i>	0	0	0	1
<i>CADIZ</i>	0	0	0	0
<i>CARTAGENA</i>	0	0	0	0
<i>CASTELLON</i>	1	1	1	1
<i>CEUTA</i>	1	0	1	1
<i>FERROL - SAN CIBRAO</i>	1	1	1	1
<i>GIJON</i>	0	0	1	1
<i>HUELVA</i>	0	0	1	1
<i>LAS PALMAS</i>	0	1	1	0
<i>MALAGA</i>	1	1	1	1
<i>MARIN</i>	0	0	0	0
<i>MELILLA</i>	1	1	1	1



<b>MOTRIL - GRANADA</b>	0	0	0	1
<b>PASAJES</b>	0	0	0	0
<b>SANTANDER</b>	0	1	1	0
<b>SEVILLA</b>	1	1	1	0
<b>TARRAGONA</b>	1	1	1	1
<b>TENERIFE</b>	0	0	1	0
<b>VALENCIA</b>	1	1	1	1
<b>VIGO</b>	0	0	1	1
<b>VILAGARCIA DE AROUSA</b>	0	0	0	0
<b>TOTAL</b>	<b>10</b>	<b>12</b>	<b>18</b>	<b>16</b>

No=0; Yes=1

The table above show which Port Authorities have published their sustainability reports during the 4 year period from 2010 to 2013. Several authorities have published since the first year (2010). This is the case of Port Authorities such as: A Coruna, Baleares, Castellon, Ferrol - San Cibrao, Malaga, Melilla, Tarragona and Valencia. On the other hand, there are Port Authorities which have never published any sustainability report during the temporal framework established. These are the Port Authority of Algeciras, Almeria, Aviles, Cadiz, Cartagena, Marin, Pasajes and Vilagarcia de Arousa.

The rest of Spanish Port Authorities have already published a sustainability report during the temporal framework analysed but they do not present publications of sustainability reports all the years of the period analysed. Those Port Authorities are Alicante, Barcelona, Bilbao, Gijón, Huelva, Las Palmas, Motril-Granada, Santander, Tenerife and Vigo.

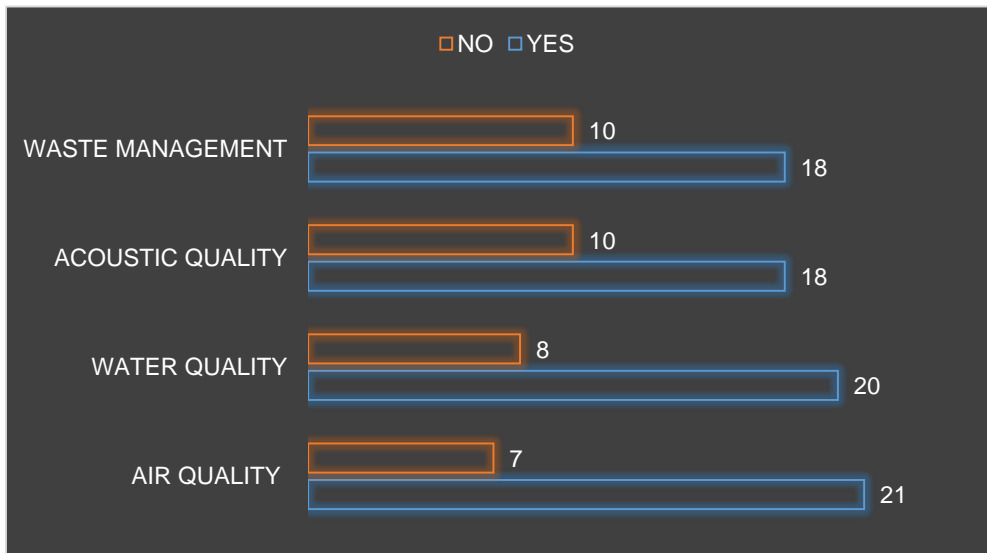
It is important to point out that the Port Authority of Las Palmas, Santander, Sevilla and Tenerife are the only authorities that having begun to publish sustainability reports within the temporal framework they, however, have not published in 2013. Due to this inconsistency, it was decided to research whether these Port Authorities published –or not- their sustainability reports in 2014 in order to determine whether the event in 2013 was just a **punctual fact**. The result has been 1 out of 4 has actually published its sustainability report in 2014, this Port Authority is Las Palmas. Nevertheless, the fact that authorities giving up publishing sustainability reports a concrete year does not mean that this was the final decision in a terminal way –no conclusions made as not all the Port Authorities have their sustainability reports available up to the public yet.

To sum up, the inconsistency regarding the reduction of sustainability report published in 2013 could be a punctual fact, a **sporadic** and **intermittent** one. Kind of **anomalous effect** as there is no explanation found which can justify the decrease of reports' publications in 2013.

Having sustainability reports published is a great tool to differentiate from the authorities which have not got. The strategy of having these reports as an instrument of **transparency** and **communication** towards society in order to show concern about the environment through **letting see inside the authorities which are the initiatives, procedures, processes and actions undertaken by.**

**2. Port Authorities that include information related to the environmental magnitudes analysed in their sustainability reports**

**Graphic 4. Port Authorities that include information related to the environmental magnitudes (2013)**



As shown in the graphic above a rank of the environmental magnitudes analysed can be made. By this means Port Authorities consider what environmental magnitudes are the most important in their opinion as they include more **environmental initiatives disclosure** in some environmental magnitude than in others.

First position to **air quality** with **21 out of 28** Port Authorities. Secondly, **water quality** with **20 out of 28**. And third and last position **acoustic quality** and **waste management** due to tie with **both 18 out of 28** Port Authorities.

The data that complete each box in the table below depict which Port Authority incorporates -or not- information related to the environmental magnitudes analysed –air

quality, water quality, acoustic quality and waste management- in their sustainability reports.

**Table 2. Port Authorities that include information related to the environmental magnitudes analysed in their sustainability reports (2013)**

<b>PORT AUTHORITY</b>	<b>AIR QUALITY</b>	<b>WATER QUALITY</b>	<b>ACOUSTIC QUALITY</b>	<b>WASTE MANAGEMENT</b>
<i>A CORUÑA</i>	1	1	1	1
<i>ALGECIRAS</i>	1	1	0	1
<i>ALICANTE</i>	1	1	1	1
<i>ALMERIA</i>	0	0	0	0
<i>AVILES</i>	0	0	0	0
<i>BALEARES</i>	1	1	1	1
<i>BARCELONA</i>	1	1	0	1
<i>BILBAO</i>	1	0	1	0
<i>CADIZ</i>	0	0	0	0
<i>CARTAGENA</i>	0	0	0	0
<i>CASTELLON</i>	1	1	1	1
<i>CEUTA</i>	1	1	1	0
<i>FERROL - SAN CIBRAO</i>	1	1	1	1
<i>GIJON</i>	1	1	1	1
<i>HUELVA</i>	1	1	1	1
<i>LAS PALMAS</i>	1	1	0	0
<i>MALAGA</i>	1	1	1	1
<i>MARIN</i>	0	0	0	0
<i>MELILLA</i>	1	1	1	1
<i>MOTRIL - GRANADA</i>	1	1	1	1
<i>PASAJES</i>	0	0	0	0
<i>SANTANDER</i>	1	1	1	1
<i>SEVILLA</i>	1	1	1	1
<i>TARRAGONA</i>	1	1	1	1
<i>TENERIFE</i>	1	1	1	1
<i>VALENCIA</i>	1	1	1	1

<b>VIGO</b>	1	1	1	1
<b>VILAGARCIA DE AROUSA</b>	0	0	0	0
<b>TOTAL</b>	21	20	18	18

*No=0; Yes=1*

From the above table it highlights four different ways that Port Authorities have of behaving with regard to the environmental magnitudes analysed:

One is that Port Authorities incorporate information related to all the four environmental magnitudes selected in their sustainability reports. The sum of those Port Authorities are 16: A Coruña, Alicante, Baleares, Castellon, Ferrol – San Cibrao, Gijon, Huelva, Malaga, Melilla, Motril – Granada, Santander, Sevilla, Tarragona, Tenerife, Valencia y Vigo. Conversely, there are other authorities which do not include any information related to any magnitude at all. The reason why they do not present any information is due to those Port Authorities that do not have published any sustainability report neither. These Port Authorities are: Almeria Aviles, Cadiz, Cartagena, Marin, Vilagarcia de Arousa.

