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STUDENT REPORT

Stakeholder engagement within strategic environmental management

– The case of Port of Aalborg –

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'Boot camp together with Port of Aalborg stakeholders', 2nd of May, 2016. Photo: Lucia Mortensen

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Abstract:

Sustainability has become the aim of many ports around the world. The focus on the climate and environmental impact of port activities, and on the reduction of resource use is already an integrative part of port sustainable developments. However, a proactive and strategic environmental approach to sustainable development is in the focus for more and more port authorities. This approach recommends engagement of different port stakeholders such as port authorities, customer companies, society around, consulting companies, local and regional authorities, etc.in the development process. Engaging port stakeholders can assure the development of symbiotic relationships and synergies between stakeholders creating added value (environmental social and economic) for all of them and assuring the success of the project.

Port of Aalborg initiated together with Aalborg University the project, with the work title 'Strategic Environmental Development' which is a very ambitious strategic commitment to create added value through a proactive environmental management approach. Port of Aalborg is remarkable by its good relations with many of its stakeholders. Even so, no strategic stakeholder engagement system is in place. Many methods exist for stakeholder engagement. Finding a single one that will fit the 'Strategic environmental development' project can be challenging. Inspiration from European leading ports such as Port of Rotterdam is crucial. Port of Rotterdam has the ambition to become the most sustainable port in the world and has years of experience with stakeholder involvement in its processes. An insight in different methodologies of stakeholder engagement permits therefor to develop a strategic stakeholder engagement model for Port of Aalborg and Aalborg University's ambitious project.

Preface

This report is a master thesis for the Environmental Management and Sustainability science Master program at Aalborg University.

The research, this report bases upon, is anchored in the strategic environmental development process that Port of Aalborg initiated together with the Aalborg University. It is to be part of the shaping phase of an ambitious project having environment as a strategic parameter for sustainable development.

During the research period I was actively taking part within a group of four persons (two researchers, a special consultant at Aalborg University and me). The group was working on shaping the ambitious project with the working title 'Strategic environmental development' at Port of Aalborg.

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Content

1 Introduction

This research explores the field of port sustainability and argues the importance of stakeholder engagement within strategic environmental processes. The research is grounded in the Port of Aalborg's proactive and strategic environmental development process with the consideration of stakeholder engagement for sustainability-based value creation. The port, sustainability and stakeholder engagement are therefore the main contexts of this research.

In the following initial chapter the state of the art of general context and background for this research will be presented. Furthermore, the research gap this study comes to fulfil will be explained in order to understand the relevance and contribution of this study.

1.1 General context

Since hundreds of years' ports have served as an important economic hub for the surrounding society. They are also the link between different components in a contemporary supply chain. They are the transportation hub of humans and goods, with exit to the different means of transportation such as sea, railways and terrestrial roads, supporting in this way the local and regional economy and the human well-being. Located usually outside a city centre, ports can possess large land areas. They accommodate different companies such as logistic, production and service industries among which the heavy polluting industries are often making the biggest part on a ports territory. Besides, a port is not only heavy polluting companies, but in the same time an amalgam of natural (marine and terrestrial) habitats, with specific flora and fauna, striving to survive under the environmental pressure of businesses. A port is therefore the hub where many conflicting interests between humans and ecology, between economic, social and environmental interests meet. (Hiranandani, 2014)

A port is embedded in complex and competitive political, technological, social, business, natural, etc. environments that put different pressures on its development. Ports are normally seaports or inland ports. They are municipal, regional or national (fully or partially) owned companies that can represent hybrid organizations with both public and private interests. (Notteboom, et al., 2015) Furthermore, ports can be divided into 'comprehensive' and 'landlord' ports. A comprehensive port is one that completes all port services by its-self, while landlord port is the one that outsource the services by leasing and/or renting private companies to perform port's services. The port authority, which is the port's management organization, remains then with a different role: in comprehensive ports, the port authority has both the implementing and management role, while in the landlord ports the port authority has the overall strategic management role, making sure the port develops in a sustainable direction. (Dooms & Macharis, 2003)

Ports are as well organizations that navigate through different political landscapes, obeying different regulations over the years. Ports got over the years a reputation of creating economic value in detriment for the environment and natural habitats. (Kelly, 2005) Ports are often surrounded by society that is highly attentive at the ports' environmental footprint, while enjoying their possible role of socio-economic growth dynamo. Through the activities they undertake and the companies hosted ports set a continuous threat to the maritime and terrestrial environments. The activities of large (often host highly polluting) industrial areas ports host that need to be close to the transportation facilities a port can offer, and which are difficult to place somewhere else, are often contested, but in the same time necessary to the socio-economic development. (Wenning, et al., 2007)

Within business environment, ports are pressed to develop so that they stay high competitive in a highly globalised world. The need for expansion and enlargement of land area, accommodating larges vessels and a larger volume of containers is a reality for many ports around the world. (Kelly, 2005) (GHD, 2016) This development follows the globalised world development. In this context ports become more and more important for the development of local, regional, national and international environments. They are seen as fulfilling different roles: 1) as the connection point of different relationships within a globalised world (Wenning, et al., 2007); 2) playing a crucial role for achieving sustainability within transportation sector (Dooms & Macharis, 2003); 3) contributing considerably to the economic development of the region it is located (Lee Lam, et al., 2013), etc. More recently, ports understood that in order to continue to develop a social licence (social recognition and accept) is needed. In order to obtain social recognition, a port do not have to offer only socio-economic benefits to the surrounding society, but also environmental benefits. Ports around the world adopt therefore more and more a sustainability approach for their development, where economic, social and environmental objectives are followed (GHD, 2016).

Sustainability and sustainable development is a contested concept debated by environmentalists, economists and sociologists (Boutilier, 2009b). The widely recognized definition of sustainable development appeared in the World Commission on the Environment and Development report known as Brundtland Report back in 1987 (WCED, 1987) and defines sustainable development as the 'development that meets the needs of the present without compromising the ability of future generations to meet their own needs' (WCED, 1987). While sustainable development is perceived as the process through which sustainability is achieved, sustainability itself is perceived as the desired outcome (Silvius & Tharp, 2013). The two concepts (sustainable development and sustainability) are therefor to be distinguished but acknowledged for their complementation. In this research sustainability is seen as the higher aim a port strives to while the process that a port goes through for achieving sustainability is represented by sustainable development. Sustainability is highly value-based (Silvius & Tharp, 2013). It depends on the values of those who work directly with sustainable development and the organisation's stakeholders. Stakehoders are defined differently by different academics. Based on the explored stakeholder theory (chapter 2.2.), stakeholders, in this report's context, are defined as:

'*any group or individuals with a particular stake(interest), who are participants in exchange relationships within a joint value creation process (with sustainability as the highest aim) and who can affect (through their actions) or be affected by the measurements undertaken for achievement of the project objectives*'.

This makes sustainable development a continuous process that changes in accordance with personal values, interests, actions, etc.

By seeking to become sustainable, ports try to bring industrial, social and environmental systems into harmony, to balance the use of resources and to shift from a linear mode of economic activities to a circular economy. For ports, sustainable development implies among others new business strategies and activities such as e.g. environmental development projects that meet the current and future needs of the enterprise and its stakeholders. It implies as well creation of symbiotic relations based on mutualism, where there are at least two organisations that support each other and benefit from each other's activities. One of the most cited forms of symbiosis relations used in a business context is industrial symbiosis. Industrial symbiosis is

defined as the engagement of at least two businesses in an exchange of resource flow (e.g. water, energy, materials, human resources, etc.) (Chertow, 2007). With the more acute resource scarcity, the rise of circular economy concept and with its more and more proved economic and environmental earnings (EMF, 2015) the port authorities shift from a management based on simple regulatory compliance to one embracing a proactive, environmental management, and initiating sustainability projects where creating symbiotic relations are one of the objectives (Berry & Randinelli, 1998). For example, the largest port in Europe, the Port of Rotterdam (PoR) is known as the port with the ambition to become the most sustainable port in the world and with its several industrial symbioses created and proactive integrative environmental approach to sustainable development is very well on its way (PoR, n.d.d).

A proactive integrative environmental approach to sustainable development means to adopt concrete innovative actions that go beyond the compliance integrating the economic, social and environmental interests. Setting e.g. air pollution and climate change adaptation activities on the agenda, together with aims based only on reducing the environmental footprint is not enough anymore. A strategic approach to sustainable development, integrating the economic, social and environmental interests with decision-making processes is therefore perceived as necessary for value creation not only for the port itself, but also for its stakeholders if a port should succeed in achieving sustainability.

The role of stakeholders within a sustainable development is more and more recognised and they are, engaged more and more in the strategic development processes. The stakeholders' changing character, position, values, etc. require a flexible stakeholder engagement that more and more ports recognize and adopt. (Gray & Stites, 2013) (Bal, et al., 2013) (Dooms & Macharis, 2003)

1.1.1 Stakeholders' role in the sustainable port development

As it was argued above ports represent areas where different conflicting interests (environmental, social and economic) meet. Ports are not just an organization by itself, separated from its environment, but it is embedded in the local, regional, national and international environments. Being s transportation hub of international routes, not only local, regional and national actors relate to ports, but also international. These actors (individuals and/or organizations) that can affect or be affected by a port's actions are named port's stakeholders, inspired by the stakeholder definition given by Freeman in 1984 (Freeman, 1984).

Ports are hybrid organizations that are both public and private in nature. The sustainable development strategies have therefore to balance the interests of stakeholders from different spheres. Especially in the landlord model of port management achieving sustainability results depends in a high degree on relations with stakeholders. Port authorities can find themselves pressed by society, partners, different (national and/or international) suppliers that have their own stakeholder pressures, etc. and that have various goals and interests, many times conflicting. (de Langen, 2006) (Notteboom, et al., 2015) Stakeholder interests encourage stakeholder expectations regarding ports activities that can result in specific actions that in their turn can be in line with the port authorities planed actions or differing from them. Identifying and satisfying stakeholder interests can prevent from undesirable stakeholder actions that can impede the port from its planned activities and its overall development strategy. Taking stakeholder interests, expectations into consideration can also shape the port's operational legitimacy at different geographic scales. (Dooms, et al., 2013)

Understanding stakeholders' views, interests, expectations and agendas is crucial for a port's future. As mentioned above (section 1.1.) ports are embedded in constantly complex and competitive environments. The competitive environment force ports to find innovative ways of development, innovative ideas, not only answering port's own needs and interests, but also to answer those of stakeholders'. Sustainability can only be achieved when taking stakeholder interests into consideration (Silvius & Schipper, 2014). Stakeholders' can create the critical mass that can offer new input to sustainable solutions identification and implementation. (Rainey, 2006) Identifying stakeholders' interests, expectations, needs, etc. is therefore very important for a port's activity and sustainability achievement.