Moreover, other data provided by the table shows Port Authorities which do not include information related to one of the environmental magnitudes analysed in their sustainability reports. This is the case of Port Authorities such as Algeciras, Barcelona and Ceuta. However, while the Port Authorities of Algeciras and Barcelona omit information about acoustic quality –noise-, the Port Authority of Ceuta leave out the information related to waste management. Finally, another feature observed in the table is when Port Authorities do not incorporate information on two out of four of the magnitudes analysed in their sustainability reports. These authorities are Bilbao and Las Palmas. Authorities in which both the environmental magnitude of waste management does not appear in any section of their reports. But while the Port Authority of Bilbao does not include information on air quality, the Port Authority of Las Palmas omit information about acoustic quality.

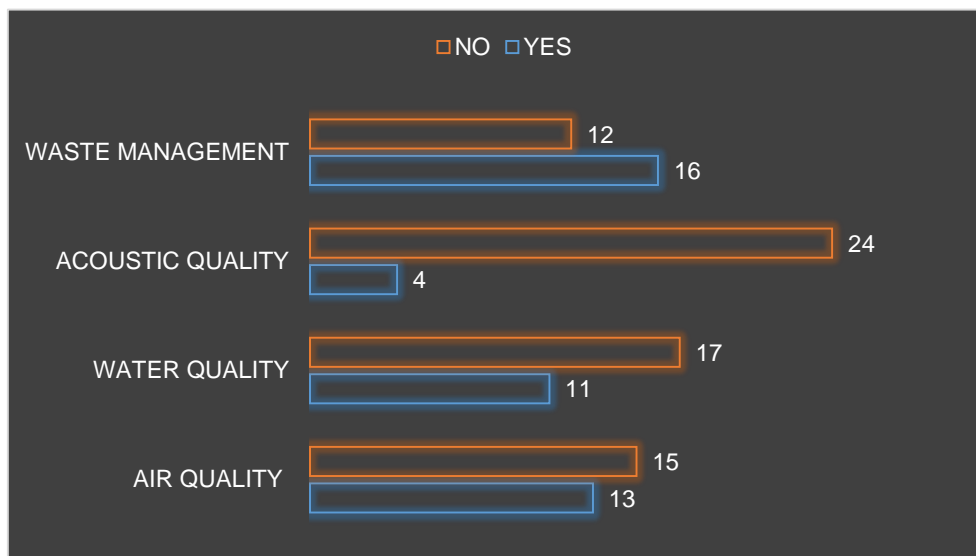
In this section the information voluntary disclosure about environmental initiatives provided by Port Authorities in their sustainability reports can be seen. Maybe this can be a positive and proactive attitude with regard to the environment but it is not enough to achieve true commitment. However, companies' performance is what really matters in order to protect the environment.

It is time to observe which Port Authorities provide environmental performance disclosure and present signals of environmental commitment in their sustainability reports in order

to have an added value through numerical data, diverse values and measures adopted in ports.

### 3. Port Authorities that include information on environmental performance disclosure related to the environmental magnitudes analysed

**Graphic 5. Port Authorities which show their environmental performance disclosure (2013)**



A rank can be made related to the environmental magnitudes analysed showing which magnitude provide more values of environmental performance in the reports provided by Port Authorities in Spain. Firstly, **16 out of 28** Port Authorities present values of environmental performance of **waste management** in their sustainability reports. In second place **air quality** with **13 out of 28** Port Authorities is found. This is followed by **water quality** with **11 out of 28** Port Authorities that add a value to the information found in their sustainability reports. Lastly, **acoustic quality** which has **only 4 out of the 28** Port Authorities that incorporate environmental performance disclosure with regard to acoustic quality.

**Table 3. Port Authorities that include environmental performance disclosure related to the environmental magnitudes analysed (2013)**

PORT AUTHORITY	AIR QUALITY	WATER QUALITY	ACOUSTIC QUALITY	WASTE MANAGEMENT
<i>A CORUÑA</i>	1	1	1	1
<i>ALGECIRAS</i>	0	0	0	0
<i>ALICANTE</i>	0	0	0	1

<b>ALMERIA</b>	0	0	0	0
<b>AVILES</b>	0	0	0	0
<b>BALEARES</b>	0	0	0	1
<b>BARCELONA</b>	1	1	0	1
<b>BILBAO</b>	0	0	0	0
<b>CADIZ</b>	0	0	0	0
<b>CARTAGENA</b>	0	0	0	0
<b>CASTELLON</b>	1	1	1	1
<b>CEUTA</b>	1	1	0	1
<b>FERROL - SAN CIBRAO</b>	1	0	0	1
<b>GIJON</b>	1	1	0	1
<b>HUELVA</b>	1	1	0	0
<b>LAS PALMAS</b>	0	1	0	0
<b>MALAGA</b>	1	0	0	1
<b>MARIN</b>	0	0	0	0
<b>MELILLA</b>	1	0	0	1
<b>MOTRIL - GRANADA</b>	1	1	0	1
<b>PASAJES</b>	0	0	0	0
<b>SANTANDER</b>	1	0	0	1
<b>SEVILLA</b>	0	1	0	0
<b>TARRAGONA</b>	0	0	0	1
<b>TENERIFE</b>	0	0	0	1
<b>VALENCIA</b>	1	1	1	1
<b>VIGO</b>	1	1	1	1
<b>VILAGARCIA DE AROUSA</b>	0	0	0	0
<b>TOTAL</b>	<b>13</b>	<b>11</b>	<b>4</b>	<b>16</b>

No=0; Yes=1

This section analyses the environmental performance developed in Spanish Ports Authorities through information available in their sustainability reports about environmental performance disclosure. Air quality, water quality, acoustic quality and waste management are the environmental magnitudes analysed in this project due to



the importance and high impact they have on the environment. As a result of this it is concluded to go further in the research in order to check properly ports' performance in Spain. In other words, the distinction between Port Authorities that only include information related to initiatives and environmental magnitudes in their sustainability reports and those Port Authorities that –moreover- incorporate environmental performance disclosure with regard to the environmental magnitudes analysed in the project.

Regarding the data provided by the table nº 3 in comparison with the previously one - Port Authorities whose sustainability reports inform about environmental initiatives disclosure-. The results change significantly. In fact, it is vitally important to say that the number of Port Authorities that incorporate environmental performance disclosure with regard to the environmental magnitudes analysed in their sustainability reports has been considerably reduced in comparison with Port Authorities that only provide information related to the magnitudes analysed.

Analysing the table nº 3 it points out different attitudes taken by the Port Authorities. On the one hand, Port Authorities which present values of environmental performance disclosure related to all the four environmental magnitudes analysed. These authorities are: A Coruña, Castellon, Valencia and Vigo. Conversely, there are Port Authorities which do not incorporate any environmental performance related to none of the environmental magnitudes in their sustainability reports. This is the case of Port Authorities of Algeciras, Almeria, Aviles, Bilbao, Cádiz, Cartagena, Marin, Pasajes y Vilagarcia de Arousa –as a result some of them do not present any sustainability report within the temporal framework analysed.

Moreover, the rest of Port Authorities include environmental performance disclosure related to the environmental magnitudes analysed in their sustainability reports but not with regard to all the four environmental magnitudes. The environmental magnitude which present more lack of information with regard to the performance is acoustic quality. Port Authorities of Alicante, Baleares, Barcelona, Ceuta, Ferrol-San Cibrao, Gijon, Huelva, Las Palmas, Malaga, Melilla, Motril-Granada, Santander, Sevilla, Tarragona and Tenerife omit values of environmental performance disclosure in acoustic quality.

It is worth mentioning to appreciate the **difference between** the quantity of information about **environmental initiatives disclosure and** the actual **environmental performance disclosure** of Port Authorities. For instance: the case of **acoustic quality** where in table nº 2 there were **18 out of 28** Port Authorities which considered it is important to include information related to acoustic quality whereas **4 out of 28** Port

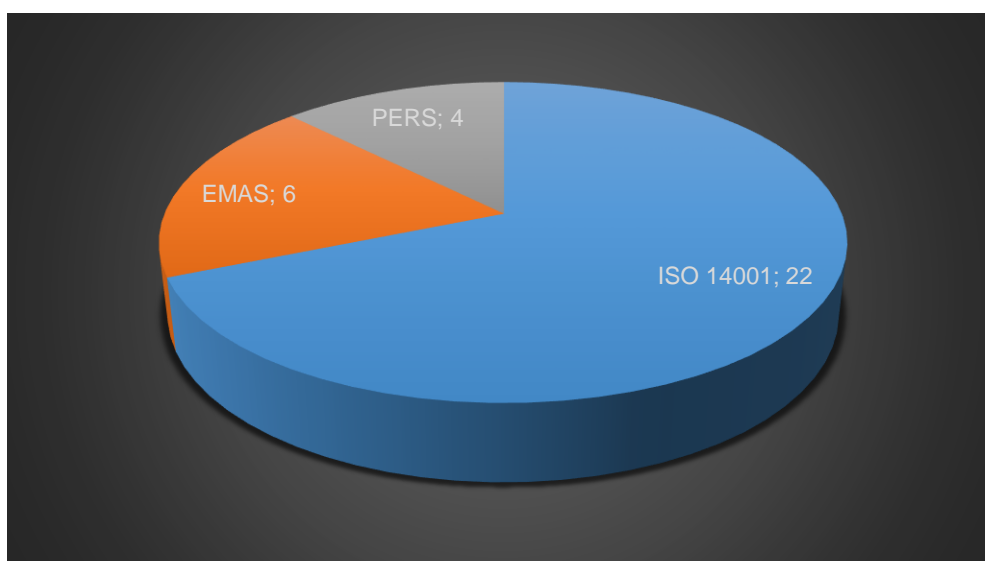
Authorities could present environmental performance disclosure related to acoustic quality in their activities developed. The other environmental magnitudes also present differences between the information disclosed by Port Authorities and the actual performance in Port Authorities.

This means that the information related to the environmental magnitudes that is included in sustainability reports by Ports Authorities does not coincide with the performance of Port Authorities. Then, what is disclosed does not match with the actual events of ports, however, the disclosure must coincide with the values of environmental performance to be useful. Furthermore, a gap of expectations is produced between the true performance Port Authorities have and how this performance is believed to be by Ports Authorities. Moreover, companies with an unfavourable situation in terms of environmental performance often tend to disclose information in order to manage and address this gap of expectations using voluntary disclosure as a way to justify the facts of the company.

According to Salancik (1979) if all companies were equal, organisations that go unnoticed would have less need to adapt their behaviour to the environment and change their performance because they have less public that practice close examination by scrutiny. In fact, the impact of media and exposure have made organisations experience changes and effects in their behaviour and performance by the simple fact of being visible to the public.

#### 4. Port Authorities hold certificates Environmental Management Systems (EMSs) endorsed

Graphic 6. Port Authorities holding certified EMS (2013)



Well, in the following table it can be seen clearly which Port Authorities have at their disposal one of the certificates -or all of them- selected for analysis.

**Table 4. Port Authorities holding certificates endorsed (2013)**

<b>PORT AUTHORITY</b>	<b>ISO 14001</b>	<b>EMAS</b>	<b>PERS</b>
<i>A CORUÑA</i>	1	1	0
<i>ALGECIRAS</i>	1	0	0
<i>ALICANTE</i>	0	0	1
<i>ALMERIA</i>	1	0	0
<i>AVILES</i>	1	0	0
<i>BALEARES</i>	1	0	0
<i>BARCELONA</i>	1	1	0
<i>BILBAO</i>	1	1	0
<i>CADIZ</i>	0	0	0
<i>CARTAGENA</i>	1	1	0
<i>CASTELLON</i>	1	0	1
<i>CEUTA</i>	1	0	0
<i>FERROL - SAN CIBRAO</i>	1	0	0
<i>GIJON</i>	1	0	0
<i>HUELVA</i>	1	0	0
<i>LAS PALMAS</i>	1	0	0
<i>MALAGA</i>	1	0	0
<i>MARIN</i>	0	0	0
<i>MELILLA</i>	1	0	0
<i>MOTRIL - GRANADA</i>	1	0	0
<i>PASAJES</i>	0	0	0
<i>SANTANDER</i>	1	0	0
<i>SEVILLA</i>	0	0	0
<i>TARRAGONA</i>	1	0	0
<i>TENERIFE</i>	0	0	0
<i>VALENCIA</i>	1	1	1
<i>VIGO</i>	1	1	1
<i>VILAGARCIA DE AROUSA</i>	1	0	0
<b>TOTAL</b>	<b>22</b>	<b>6</b>	<b>4</b>

No=0; Yes=1

The table above shows clearly as all Port Authorities with the certificate EMAS -also- have at their disposal the ISO 14001 certification, it is important to note that it is not necessary to have the ISO 14001 certificate before the EMAS but it is highly recommended, as the environmental management system ISO 14001 is less complex

and the transition from one to another is simple. However, the EMAS certificate has major expense because of the environmental statement and the external communication carried out by companies in general – and Port Authorities particularly.

Regarding the analysis, according to the data obtained from both the graphic and table it is clear that popularity goes to the **ISO 14001** certificate with **22 out of 28** Port Authorities holding this certificate. These authorities are: A Coruña, Algeciras, Almeria, Aviles, Baleares, Barcelona, Bilbao, Cartagena, Castellón, Ceuta, Ferrol - San Cibrao, Gijon, Huelva, Las Palmas, Malaga, Melilla, Motril - Granada, Santander, Tarragona, Valencia, Vigo and Arousa. On the other hand, there are **6 out of 28** Port Authorities which hold **EMAS** certificate. This is the case of Port Authorities such as: A Coruña, Barcelona, Bilbao, Cartagena, Valencia and Vigo. Lastly but not least, PERS certificate, firstly, it is emphasized that **PERS** is the only environmental certification which is exclusively address to the port sector. And, there are only **4 out of 28** Port Authorities holding this certification. These authorities are: Alicante, Castellón, Valencia and Vigo.

Nevertheless, the table analysed presents only 2 out of 28 Port Authorities -Valencia and Vigo- that enjoy holding the three certificates - ISO 14001, EMAS and PERS.

It is vital to say that the nature of the certificates selected for the analysis is voluntary and international. These certifications are not required nor imposed by the Port Authorities. Conversely, these certificates organisations voluntarily decide to have them -among many other elements- in order to identify environmental issues and risks associated with these issues, perform control and minimize negative impacts on the environment as a result of the nature of the economic activity. Thus, increase efficiency through sustainable development. Additionally, these certifications help to comply with the environmental legislation and policies in force. Moreover, they encourage ports to have an evaluation of their current situation in the organisation with regard to the environment, then, design environmental plans with suggestions for improvements. Furthermore, holding these certifications attract customers that are characterized by their concern about the environment and the business practices -and nowadays, environmental sustainability is a key concern in the whole world-. These were several benefits of holding these kind of certifications –ISO 14001, EMAS and PERS.

Nevertheless, holding one of these certificates does not mean that the organisation -or in this case the Port Authority- is performing sustainably and have optimal values of environmental performance or the activity carried out in ports are under good conscious practices. Having a certificate as one of the named above has a consequence on the performance and behaviour of those organisations regarding the environment in order to

show a proactive attitude and concern about sustainable development. Port Authorities which hold these certifications try to comply with the law established but -by holding these certificates- does not mean that the performance of Port Authorities is being sustainable and can show evidence of their environmental performance.

It's the meaning that people associate with the idea of having such a certificate, as it is related to concepts like communication, verification, reliability, transparency, trust, image and reputation, among others. It can be considered that those **Port Authorities which hold those certifications tend to be more socially accepted** and well regarded than those who do not. These certifications are being seen as a guarantee of good environmental practices. There are several reasons but a simple one is the people's thought of those authorities who have not got a certificate as people can think is due to the fact that Port Authorities do not want to undergo the procedure of purchase. This means, that population look on this behaviour as fear to be evaluated –and receiving the results- of their environmental performance by a third party.

There are certain steps to follow and various requirements to comply in order to purchase a certification such as ISO 14001, EMAS and PERS. It is necessary to mention that purchasing these certifications is costly –both financially and in terms of time investment-. Consequently, there are organisations that do not consider it beneficial to implement these certifications in enterprises.