Sustainable initiatives that ports around the world adopt more and more are based on a proactive and strategic approach to environment. This implies adopting concrete innovative actions that go beyond the compliance and integrating the economic, social and environmental interests. It involves as well creation of symbiotic relations between different actors. Such relations are based on different patterns of collaboration. These kinds of partnerships are sustained by the different inputs (knowledge, financial inputs, skills, etc.) of the involved stakeholders. They are based primarily on trust, commitment, motivation and transparency. It is especially the transparency over the stakeholders' interests, needs, etc. that can generate trust and commitment for other stakeholders involved in a symbiotic relation. Succeeding in establishing these new partnership relations within a e.g. industrial symbiosis can lead to achieving economic growth while diminishing the environmental footprint. (Chertow, 2007) (Gray & Stites, 2013) Thus, stakeholders are very important for a strategic environmental approach a port can take.

Stakeholders are not static entities. They change over time and space (Dooms, et al., 2013). They are also embedded in complex environments that shape e.g. their visions and values. Their actual knowledge, resources, needs and interests, for example, can differ from their knowledge, resources, needs and interests in maybe just a short period of time. This could affect the port's activities, its resource management and its legitimate existence at the end. The role of stakeholders for the decision-making processes needs to be acknowledged if sustainability should be achieved. A strategic stakeholder engagement system needs to be developed. This is crucial for creating ownership, commitment, consensus, etc. contributing in this way to the port's sustainable development. (UNDP, 2012)

Likewise, Port of Aalborg engages in proactive sustainable development with a strategic environmental approach. A proactive sustainable development with a strategic environmental approach is the approach that focusses not only on just complying with environmental regulations, but goes beyond them with the aim of creating economic growth and social development through environmental sustainability.
For Port of Aalborg such an approach to sustainable development implies making environment a strategic parameter for the port's and its stakeholders' activities. This can imply many environmental measurements among which the desire of creating (economic and social) value through implementation of circular economy principles (re-use, recycle, resource upstreaming, etc.) and business models (such as industrial symbiosis) is mostly expressed by the Port of Aalborg.

1.2 Research background

Port of Aalborg, the 4th biggest container terminal in Denmark (PoA, 2016), it is known as 'the intelligent port of Denmark' (DP, 2014) and 'the Danish most planned port area' (PoA, n.d.). It is the port that has high environmental management ambitions anchored in their corporative and sustainability strategy (PoA, 2015b) (PoA, 2015a). Many actions have been taken towards a more sustainable port that has contributed to the 41 percent CO_2 reduction, 38 percent reduction of electricity consumption and 26 percent reduction of sweepings since 2010. (PoA, 2016) Furthermore, the pro-environmental actions contributed to an increase of the company's income with 3 percent, by having the named above savings. 'The life got easier with pro-environmental actions' (PoA, 2016).

Sustainability is the driving factor for the Port of Aalborg Authority's business model. By sustainability the Port of Aalborg means 'the application of a long-term and holistic perspective in planning and development of services and behaviour in general. The holistic perspective involves environment, people and economy.' (PoA, 2015a) As a corporation, Port of Aalborg included sustainability as one of the four key decision-making principles at the core of the port development ('1) Is it right?; 2) Is it worth it?; 3) Is it functional?; 4) Is it sustainable?' (PoA, 2015a)) and the port focuses on 'generating profits, strengthening relations with the private sector and ensuring that the infrastructure around the port develops, updates and is efficient and competitive, now and in the future' (PoA, 2015b) while environmental measurements are taken.

Besides sustainability aim at corporation level, Port of Aalborg has specific aims at local and regional levels intending to become a sustainable framework for the companies on its territory and those in the city region where it is located. (PoA, 2015a) (PoA, 2015b) (PoA, n.d.)

Furthermore, Port of Aalborg intends as well to become an integrator for the Aalborg city, Aalborg municipality and the entire North Jutland region. It is exactly the integrator role that is in focus in this research.

The Port of Aalborg is, with its port areas spread across the city, its container-, oil- and arctic shipping activities to/from Greenland, an important part of Aalborg city, North Jutland Region and of a national importance. Therefor Port of Aalborg has the ambition to become the integrator that creates economic, social and environmental development not only in Aalborg area, but also in the whole Aalborg municipality and North Jutland region, becoming in this way a flagship example for other ports in Denmark and an internationally recognized example. (PoA, 2015b) (Interview, 2016e)

In line with the aim of becoming an integrator, Port of Aalborg has initiated a strategic environmental management approach to sustainable development, setting environment as a strategic parameter for their value creation. Using this approach Port of Aalborg has initiated together with Aalborg University a long-term project that has the ambitions to create symbiotic relationships between businesses (both on port area, and outside it), between the port and the society around, etc. The project, with the work title 'Strategic Environmental Development', is a very ambitious strategic commitment of Port of Aalborg and Aalborg University and aims at creating added value for all the project stakeholders through a proactive strategic approach to environment. The aim is to change the environmental attitude from being a threat to the port and its stakeholders to being an adding-value parameter for the existing and new businesses. The project aims at establishing new business models based on circular economy and in this way to establish

mutualistic, symbiotic and synergetic relationships between businesses, and between businesses and whole surrounding society (Kørnøv, 2015).

The 'Strategic Environmental Development' project is at its very initial shaping phase, where the concept is developed and the scope and objectives are established. Even though exact activities for achieving the objectives of this development project are not yet planned, some of the ambitions are to create new ways of business collaborations and partnerships through industrial symbiosis. It is desired to achieve the project's aim in collaboration with the stakeholders. In the context of Port of Aalborg stakeholders who are important for the port development can be considered the municipality counsellors, business representatives, consultants, knowledge institutions and civil society representatives.