To sum up, there are several Port Authorities which are perceived to outperform. These are the cases of Port Authority of A Coruña, Castellon, Valencia, Vigo. Futhermore, Port Authorities such as Barcelona, Ceuta, Gijon, and Motril-Granada are good examples of conscious practices. On the other hand, there others authorities that do not depict for their environmental sustainability among the list of ports but they actually do quite well. This is the case of Alicante, Baleares, Ferrol-San Cibrao, Huelva, Malaga, Melilla and Tarragona. Conversely, there are Port Authorities that are perceived to underperform constantly on almost all the dimensions analysed, they are Algeciras, Almeria, Aviles, Cadiz, Cartagena, Marin, Pasajes and Vilagarcia de Arousa.

## **6.2. The relation between sustainability and firm size**

First it is important to say that pressure from stakeholders, in this case citizens, causes organisations to act with more environmental performance during their business activities. Therefore, there are more efforts made in the environmental aspect of sustainability in enterprises. Companies use environmental disclosure and hold certifications to show citizens their environmental performance and their improvements

made in their environmental dimension of the company. But the pressure will be greater when the port has more business activity –as the port will pollute more- or the population who are established in the port is high –as having more inhabitants in the town where the port is located.

Size variable in this project covers two measures. The first is size (port) meaning the turnover of the Port Authorities (income). And second, size (population) referring the number of inhabitants of the port city.

In table 5 the results of the relation between sustainability conducted by the Spanish Port System and its size is exposed. On one side there are the variables selected for the project (report, information related to four environmental magnitudes, environmental performance disclosure and certifications) and, on the other hand, two magnitudes of size selected in the analysis (size port and population). What is relevant for the aim of this project is to check and verify the existence -or not- of relation between each of the variables recently named and the size of the respective Port Authorities.

**Table 5. Correlation between sustainability and size in Spanish Port System (n=28)**

	SIZE (Port)	SIZE (Population)
REPORT	,311	,288
INFORMATION	,225	,238
PERFORMANCE	,264	,229
CERTIFICATE	,187	,124

*\*. The correlation is significant at the level 0,05 (bilateral)*

The empirical literature with regard to the relationship analysed shows mixed results. In our case the results denote that there is no relationship between sustainability and the size of Port Authorities. In the literature review, it has been observed that there is a relationship between a magnitude such as the size with the disclosure of information regarding the environmental dimension of organizations (Choi, 1992; Cormier and Gordon, 2001; Hackston and Milne, 1996; Mahadeo et al, 2011). However, in the case of the Spanish Port System it can be observed how statistically it has no significant correlations between the variables considered (reports, environmental initiatives disclosure, environmental performance disclosure and certification) with size port and population. Therefore, the results of this project can be seen as **the relationship -which in some cases comply- in the case of the Spanish Port System has given no support to the relationship pointed out by some studies**. Still, other studies support the theory that there is no relation between the amount of information disclosed by a company and its size, as in the case of **Roberts** (1992).

Table 6. Port Authorities & the magnitudes analysed (2013)

PORT AUTHORITY	SUSTAINABILITY REPORTS	INFORMATION	PERFORMANCE	CERTIFICATIONS	Nº OF CERTIFICATES	TURNOVER (THOUSAND OF €)	POPULATION
<i>A CORUÑA</i>	1	4	4	1	2	21.337	244.810
<i>ALGECIRAS</i>	0	0	0	1	1	89.53	117.974
<i>ALICANTE</i>	1	4	1	1	1	13.019	332.067
<i>ALMERÍA</i>	0	0	0	1	1	12.850	193.351
<i>AVILÉS</i>	0	0	0	1	1	12.008	81.659
<i>BALEARES</i>	1	4	1	1	1	61.772	1.103.442
<i>BARCELONA</i>	1	3	3	1	2	167.361	1.602.386
<i>BILBAO</i>	1	2	0	1	2	64.622	346.574
<i>CÁDIZ</i>	0	0	0	0	0	19.420	121.739
<i>CARTAGENA</i>	0	0	0	1	2	34.188	216.451
<i>CASTELLÓN</i>	1	4	4	1	2	20.552	173.841
<i>CEUTA</i>	1	3	3	1	1	15.077	84.963
<i>FERROL - SAN CIBRAO</i>	1	4	2	1	1	16.949	70.389
<i>GIJÓN</i>	1	4	3	1	1	38.584	275.735
<i>HUELVA</i>	1	4	2	1	1	39.717	147.212
<i>LAS PALMAS</i>	0	0	0	1	1	58.459	382.283
<i>MÁLAGA</i>	1	4	2	1	1	16.288	566.913
<i>MARÍN</i>	0	0	0	0	0	8.119	25.329
<i>MELILLA</i>	1	4	2	1	1	7.216	84.509
<i>MOTRIL - GRANADA</i>	1	4	3	1	1	5.032	60.870
<i>PASAJES</i>	0	0	0	0	0	13.637	15.929
<i>SANTANDER</i>	0	0	0	1	1	20.013	175.736
<i>SEVILLA</i>	0	0	0	0	0	19.256	696.676
<i>TARRAGONA</i>	1	4	1	1	1	53.273	132.199
<i>TENERIFE</i>	0	0	0	0	0	34.858	205.279
<i>VALENCIA</i>	1	4	4	1	3	107.337	786.424
<i>VIGO</i>	1	4	4	1	3	26.815	294.997
<i>VILAGARCÍA DE AROUSA</i>	0	0	0	1	1	4.244	37.712



## 7. CONCLUSIONS

This study presents the environmental behaviour of the 28 Port Authorities which shape the Spanish Port System. In the first part of this study it is argued that there is a real degradation of the environment and society is becoming increasingly aware of it. This environment deterioration is due to human action and companies should adopt appropriate courses of action to tackle this problem. The reasoning behind the development of this project was to explore the contamination caused by the port sector, as well as the responsibility ports take with regard to their impact on the environment as a result of their business' activities. The research carried out in this project found that there is a perception that certain ports outperform as they consider themselves green ports due to carrying out their business activities under good conscious practices. However, there are other authorities which do not show any environmental performance at all. Nonetheless, Port Authorities should take every effort to protect the port and its neighbourhood from any type of pollution threat. If Port Authorities decide to commit to increase their environmental sustainability, it is likely they will be able to protect the environment and the needs of future' generations. Sustainability reports are used as a tool by Port Authorities in order to show this commitment and engagement with the sustainability aspect.

Furthermore, it has drawn the following conclusions from the present situation with regard to environmental sustainability in Spanish Port Authorities. The empirical results provide important notions on the behaviour of these authorities. Firstly, the more information available in sustainability reports, the more the message will be transmitted that authorities are transparent and communicative to the different stakeholders' groups. It can be observed that there is an upward trend in the number of reports published when comparing the years 2010 and 2013. Secondly, sustainability reports include information regarding both the environmental initiatives disclosure and environmental performance disclosure, but both present different results. On the one hand, research results indicate that regarding the environmental initiatives disclosure, air quality was the most important environmental magnitude influencing these ports environmental behaviour. Followed by water quality as well as acoustic quality and waste management. Conversely, regarding the environmental performance disclosure, waste management was the environmental magnitude which more Port Authorities include information related to. Followed by air quality, water quality, and finally, acoustic quality. Thirdly, the information voluntarily disclosed about environmental initiatives do not coincide with the environmental

performance disclosure in the sustainability reports by Port Authorities. In fact, it is worth mentioning that in some environmental magnitudes the information provided by sustainability reports is considerably reduced when the data is compared between the environmental initiatives disclosure and environmental performance disclosure. For instance, acoustic quality presented that 18 out of 28 Port Authorities considered it is important to include information related to acoustic quality whereas 4 out of 28 Port Authorities present environmental performance disclosure in their sustainability reports. As a result of this, Port Authorities will be experience an expectations gap which is the difference between the way they perform and how key external stakeholders believe they should perform. Moreover, voluntary certified Environmental Management Systems (EMs) are used to improve the environmental behaviour of Port Authorities. Regarding research results the popularity goes to the ISO 14001 certificate with 22 out of 28 Port Authorities holding this certificate. As a matter of fact, each Port Authority that holds an EMAS certificate also holds an ISO 14001 certification. Nowadays, there are 6 out of 28 Port Authorities that hold an EMAS certification. Saying so, it can be presumed that the rest of Port Authorities which already have the ISO 14001 are on their way to purchase an EMAS certification due to the fact that holding the ISO 14001 makes the transition easier to EMAS certification as they are similar. Holding these kind of certifications works as a tool which manages the environmental effects of companies and minimizes those negative impacts while improving ports' performance in a consistent way. And finally, it has been concluded that there is no relation between the information voluntary disclosure in reports and the size of each Port Authority in the case of the Spanish Port System. Moreover, there is no significant relation between certifications and size. Here, the variable size covers both the annual turnover (income) of each Port Authority and population in the city which have a port.

It is worth noting that, in general, there are a positive and proactive behaviours regarding environmental sustainability in Spanish Port Authorities. Also, the aim of the Spanish Port System is clear; the protection of the environment and the improvement of the quality of life in the port and in its neighbourhood, as the Port Authority have to take responsibility of this. However, it should be a shared concern with the rest of the economic and social agents in order to achieve the sustainable development among ports, it has to be a deal that takes into account the economic dimension of ports and make it possible in an integrated way, the generation and distribution of wealth, the welfare of people, social cohesion and rational management of resources and, as well as, the development of opportunities for future generations. This means that Port

Authorities may become more proactive in showing their environmental information, performance and, finally, behaviour.

Nevertheless, results of this study must be interpreted considering the following limitation: the vast amount of heterogeneous information found in sustainability reports. Leaving this limitation aside, this study can be used as a springboard for further research. Many studies analyse the relation of economic and social aspects in port sector while other cases study only the environmental aspect in ports. By this means, one future research which could be interesting would be to analyse how sustainable development is achieving in the port sector in order to achieve the triple bottom line –which integrates three mutually interdependent dimensions: economic, social and environment.

## 8. REFERENCES

- ¿Cómo contaminamos el aire que respiramos? Accessed 18 November 2015 Available at: <http://noticias.universia.es/en-portada/noticia/2013/04/01/1013745/como-contaminamos-aire-respiramos.html>
- ¿Qué es el EMAS? Accessed 19 November 2015 Available at: <http://clubemas.cat/es/queeselemas/queeselemas.html>
- AAPA (American Association of Port Authorities) (2007). D-11: *Embracing the concept of sustainability as a standard practice for ports and the association*. Accessed 23 October 2015 Available at [http://aapa.files.cmsplus.com/PDFs/sustainability\\_resolutions.pdf](http://aapa.files.cmsplus.com/PDFs/sustainability_resolutions.pdf)
- Abrahamson, E. and Hambrick, D.C. (1997). Attentional Homogeneity in Industries: The Effect of Discretion. *Journal of Organizational Behavior*, 18 (7), p. 513-532
- Adams, W. M. (1990). *Green Development: Environment and Sustainability in the Third World*. New York: Routledge.
- AECA. *Nivel de RSC en las Empresas de la Región de Murcia*. Accessed 10 November 2015 Available at: [http://www.um.es/catedrarsc/documentos/nivel\\_rsc\\_empresas\\_rm.pdf](http://www.um.es/catedrarsc/documentos/nivel_rsc_empresas_rm.pdf)
- Al-Tuwaijri, S.A., Christensen, T. E. and Hughes, K.E., (2004). The Relations among Environmental Disclosure, Environmental Performance, and Economic Performance: A Simultaneous Equations Approach. *Accounting, Organizations & Society*, 29 (5/6), p. 447-465.
- Ammenberg J, Hjelm O. 2003. Tracing Business and Environmental Effects of Environmental Management Systems: a Study of Networking Small and Medium-sized Enterprises using a Joint Environmental Management System. *Business Strategy and the Environment*, 12, p. 163–174.
- Ammenberg, J., Hjelm, O., 2002. The Connection between Environmental Management System and Continual Environmental Performance Improvements. *Corp. Environ. Strategy*, 9, p. 183-192.
- Anton, W., Deltas, G., and Khanna, M. (2004). Incentives for Environmental Self-regulation and Implications for Environmental Performance. *Journal of Environmental Economics and Management*, 48, p. 632-654.
- Arimura, TH., Hibiki, A., Katayama, H., 2008. Is a Voluntary Approach an Effective Environmental Policy Instrument? A Case for Environmental Management Systems. *Journal of Environmental Economics and Management*, 55, p. 281-295.

- Asgari, N., Farahani, R.Z., Goh, M., (2013). Network Design Approach for Hub Ports-shipping Companies' Competition and Cooperation. *Transport Research Part A. Policy Practice*, 48, p. 1-18.
- Asgari, N., Hassani, A., Jones, D. and Nguye, H.H. (2015). Sustainability Ranking of the UK Major Ports: Methodology and Case Study. *Transportation Research Part E*, 78, p. 19-39.
- Attah, N.V. (2010). *Environmental Sustainability and Sustainable Growth: A Global Outlook*. (Master). University of Pennsylvania. Pennsylvania.
- Banerjee, S.B. (2007). *Corporate Social Responsibility: The Good, The Bad and The Ugly*. Cheltenham, UK: Edward Elgar.
- Bansal, P. & Clelland, L. (2004). Talking Trash: Legitimacy, Impression Management, and Unsystematic Risk in the Context of The Natural Environment. *Academy of Management Journal*, 47(1), p. 93-103.
- Barla, P. (2007). ISO 14001 Certification and Environmental Performance in Quebec's Pulp and Paper Industry. *Journal of Environmental Economics and Management*, 53, p. 291-306.
- Barton, H. (2000). *Conflicting perceptions of neighbourhood: In Sustainable Communities*. Barton H (ed.), London: Earthscan.
- Bettman, J. R. and B. A. Weitz: (1983) Attributions in the Board Room: Causal Reasoning in Corporate Annual Reports. *Administrative Science Quarterly*, 28 (2), p.165–183.
- Boiral, O., 2007. Corporate Greening through ISO 14001: a Rational Myth? *Organization Science*, 18, p. 127-146.
- Bowen, H. 1953. *Social Responsibilities of the Businessman*. New York: Harper and Row.
- Brown, N. and Deegan, C. (1998) "The Public Disclosure of Environmental Performance Information – A Dual Test of Media Agenda Setting Theory and Legitimacy Theory", *Accounting and Business Research*, 29 (1), p. 21–41.
- Calidad del agua*. Accessed 18 November 2015 Available at: [https://es.wikipedia.org/wiki/Calidad\\_del\\_agua](https://es.wikipedia.org/wiki/Calidad_del_agua)
- Calidad del aire*. Accessed 18 November 2015 Available at: [https://es.wikipedia.org/wiki/Calidad\\_del\\_aire](https://es.wikipedia.org/wiki/Calidad_del_aire)
- Carrol, A. (1979). A Three-dimensional Conceptual Model of Corporate Social Performance. *Academy of Management Review*, 4, p. 497-505.
- Charoenwatana, T., and Rambo, A.T. (1988). "Preface" in Charoenwatana, T. and Rambo, A.T. (Eds.), *Sustainable Rural Development in Asia* (Khon Kaen, Thailand: KKU-USAID Farming Systems Research Project, Khon Kaen University and Southeast Asian Universities Agroecosystem Network), p. 7-10