Port of Aalborg acknowledges the importance of and the need for stakeholder engagement in the process of strategic environmental development. It is especially the stakeholders' need, interests, role, etc. in establishing and developing symbiotic relationships that are to be mentioned.

The stakeholders of Port of Aalborg are, as all other ports' stakeholders, not static entities. They can change over the time. New stakeholders can become more important than before, and other stakeholders' importance in the process can shade. The stakeholders' attributes such as needs, interests and values can as well change within the project development processes. A stakeholder engagement system is therefore necessary to be put in place at this initial phase of 'Strategic environmental development' project (named from now on in this report: **t*he SED Project***).

This study is an initial research within the shaping phase of the SED Project. The research takes point of departure in the need for development of a stakeholder engagement model and tool to answer the needs of the SED Project. It explores the relevant theoretical context, existing methods for stakeholder engagement, and an applied example at Port of Rotterdam. The study researches then the multitude of Port of Aalborg stakeholders within such a complex process as SED Project and develops a strategic stakeholder engagement model tailored for the SED Project.

1.3 Research question

The research was driven by the overall research question

How can Port of Aalborg's stakeholders be engaged in the port's sustainable development process?

The research question is decomposed in several sub- questions, each with its goals as presented in the Table 1.

Table 1: Research sub-questions and their goals

Research sub-question (RSQ)	Goals
RSQ 1: How can project stakeholders be engaged in shaping a sustainable development project?	• To explore: - the cornerstones of a sustainable development project through strategic environmental management; and of - the stakeholder engagement approaches *(theoretical approach)*
RSQ 2: How can stakeholders be engaged within a port strategic environmental development?	• To explore a strategic environmental development process and the stakeholder engagement within a port context *(the case of Port of Rotterdam)*
RSQ 3: How can SED Project stakeholder be engaged in the project's development process?	• To identify the strategic SED Project's stakeholders • To assess the SED Project's stakeholders' roles, interests, attitudes and possible actions for the project • To develop a strategic stakeholder engagement model/tool for further SED Project development *(the case of Port of Aalborg -the SED Project)*

1.4 Research delimitations

Stakeholder engagement, in the context of this study is not to be confused with stakeholder involvement that has the focus on different strategies a project management group can apply on stakeholder relations. Stakeholder engagement is simply the process through which stakeholders are worked with (being stakeholder identification or stakeholder analysis) together with stakeholders themselves for a further identification of future strategies for project planning and development. It is rather collaboration within project management.

As the scope and resources of this study were limited to the environmental management field, no research on project management field was done. The study of a possible existence of such a stakeholder engagement approach and its critics dragging on project management theories is therefore not included in this research.

No exhaustive stakeholder identification and assessment was done for the Port of Rotterdam case. The aim was only to use this case as inspiration for the further process within SED Project regarding strategic stakeholder engagement.

2 Conceptual framework

This chapter explores the theoretical background of this research. It revolves around RSQ 1 (*How can project stakeholders be engaged in shaping a sustainable development project?)* And has the goal of exploring first the cornerstones of a sustainable development project through strategic environmental management; and then the stakeholder engagement approaches.

2.1 A sustainable development project theory

This section presents the review of the literature on sustainable development projects with a strategic environmental approach. It aims at contributing to the establishment of the conceptual framework and context this research contributes to.

2.1.1 Sustainable development through strategic environmental management

Sustainability concept enters nowadays more and more sectors of our lives, not being present only in the environmental studies. Sustainability became the new paradigm within which the world functions. Implementing sustainability through projects and project management acquires momentum. (Silvius & Tharp, 2013).

Sustainable development projects are based on the concept of 'developing sustainability' (Silvius & Tharp, 2013). Because they contain the word 'development' they refer to the fact that sustainable development is a process, where sustainability is the goal. Reaching this goal depends on the respect of different values, as developing sustainability is value based. Any organization involved in a sustainable development project must be transparent about its actions and the consequences they have on the socio-economic and environmental aspects. Clear information on actions needs to be provided to other individuals or organizations involved in the sustainable development, so they can adjust their own actions in return. Those involved in a sustainable development project must as well present accountability, which is the acceptance of responsibility of its own actions. Thus, several values can be identified: transparency, fairness, tractability, participation and accountability. (Silvius & Tharp, 2013) (Silvius & Schipper, 2014)

Sustainable development is based mainly on the economic, social and environmental principles. However, temporal principles (short, mid- and long-term) and spatial principles (local, regional, national and global) within sustainable development models are more and more accepted and implemented. (Duarte, et al., 2008) (Silvius & Tharp, 2013) Implementation of such principles relies more and more on the acceptance and adoption of a strategic environmental management approach. Strategic environmental management is the business practice recognizing the profit opportunities obtained by reducing environmental impacts. (Goldstein, 2002)Within this research strategic environmental management refers to the process of making environment as a strategic parameter for sustainable development.

Within sustainable development projects adopting a strategic environmental management approach profit making is regarded as totally moral. 'Business and ethics are not perceived as conflicting but as fundamentally interlinked' (Hörisch, et al., 2014). Less environmental footprint equals larger profit revenues, based on e.g. resource savings and larger profit margin. Even more, new market opportunities can be captured. Creating e.g. innovative environmental impact-reducing and eco-design-based products and services companies can enter new markets or better position themselves among customers. High environmental standards stimulate technical innovation and promote social well-being. A better management is in general encouraged. (Goldstein, 2002)

However, it is not a simplistic approach to environmental management. Such project approach is complex and challenges the classical, traditional and conventional project management approaches and the firm approach. They ask for a strategic long-term vision, versus the short-term view of the conventional management approach. (Hörisch, et al., 2014) (Silvius & Tharp, 2013) (Goldstein, 2002) Besides, the spatial

and geographic perspective is broadened when an organization considers developing sustainability through specific projects. Silvius & Tharp (2013) argument that 'projects are small organizations, (…)[but which] may have considerable effects on a region or beyond it'. Therefore, it is not only firm sustainability that is seeked and achieved, but synergetic relations between the firm and its social and business environment as well.

2.1.2 Strategic environmental development projects: A stakeholder approach

To implement such projects is as well not an easy task. Silvius & Tharp (2013) argument that the desired project ideal outcomes can constantly change, depending on the ethics and values of stakeholders. 'Sustainability is about stakeholder participation' (Silvius & Schipper, 2014). A sustainable development project should therefore take a stakeholder engagement approach. Knowing, understanding and respecting stakeholder roles, interests and their possible influence on the project is the key to sustainability achievement. Thus a high priority must be given to the stakeholder engagement in a strategic environmental development process. (Poplawska, et al., 2015)

A strategic environmental development project offers a dynamic arena for stakeholder engagement all the way through its life cycle. There is no one single way of engaging stakeholders in the project development. In addition, the project stakeholders' potential to participate in the process or to influence the project variates along the project development process. Balancing the different needs, interests, roles and attitudes is a constant challenge a project management group has during a project's decision-making processes. (Aaltonen & Kujala, 2010)

Furthermore, development of common values and visions of different stakeholders is seen as challengeable. The integration and a balance between the economic, social and ecologic values and perspectives as a holistic approach can present challenges to different value sets of stakeholders. The creation of economic value goes hand in hand with respect of the moral (social and environmental) ethics for some stakeholders, while some others, having different sets of values and believes, have to be convinced about it. (Hörisch, et al., 2014) (Silvius & Tharp, 2013) (Goldstein, 2002)

Establishing a stakeholder engagement strategy for common sustainability-based value creation is a complex task that is grounded in the 'stakeholder paradigm for value creation'. The stakeholder paradigm for value creation presents a new view on stakeholders, the role of corporations and the collaborations between these. It can be operationalized through stakeholder-firm co-operations, partnerships and networks for innovative products and services creation with the aim of acquiring a larger sustainability-based value. (Sachs & Ruhli, 2011)

Adopting a strategic environmental management approach through stakeholder engagement is to create economic benefits for all project stakeholders, while contributing to sustainability (Hörisch, et al., 2014). Therefor identifying the right stakeholder engagement approach is of high importance.

2.2 Stakeholder theory

This section has the aim to shed light on the stakeholder definition with the further focus on delimiting the project stakeholders. The significance of engaging stakeholders within a sustainable development project is as well explored. The stakeholder engagement approaches are studied with the focus on delimiting the analytical framework for the strategic stakeholder engagement within the case of Port of Rotterdam and later the SED Project.

2.2.1 Project stakeholder definition challenges

To find a definition of 'stakeholder' that could fit all situations it can be an impossible task (Hörisch, et al., 2014). Rooting back in 1963 when it was used for first time in a memo from Stanford Research Institute (Olander, 207) and used mostly in the field of corporate management (De Lopez, 2001) the stakeholder concept was adopted by many other disciplines, many definitions formulated and a stakeholder theory developed. Mitchell, et al. (1997) presents a wide picture on stakeholder's definitions. As the enumeration of the multitude of the definitions is out of the scope of this study, only the definitions related to this study will be presented.

The most classical definition, present in much of the literature on stakeholders, is Freeman's definition given in 1984: '. . . any group or individual who can affect or is affected by the achievement of the organization's objectives . . .' (Freeman, 1984). Later, in the stakeholder theory, other researchers present stakeholders as 'contractors or participants in exchange relationships' (Mitchell, et al., 1997). In 1994 Freeman argues that stakeholders are 'the participants in "the human processes of joint value creation" ' (Mitchell, et al., 1997) Thus the stakeholder definition evaluated from a firm perspective to a larger participatory process of a firm's activities with focus on relationships between organizations and businesses and its stakeholders (De Lopez, 2001) (Freeman, et al., 2010). The stakeholder theory supports the idea that 'the purpose of business is to create value for all stakeholders' through engaging them in a joint value-creation process, such as strategic environmental development process (Freeman, et al., 2010) (Hörisch, et al., 2014). As this study refers to the SED Project, project stakeholders, rather than corporate stakeholders, are the relevant once for consideration. Aaltonen & Kujala (2010) and Silvius & Tharp (2013) argue that a project can be seen as a temporary organization and therefore stakeholder theory can as well be used when exploring project stakeholders. Freeman et al. (2010) proposes though that in any cases a pragmatic approach to the stakeholder definition has to be established and it is necessary to be aware of 'the purpose' when using a specific definition.

Project stakeholders are defined as any 'individual or group who have an interest or some aspect of rights or ownership in the project, can contribute in the form of knowledge or support, or can impact or be impacted by, the project'. (Aapaoja & Haapasalo, 2014) Project stakeholders are those who have a stake in the project. A stake refers to and determines specific expectations from the project, specific interests in the project results and subsequently specific actions within the project development (Newcombe, 2003) (Aaltonen & Kujala, 2010). Bourne & Walker (2006) agrees that a stakeholders' stake is equal to stakeholders' interests, rights and ownership.