- Cho, C.H., Paton, D.M., (2007). The Role of Environmental Disclosures as Tools of Legitimacy: a Research Note. *Accounting, Organizations and Society*, 32 (7-8), p. 639-647.
- Cho, C.H.; Guidry, R.P.; Hageman, A.M., and Patten, D.M. (2012). Do Actions Speak Louder than Words? An Empirical Investigation of Corporate Environmental Reputation. *Accounting, Organizations and Society*, 37, p. 14-25.
- Choi, J.S. (1999). An Investigation of the Initial Voluntary Environmental Disclosures made in Korean Semi-annual Financial Reports. *Pac Account Rev*, 11 (1), p. 73-102.
- Clarkson PM, Lie Y, Richardson GD, Vasvari FP. 2008. Revisiting the Relation between Environmental Performance and Environmental Disclosure: An Empirical Analysis. *Accounting, Organizations and Society*, 33, p. 303–327.
- Clarkson, P., Overell, M., Chapple, L., (2011a). Environmental Reporting and its Relation to Corporate Environmental Performance. *Abacus*, 47 (1), p. 27-60.
- Cohen, L. & Allen, W., (2012) Sustainable Ports: Commitment to the Future. *Revista Portus*, (24), p. 8–11.
- Conama: *Cumbre del Desarrollo Sostenible. La sostenibilidad en los puertos* (2004). Accessed 28 November 2015 Available at: <http://www.conama.es/viiconama/gt/gt23.pdf>
- Cormier, D., and Gordon, I. (2001). An Examination of Social and Environmental Reporting Strategies. *Accounting, Auditing and Accountability Journal*, 14 (5), p. 587-616.
- Cormier, D., and Gordon, I.M. (2001). An Examination of Social and Environmental Reporting Strategies. *Journal of Account Audit Account*, 14 (5), p. 587-616.
- Cowen, S., Ferreri, L., Parker, L., (1987). The Impact of Corporate Characteristics on Social Responsibility Disclosure: a Typology and Frequency based Results. *Accounting, Organizations and Society*, 12 (2), p.111-122.
- Cuatro puertos europeos reciben la certificación medioambiental PERS*. Accessed 19 November 2015 Available at: <http://portalportuario.cl/cuatro-puertos-europeos-reciben-certificacion-medioambiental-pers/>
- Darbra, R.M., Ronza, A., Casal, J., Stojanovic. T.A., Woolridge, C., 2004. The Self-diagnosis Method. A New Methodology to Assess Environmental Management in Sea Ports. *Marine Pollution Bulletin*, 48, p. 420-428.
- Darbra, R.M.; Ronza, A.; Stojanovic, T.A.; Wooldridge, C., and Casal, J. (2005). A procedure for Identifying Significant Environmental Aspects in Sea Ports. *Marine Pollution Bulletin*, 50, p. 866-874.

- Darnall, N., Henriques, I., and Sadowsky, P. (2008). Do Environmental Management Systems Improve Business Performance in an International Setting? *Journal of International Management*, 14, p. 364-376.
- Darnall, N., Sides, S., 2008. Assessing the Performance of Voluntary Environmental Programs: does Certification Matter. *Policy Studies Journal*, 36, p. 95-117.
- Davis, K. (1973). The Case For and Against Business Assumption of Social Responsibilities. *Academy of Management Journal*, 16, p. 312-22.
- Dawkins, C.; Fraas, J.W. (2011). Coming Clean: The Impact of Environmental Performance and Visibility on Corporate Climate Change Disclosure. *Journal of Business Ethics*, 100, p. 303-322.
- Dawkins, C.E.; Fraas, J.W. (2011). Erratum to: Beyond Acclamations and Excuses: Environmental Performance, Voluntary Environmental Disclosure and the Role of Visibility. *Journal of Business Ethics*, 99, p. 383-397.
- Deegan, C., (2004). Environmental Disclosures and Share Prices – a Discussion about Efforts to Study this Relationship. *Accounting Forum*, 28 (1), p. 87-97.
- Deegan, C., Cooper, B., Shelly, M., (2006). An Investigation of TBL Report Assurance Statements: UK and European Evidence. *Managerial Auditing Journal*, 21 (4), p. 329-371.
- Denktas-Sakar, G.; Karatas-Cetin, C. (2012). Port Sustainability and Stakeholder Management in Supply Chains: A Framework on Resource Dependence Theory. *The Asian Journal of Shipping and Logistics*, 28 (3), p. 301-320.
- Dinwoodie, J.; Tuck, S.; Knowles, H.; Benhin, J., and Sansom, M. (2012). Sustainable Development of Maritime Operations in Ports. *Business Strategy and the Environment*, 21, p. 111–126.
- Dirsmith, M. W. and Covalleski, M. A. (1983). Strategy, External Communication and Environmental Context. *Strategic Management Journal*, 4 (2), p. 137–151.
- Ditty, J.M.; Rezende, C.E. (2014). Unjust and Unsustainable: A Case Study of Açú Port Industrial Complex. *Marine Policy*, 45, p. 82-88.
- Du Plessis, C. (2000). *Cities and sustainability: sustaining our cultural heritage*. In *Cities and Sustainability: Sustaining Our Cultural Heritage*. Brandon P. Lombardi P. Perera S. (eds). Sri Lanka: Kandalama.
- Duriau, V., Reger, R. and Pfarrer, M. (2007). A Content Analysis of the Content Analysis Literature in Organization Studies: Research Themes, Data Sources, and Methodological Refinements. *Organizational Research Methods*, 10 (1), p. 5–34.



- El informe de Brundtland, 1987-2012*. Accessed 6 March 2015 Available at: <http://practicasdeldesarrollo.blogspot.com.es/2012/03/el-informe-brundtland-1987-2012.html>
- Elkington, J. (1998). *Cannibals with Forks: The Triple Bottom Line of 21st Century Business*. Gabriola Island, Canada: New Society Publishers.
- Emmanuel, G.L. (2013). Environmental Disclosure Quality: Evidence on Environmental Performance, Corporate Governance and Value Relevance. *Emerging Markets Review*, 14, p. 55-75.
- Escobar, L.F.; Vredenburg, H., (2011). Multinational Oil Companies and the Adoption of Sustainable Development: A Resource – Based and Institutional Theory Interpretation of Adoption Heterogeneity. *Journal of Business Ethics*, 98, p. 39-65.
- Esteban, V.C. (2012). The environment and Climate Change: Ports at the Crossroads. *Revista Portus*, (24), p. 26-29.
- Estrada, J.L.L. (2012). Environmental Sustainability of Ports. An Overview. *Revista Portus*, (24), p. 12–19.
- European Commission (2005). *Promoting a European framework for corporate social responsibility*. Accessed 15 March 2015 Available at: [http://www.europa.eu.int/comn/employment\\_social/soc-dial/csr](http://www.europa.eu.int/comn/employment_social/soc-dial/csr).
- European Sea Ports Organisation (ESPO)*. Accessed 5 March 2015 Available at: <http://www.espo.be/>
- Fernand Braudel (1979). *Civilization and Capitalism, 15th-18th Century*, in 3 volumes, New York: Harper and Row, 1981-84, original editions in French.
- Fiol, M.: (1995). Corporate Communications: Comparing Executives. Private and Public Statements. *Academy of Management Journal*, 38 (2), p. 522–537.
- Franzen, A., 2013. Two Decades of Measuring Environmental Attitudes: A Comparative Analysis of 33 Countries. *Global Environmental Change*, 23 (5), p. 1001-1008.
- Freedman, M., and Patten, D. M. (2004). Evidence on the Pernicious Effect of Financial Report Environmental Disclosure. *Accounting Forum*, 28, p. 27-41.
- Gestión de residuos*. Accessed 18 November 2015 Available at: [https://es.wikipedia.org/wiki/Gesti%C3%B3n\\_de\\_residuos](https://es.wikipedia.org/wiki/Gesti%C3%B3n_de_residuos)
- Goldman, M. (2007). *Sustainability at Ports, Presentation to AAPA Sustainability Task Force*. 96<sup>th</sup> Annual AAPA Convention, Norfolk. Accessed 2 November 2015 Available at: [http://aapa.files.cms-plus.com/PDFs/AAPA\\_Sustainability-Keynote.pdf](http://aapa.files.cms-plus.com/PDFs/AAPA_Sustainability-Keynote.pdf)