Deriving from all the definitions mentioned above, strategic environmental development project stakeholders can be defined as:

'any group or individual with a particular stake (interests, expectations, etc.), who are participants in exchange relationships within a joint value creation process (with sustainability as the highest aim) and who can affect (through their actions) or be affected by the measurements undertaken for achievement of the project objectives'

Figure 1: Project stakeholder definition within this research

Stakeholders according to Mitchell, et al. (1997) cannot only be persons, groups, organizations and institutions but also neighbourhoods, societies, and even the natural environment. For example, Rodrigue et al. (2010) mention that the port authority, public authorities, trucking companies, rail and barge operators, shipping companies, etc. can be considered port stakeholders, without these forming an exhaustive stakeholder list. The stakeholders can vary according to the specific environment and location (e.g. port, national regulation, activity specificity, etc.) (Aapaoja & Haapasalo, 2014) or according to taking directly part in the project, being formally members of a project group (internal stakeholders) such as company managers, project manager groups, contractors, etc. , being outside the project, but being able to affect or to be affected by the project (external stakeholders) such as community, or being in between those two categories (interface stakeholders) and acting as internal stakeholders in one situation and external in others (Newcombe, 2003) (Aaltonen & Kujala, 2010) (Mayers, 2005). Dividing stakeholders in internal and external project stakeholders is a typical project stakeholder classification, but is criticized to be vague (Aaltonen & Kujala, 2010) (Aapaoja & Haapasalo, 2014). Other scholars categorize stakeholders in 'those who promote' the project and 'those who oppose' it (Aaltonen & Kujala, 2010) or according to their functions and role they have in the project (Poplawska, et al., 2015). Knowing different roles project stakeholders have in the project and engaging them in the project development is to maximize the project's benefits and value creation (Aapaoja & Haapasalo, 2014).

2.2.2 Stakeholder engagement significance

Engaging stakeholders in the project from the very early phases of the project offers the possibility of aligning mutual interests in the project, reducing project fail risks, and increasing the project economic advantage. Evidence has been found that companies that considered their stakeholders' needs and interests have performed better economically, socially and environmentally. If stakeholders are not engaged as early as possible in a project processes, resistance to change may occur from the side of different stakeholders later in the project development, delaying in this way the project deliverables. (Bourne & Walker, 2006) (Boutilier, 2009a) (Walley, 2013)

Engaging the project stakeholders in the project development could stimulate the critical thinking, generating innovative ideas and sustainable solutions for sustainability challenges. The project could gain reputation and the social acceptance (license) to operate, to innovate and to compete. (Sachs & Ruhli, 2011) (Rainey, 2006) Through knowing stakeholders and their needs and interest, through engaging them in the project development and through maintaining the relations with them a project manager team creates ownership for the project and its results, builds consensus for action, creates innovative result and not least important sustainability-based economic value (UNDP, 2012) (Hörisch, et al., 2014).

Engaging stakeholders can also mean enlarging stakeholders' stake (interests, expectations, rights, project ownership, etc.) in the project. Bourne& Walker (2006) and Hörisch, et al. (2014) agree that enlarging stakeholders' stake can equal enlargement of sustainability-based project value, contributing positively to the triple bottom line: economic, social and environmental. The outcome of the project, in this way, can be 'a total solution', having a holistic approach, satisfying the multitude of project stakeholders and having more sustainable outcomes than initially planned or expected (Rainey, 2006).

Without taking the stakeholders' needs, expectations and interests into consideration, stakeholder actions and the motivations behind their actions cannot be identified (Aaltonen & Kujala, 2010). Stakeholders' actions and their influence on the project development can remain unknown and this can lead to rise of hidden conflicts and therefore increase the fail risk of the project. The project can actually fail or be perceived as failed even though it was keeping deadlines, budget, etc. (Walley, 2013) So engaging stakeholders upfront can prevent the rise of conflicts and misunderstandings during the project implementation (Rainey, 2006) (Olander & Landin, 2005). It can be though thought that the vice versa can also apply. Engaging stakeholders upfront can create false expectations that later can become reasons for conflicts. Furthermore, engaging stakeholders in the process of shaping a project can be a slow process as numerous interests have to be traded.

To conclude, it can be mentioned that stakeholders are anyway the 'crucial entities' for a strategic environmental development project's success. Engaging stakeholders by identifying them, their stakes (e.g. needs, interests, expectations, rights and ownership) and their contribution (roles, support and actions), by establishing, managing and maintaining relations with stakeholders can lead to project success and increased sustainability performance (Boutilier, 2009a) (Poplawska, et al., 2015) (Aaltonen & Kujala, 2010). Thus having a stakeholder engagement system during the development of a strategic environmental development project is absolutely crucial if the project is to succeed (ISO, n.d.) (Silvius & Schipper, 2014) (Walley, 2013).

2.2.3 Stakeholder engagement approaches

Stakeholders can be engaged in different ways in a project development, all resuming to one or another form for management system that an organization can put in place. The overall purpose of the project stakeholder engagement systems is the management of 'relationships between the project and its stakeholders' in order to assure the success and sustainability of the project (Aapaoja & Haapasalo, 2014) (Walley, 2013) (Silvius & Schipper, 2014)

Silvius & Tharp (2013) mentions that in the nowadays literature two scientific directions are formed considering stakeholder management: 1) management of stakeholders approach, and 2) a management for stakeholders approach.