- González, F.L. (2012). *El Marco Regulatorio de los Puertos Españoles: Resultados y Conectividad Internacional*. Accessed 17 July 2015 Available at: <http://www.minetur.gob.es/Publicaciones/Publicacionesperiodicas/EconomiaIndustrial/RvistaEconomiaIndustrial/386/Fernando%20Gonz%C3%A1lez%20Laxe.pdf>
- González, F.L. (2012). *El Marco Regulatorio de los Puertos Españoles: Resultados y Conectividad Internacional*. Accessed 17 July 2015 Available at: <http://www.minetur.gob.es/Publicaciones/Publicacionesperiodicas/EconomiaIndustrial/RvistaEconomiaIndustrial/386/Fernando%20Gonz%C3%A1lez%20Laxe.pdf>
- González, F.L. (2012). La Nueva Gestión Portuaria Española. *Revistas Ice*, p. 25-37
- Hackston, D., Milne, M.J., (1996). Some Determinants of Social and Environmental Disclosures in New Zealand companies. *Accounting, Auditing and Accountability Journal*, 9 (1), p. 77-108.
- Harvey, D. (1996). *Justice, Nature and the Geography of Difference*. Oxford: Blackwell.
- Hawken, P. (1995). *The Ecology of Commerce: A Declaration of Sustainability*. London: Phoenix.
- Holmberg, J. and Sandbrook, R. (1992). *Sustainable development: what is to be done? In J. Holmberg (ed.) Policies for a Small Planet*. London: Earthscan.
- Hooghiemstra, R. 2000. Corporate Communication and Impression Management--New Perspectives Why Companies Engage in Corporate Social Reporting. *Journal of Business Ethics*, 27 p. 55-68.
- Ingram, R.W.; Beal, K.F. (1980). Environmental Performance and Corporate Disclosure. *Journal of Accounting Research*, 18 (2), p. 614-622.
- Intergovernmental Panel on Climate Change, 2014a. Climate Change 2014: *Mitigation*
- Iraldo, F., Testa, F., Frey, M., 2009. Is an Environmental Management System able to Influence Environmental and Competitive Performance? The Case of the Eco-management and Audit Scheme (EMAS) in the European Union. *Journal of Cleaner Production*, 17, p. 1444-1452.
- ISO 14001: *Beneficios de los sistemas de gestión ambiental*. Accessed 18 November 2015 Available at: <http://www.orbitaverde.com/iso-14001-beneficios-sistemas-gestion-ambiental-8939>
- ISO 14001: *La certificación de un Sistema de Gestión Ambiental*. Accessed 18 November 2015 Available at: <http://www.nueva-iso-14001.com/2014/12/iso-14001-la-certificacion-de-un-sistema-de-gestion-ambiental/>
- Johnson, G. and Scholes, K. (2002). *Exploring Corporate Strategy*, 6<sup>th</sup> ed. Harlow, Essex: Pearson Education.

- Jose A, Lee SM. 2007. Environmental Reporting of Global Corporations: A Content Analysis Based on Website Disclosures. *Journal of Business Ethics*, 72 (4), p. 307–321.
- King A.A., Lenox, M.J., Terlaak, A., (2005). The Strategic Use of Decentralized Institutions: Exploring Certifications with the ISO 14001 Management Standard. *Academy of Management Journal*, 48, p. 1091-1106.
- Kirkby, J., O’Keefe, P. and Timberlake, L. (1995). *Sustainable Development*. London: Earthscan.
- La Industria Pesquera y su Influencia en la contaminación ambiental*. Accessed 28 October 2015 Available at: <http://es.scribd.com/doc/102932423/LA-INDUSTRIA-PESQUERA-Y-SU-INFLUENCIA-EN-LA-CONTAMINACION-AMBIENTAL#scribd>
- Las industrias que más contaminan*. Accessed 28 October 2015 Available at: <http://www.ocio.net/estilo-de-vida/ecologismo/las-industrias-que-mas-contaminan/>
- Le, X.; Vu, V., and Heur, B.V. (2014). Stakeholder Perceptions and Involvement in the Implementation of EMS in Ports in Vietnam and Cambodia. *Journal of Cleaner Production*, 64, p. 173-193.
- Lélé, S.M. (1991). Sustainable Development: a Critical Review. *World Development*, 19, p. 607-621.
- Li, Y.; Richardson, G.D. and Thornton, D.B. (1997). Corporate Disclosure of Environmental Liability Information: Theory and Evidence. *Contemporary Accounting Research*, 14 (3), p. 435-474.
- Lirn, T.; Jim, Y.W., and Chen, Y.J. (2013). Green performance criteria for sustainable port in Asia. *International Journal of Physical Distribution & Logistics Management*, 43 (5-6), p. 427-451.
- Lirn, T.C., Thanopoulou, H., and Beresford, A.K.C (2003). Transshipment Port Selection and Decision-making Behaviour: Analysing the Taiwanese Case. *International Journal of Logistics: Research and Applications*, 6 (4), p. 229-243.
- Lirn, T.C., Thanopoulou, H., Beynon, M., and Beresford, A.K.C. (2004). An Application of AHP on Transshipment Port Selection: a Global Perspective. *Maritime Economics & Logistics*, 6 (1), p. 70-91.
- Liu, C., and Anbumozhi, V. (2009). Determinant Factors of Corporate Environmental Information Disclosure: an Empirical Study of Chinese listed Companies. *Journal of Cleaner Production*, 17, p. 593-600.
- López, M.A.N., Tortosa, V.E. and Llorens, J.M. (2015). Environmental Management Systems and Local Community Perceptions: the Case of Petrochemical Complexes Located in Ports. *Business Strategy and the Environment*, 24, P. 236-251.

- Lu, Y.; Abeysekera, I. (2014). Stakeholders' Power, Corporate Characteristics, and Social and Environmental Disclosure: Evidence from China. *Journal of Cleaner Production*, 64, p. 426-436.
- Mahadeo, J., Hanuman, V., and Oogarah-Soobaroyan, T. (2011). A Longitudinal Study of Corporate Social Disclosures in a Developing Economy. *Journal of Business and Ethics*, 104 (4), p. 545-558.
- McWilliams, A. and Siegel, D. (2001). Corporate Social Responsibility: A Theory of the Firm Perspective. *Academy of Management Review*, 26 (1), p. 117-27.
- Melnyk, S.A., Sroufe, R.P., Calantone, R., 2003. Assessing the Impact of Environmental Management Systems on Corporate and Environmental Performance. *Journal of Operations Management*, 21 (3), 329-351.
- Merck, O. (2014). *The competitiveness of Global Port-Cities: Synthesis Report*. Accessed 3 February 2015 Available at: <http://www.oecd.org/gov/regional-policy/Competitiveness-of-Global-Port-Cities-Synthesis-Report.pdf>
- Michael JH, Echols AE, Bukowski S. 2010. Executive Perceptions of Adopting an Environmental Certification Program. *Business Strategy and the Environment*, 19, p. 466–478.
- Ministerio de Fomento. *Sistema de indicadores ambientales para el Sistema Portuario Español*. Accessed 23 April 2015 Available at: <http://www.puertos.es/es-es/medioambiente/Documents/pro24.pdf>
- Ministerio de Fomento. *Sistema de indicadores ambientales para el Sistema Portuario Español*. Accessed 23 April 2015 Available at: <http://www.puertos.es/es-es/medioambiente/Documents/pro24.pdf>
- Ministerio de Industria, Energía y Turismo. Accessed 10 July 2015 Available at: <http://www.minetur.gob.es/es-ES/Paginas/index.aspx>
- Módulo III : *Implantación de la Norma ISO 14001 en empresas*. Accessed 20 April 2015 Available at: <http://www.lineaverdemunicipal.com/Guias-buenas-practicas-ambientales/es/e-Implantacion-Norma-ISO-14001-empresas.pdf>
- Mohee, R.; Surroop, D.; Mudhoo, A., and Rughooputh, B.K. (2012). Inventory of Waste Streams in an Industrial Port and Planning for a Port Waste Management System as ISO 14001. *Ocean & Coastal Management*, 61, p. 10-19.
- Murphy, P.R., Dalenburg, D.R., and Daley, J.M. (1989). Assessing International Port Operations. *International Journal of Physical Distribution & Logistics Management*, 19 (9), p. 3-10.
- of Climate Change*. [on-line] IPCC. Accessed 16 February 2015 Available at: <http://www.ipcc.ch/report/ar5/wg3>

- Oliver, C., (1991). Strategic Responses to Institutional Processes. *Academy of Management Review*, 16, p. 145-179.
- Paipai E. (1999). Guidelines for Port Environmental Management. Report SR 554. HR Wallingford, Department of the Environment, *Transport and the Regions*: London.
- Patten, D.M. (2002). The Relation between Environmental Performance and Environmental Disclosure: a Research Note. *Accounting, Organizations and Society*, 27, p. 763-773.
- Patten, D.M., (2002). The Relation between Environmental Performance and Environmental Disclosure: a Research Note. *Accounting, Organizations and Society*, 27 (8), p. 763-773.
- Peris – Mora, E.; Orejas, J.M.D.; Subirats, A.; Ibáñez, S., and Alvarez, P. (2005). Development of a System of Indicators for Sustainable Port Management. *Marine Pollution Bulletin*, 50, p. 1649-1660.
- Perkins, R., Neumayer, E., 2010. Geographic Variations in the Early Diffusion of Corporate Voluntary Standards: Comparing ISO 14001 and the Global Compact. *Environment and Planning A*, 42, p. 347-365.
- Peterlin M, Kontic B, Kross BC. 2005. Public Perception of Environmental Pressures within the Slovene Coastal Zone. *Ocean & Coastal Management*, 48, p. 189–204.
- Plaza-Úbeda JA, Burgos-Jiménez J, Vázquez DA, Liston-Heyes C. 2009. The “Win-Win” Paradigm and Stakeholder Integration. *Business Strategy and the Environment*, 18, p. 487–499.
- Porter, M. and van der Linde, C. (1995). Green and Competitive: Ending the Stalemate. *Harvard Business Review*, 44 (4), p. 120-134
- Potoski, M., Prakash, A., 2005a. Covenants with Weak Swords: ISO 14001 and Facilities' Environmental Performance. *Journal of Policy Analysis and Management*, 24, p. 745 - 769
- Prieto. A.M.S.; Tejada, F.G., and Montero, M.C. (2012). SuPort. Sustainable Ports. *Revista Portus*, (24), p. 40-47.
- Puertos del Estado. *Nosotros*. Accessed 5 March 2015 Available at: <http://www.puertos.es/es-es/nosotrospuertos/Paginas/Nosotros.aspx>
- Rahman N, Post C. 2012. Measurement Issues in Environmental Corporate Social Responsibility (ECSR): Toward a Transparent, Reliable, and Construct Valid Instrument. *Journal of Business Ethics*, 105, p. 307–319.
- Rahman N, Post C. 2012. Measurement Issues in Environmental Corporate Social Responsibility (ECSR): Toward a Transparent, Reliable, and Construct Valid Instrument. *Journal of Business Ethics*, 105, p. 307–319.

- Raisch, S., & von Krogh, G. (2007). Navigating a Path to Smart Growth. *MIT Sloan Management Review*, 48 (3), p. 64-73.
- Redclift, M. (1987). *Sustainable Development: Exploring the Contradictions*. London: Methuen.
- Report of the World Commission on Environment and Development: *Our Common Future*. Accessed 6 March 2015 Available at: <http://www.un-documents.net/our-common-future.pdf>
- Requisitos del SGMA según ISO 14001:2004*. Accessed 14 July 2015 Available at: <http://www.fomento.es/NR/rdonlyres/bfee5d95-a41d-4b40-a552-bc67d2c5fe1b/19514/CaptuloIIRequisitosdelSGMAqueestableceISO14001.pdf>
- Roberts, R.W. (1992). Determinants of Corporate Social Responsibility Disclosure: and Application of Stakeholder Theory. *Accounting, Organizations and Society*, 17 (6), p. 595-612.
- Saengsupavanick, C.; Coowanitwong, N.; Gallardo, W.G., and Lertsuchatavanich, C. (2009). Environmental Performance Evaluation of an Industrial Port and Estate: ISO 14001, Port State Control - Derived Indicators. *Journal of Cleaner Production*, 17, p. 154-161.
- Salancik, G.R. (1979). Inter-organisational Dependence and Responsiveness to Affirmative Action: the Case of Women and Defense Contractors. *The Academy of Management Journal*, 22 (2), p. 375-394.
- Salancik, G.R. and Meindl, J.R. (1984). Corporate Attributions as Strategic Illusions of Management Control. *Administrative Science Quarterly*, 29 (2), p. 238-254.
- Shiva, V. (1991). *The Violence of the Green Revolution: Third World Agriculture, Ecology and Politics*. London: Zed Books.
- Simnett, R., Vanstraelen, A., Chua, W., (2009). Assurance on Sustainability Reports: an International Comparison. *The Accounting Review*, 84 (3), p. 937-967.
- Suchman, M. C. (1995). Managing Legitimacy: Strategic and Institutional Approaches. *Academy of Management Journal*, 20 (3), p. 571 - 610.
- Talley, W.K. (2009). *Port Economics*. London and New York: Routledge
- Taylor, C. (2002). Modern Social Imaginaries. *Public Culture*, 14 (1), p. 91-124.
- The Eco-Management and Audit Scheme (EMAS)*. Accessed 5 March 2015 Available at: <http://www.emas.com/>
- The International Organization for Standardization (ISO)*. Accessed 5 March 2015 Available at: <http://www.iso.org/iso/home.html>

- The Organisation for Economic Co-operation and Development (OECD)*. Accessed 10 July 2015  
Available at: <http://www.oecd.org/>
- Thompson, MH, Dummont, CP., Gaymer, CF., 2008. ISO 14001: towards international quality environment management standards for marine protected areas. *Ocean Coast. Management*, 51, p. 727-739.
- Tilley, F. (1999). The Gap between the Environmental Attitudes and the Environmental Behaviour of Small Firms. *Business Strategy and the Environment*, 8, p. 238-248.
- United States Environmental Agency (EPA)*. Accessed 28 October 2015 Available at: <http://www3.epa.gov/>
- Verrechia, R. (1983). Discretionary Disclosure. *Journal of Accounting and Economics*, 5, p. 179-94.
- Walter, C.K., and Poist, R.F. (2004). North American Inland Port Development: International vs Domestic Shipper Preferences. *International Journal of Physical Distribution & Logistics Management*, 34 (7), p. 579-597.
- Wartrick, S.L., and Mahon, J.F. (1994). Toward a Substantive Definition of the Corporate Issue Construct. *Business & Society*, 33 (30), p. 293-312.
- Weber, R. (1990). *Basic Content Analysis*. Newbury Park, CA: Sage.
- Welch, E.W., Mori, Y., Aoyagi-Usui, M., (2002). Voluntary Adoption of ISO 14001 in Japan: Mechanisms, Stages and Effects. *Business strategy and the Environment*, 11, p. 43-62.
- Whetten, D.A., Rands, G. and Godfrey, P. (2002). What are the Responsibilities of Business to Society? In A. Pettigrew, H. Thomas and R Whittington (eds) *Handbook of Strategy and Management*. London: Sage, pp. 373-408.
- Whitehouse, L. (2006). Corporate Social Responsibility: Views from the Frontline. *Journal Business Ethics*, 63, p. 279-296.
- Williamson D, Lynch-Wood G, Ramsay J. 2006. Drivers of Environmental Behaviour in Manufacturing SMEs and the Implications for CSR. *Journal of Business Ethics*, 67 (3), p. 317–330.
- Wooldridge, C.; Tselentis, B., (2012). *Port Environmental Review System (PERS)*. Accessed 20 April 2015 Available at: [http://www.seinamaritime.net/suports/uploads/files/SuPORTS\\_CORFUpers.pdf](http://www.seinamaritime.net/suports/uploads/files/SuPORTS_CORFUpers.pdf)
- World Business Council (2005). *Corporate social responsibility*. Accessed 15 March 2015 Available at: <http://www.partnerships.gov.au/csr/corporate.shtml>
- World Commission on Environment and Development (1987). *Our Four Common Future*. New York: Oxford University Press.



- Wu, Y.C. and Goh, M. (2010). Container Port Efficiency in Emerging and More Advance Markets. *Transportation Research Part E: Logistics and Transportation Review*, 46 (6), p. 1030-1042.
- Wu, Y.C. and Lin, C.W. (2008). National Port Competitiveness: Implications for India. *Management Decision*, 46 (10), p. 1482-1507.
- Wu, Y.C., Huang, S., Kuo, L. and Wu, W.H. (2010). Management Education for Sustainability: a Web-based Content Analysis. *Academy of Management Learning & Education*, 9 (3), p. 520-531.
- Zeng, S.X., Xu, X.D., Dong, Z.Y., and Tam, V.W.Y. (2010). Towards Corporate Environmental Information Disclosure: an Empirical Study in China. *Journal of Cleaner Production*, 18, p. 1142-1148.