In the management of stakeholders' approach stakeholders are seen as providers of resources, in scope of achieving organizational aims and benefits. This approach is considered rather manipulative and comes in contrast to the second approach. (Silvius & Tharp, 2013)

The management for stakeholders' approach considers the stakeholders in their valuable way and rights. This is a more inclusive approach to stakeholder management, giving possibility to understand stakeholders, their roles through a comprehensive stakeholder analysis. (Silvius & Tharp, 2013)

The traditional project management field advocates for a management of stakeholder approach, while the integration of sustainability development within projects, recommends a management for stakeholder approach, in order to create more shared benefits (Silvius & Tharp, 2013). It is especially this second approach that the present research takes under its loop and considers it for further study and in developing suggestions for a strategic stakeholder engagement approach that can be taken within SED Project.

The management for stakeholders is defined as the management for 'the relationships between the systematically identified and analysed stakeholders and the planning and implementation of actions to support the relationships' (Aapaoja & Haapasalo, 2014).

Different systems and methods have been created for a management for stakeholders. What characterize them all is that they are sector specific, such as for construction sector (Olander, 207) (Olander & Landin, 2005) (Aapaoja & Haapasalo, 2014), healthcare sector, information technology and research and development sectors (Walley, 2013) and environmental sector (Nastran, 2014) (Grimble & Wellard, 1997) (Mayers, 2005).

Whatever sector a management system for stakeholder relations is developed for, it contains several common steps:
1) Stakeholder identification;
2) Stakeholder analysis, named as well stakeholder assessment;
3) Stakeholder involvement strategies

All these steps do not exist independently, but are set in a framework where the aim and scope of the project is identified (Mayers, 2005).

The stakeholder identification is the initial phase where all possible individuals or groups that can affect or be affected by a project are identified and gathered in a stakeholder register. This stakeholder register have to be revised several times during a project as the stakeholders can change their strategic positions in the project. (Jepsen & Eskerod, 2013) The stakeholder register should contain as exhaustive list of stakeholders as possible in order to have an overview of the possible project stakeholders. Gan & Li (2012) argument that a project will always contain several smaller, under projects, which will affect or be affected more or less by different groups of stakeholders. Therefore, action will have to be adjusted according to the specific stakeholder group. The identification of project stakeholders should thus not be done only for the project as a whole, but rather for under projects separately.

During the second step of the management for stakeholder relations system **stakeholder analyses** are performed. During this step the stakeholders' stake (interests, needs, expectations, rights, etc.), contribution (roles and attitudes), impact (activities), characteristics, circumstances and influence can be identified (Aapaoja & Haapasalo, 2014) (Aaltonen & Kujala, 2010) (Nastran, 2014) (Olander & Landin, 2005) (Olander, 207) (Newcombe, 2003) (Jepsen & Eskerod, 2009) (Poplawska, et al., 2015) (Grimble & Wellard, 1997) (Mayers, 2005). Likewise, each stakeholder's resource potential for 'harming' or 'helping' the project, could be identified (Jepsen & Eskerod, 2013). There are many methods to perform a stakeholder analysis. A short overview of different methods is presented in the Annex V. One of the most cited and used stakeholder analysis framework is the stakeholder salience framework developed by Mitchell et al.

(1997).They use ‘power’, ‘legitimacy’ and ‘urgency’ as stakeholder analysis attributes. Stakeholder ‘legitimacy’ and ‘urgency’ are often discussed and contested in the literature (Aaltonen & Kujala, 2010) (Aapaoja & Haapasalo, 2014) (Nastran, 2014) while ‘power’ is one of the most used attribute for stakeholder analysis (Aapaoja & Haapasalo, 2014) (Nastran, 2014) (Aaltonen & Kujala, 2010) (Aaltonen, 2011).

Concerning specific methods for stakeholder analysis, Aaltonen (2011) presents a large table with available methodologies to be used when doing a stakeholder analysis. Gan & Li (2012) propose a rather behavioural approach to stakeholder analysis and engagement. They propose that the economic, environmental and social interests and demands (expectations) of the stakeholders should be found in order to identify stakeholder attributes and be able to do a ‘Stakeholder influence analysis’. The stakeholder attributes characterize the possible influence the stakeholders can have on the project. Furthermore, the degree of understanding the project is explored so that possible future actions that stakeholders could take for and within the project could be identified, assessed and evaluated. Identifying the action probability in this way gives background for engagement and management measures.

Mayers (2005) propose a stakeholder framework for power analysis, that contains six steps: ‘1) Develop purpose and procedures of analysis and initial understanding of the system; 2) Identify key stakeholders; 3) Investigate stakeholders’ interests, characteristics and circumstances; 4) Identify patterns and contexts of interaction between stakeholders; 5) Assess stakeholders’ power and potential roles; and 6) Assess options and use the findings to make progress’. This framework can be used in many contexts and with many purposes, including the strategic one for scoping a project or building project momentum.

Different methodologies for visualization of the results of stakeholder analysis and stakeholder classification have as well been developed. The most referred to framework for visualizing the results of stakeholder analysis is ‘the stakeholder salience framework’ developed by Mitchell, et al. (1997) (Nastran, 2014) (Bourne & Walker, 2006) (Aapaoja & Haapasalo, 2014). Furthermore, matrices with different attributes such as power/influence matrices (Grimble & Wellard, 1997) (Nastran, 2014) (Olander, 207) (Olander & Landin, 2005). ‘Stakeholder circle^{TM}’ and some other alternative visualization have been as well developed (Bourne & Walker, 2006) (Aapaoja & Haapasalo, 2014)

The stakeholder analysis is done with the aim of understanding each stakeholder’s ‘position within the project limits’ and for identifying optimal strategies for a better stakeholder involvement (Botero Baez, 2014). **Stakeholder involvement** is then the process where the project management group develop strategies in order to involve with stakeholders for aligning their mutual interests so that any possible risks are diminished and a large sustainability – based value is created for all stakeholders. (Bourne & Walker, 2006)

However, all these analysis frameworks are designed to fit more a traditional way of stakeholder relation management and to develop strategic actions in order to manage stakeholder relationships. In these situations, the project objectives and activities are well established and only taking all stakeholders ‘on board’ of the project remains. In addition, Walley (2013) argues that a stakeholder management system (stakeholder identification, analysis and involvement) is highly context specific and therefor the methodology of such a system has to reflect the specificities of the specific sector.

Stakeholder identification, analysis and management do not exist outside a context. They are project dependent and therefore no one single solution exists (Gan & Li, 2012). Based on the theoretical context explored above the following analytical framework (pictured in Figure 2) was developed:

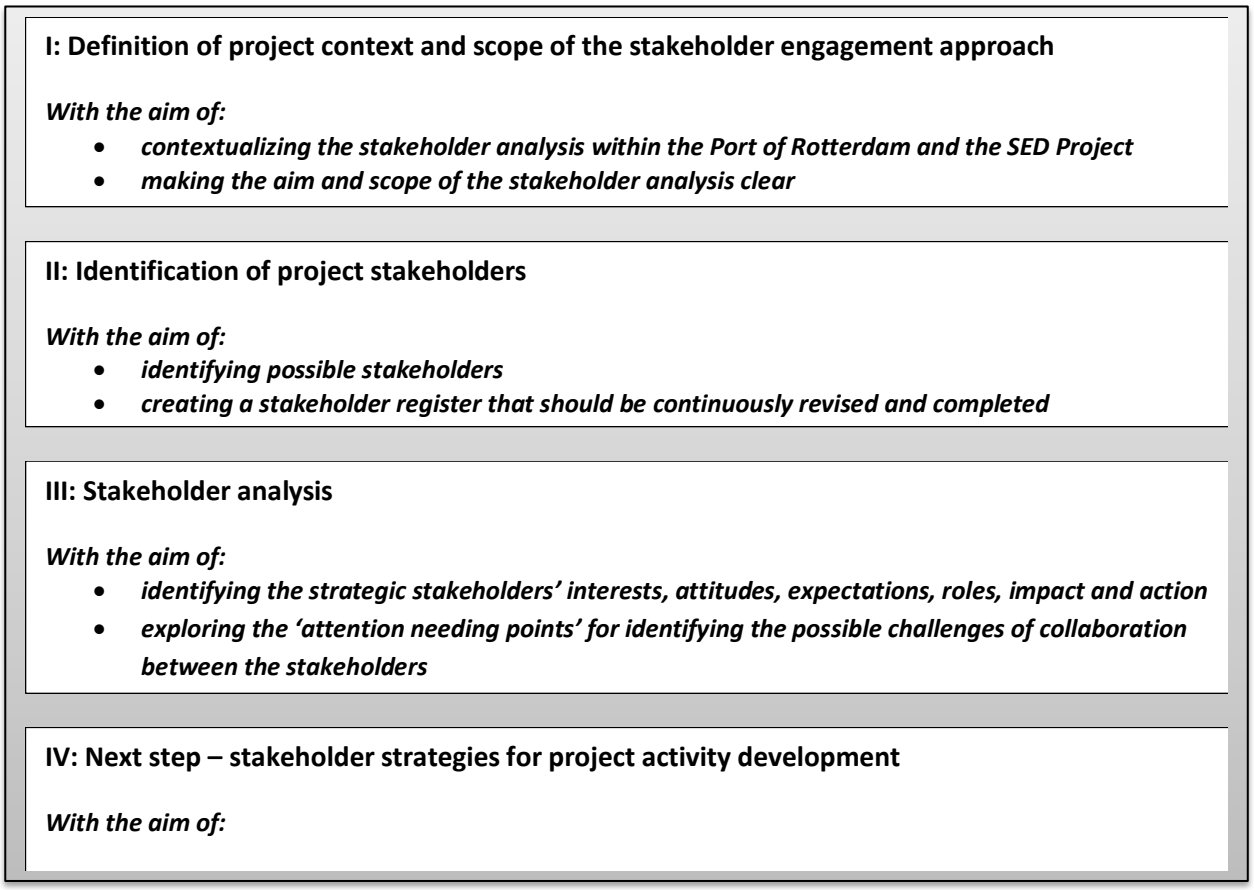

Figure 2: Analytical framework for exploring the two cases: the case of Port of Rotterdam and the case of Port of Aalborg

The analytical framework is later used in this research to explore the two cases: the port of Rotterdam and the Port of Aalborg. The strategic environmental development processes are identified within both ports. The identification of stakeholders is however only done partially for the Port of Rotterdam case, as it is out of this research scope. Exploring the strategic environmental development processes with Port of Rotterdam made possible to identify the most strategic stakeholders that played and still play a crucial role in the sustainable development of the port. For the case of Port of Aalborg, a longer stakeholder list is tried to be established.

Stakeholder analysis is not exhaustive regarding the case of Port of Rotterdam, as the main aim of exploring this case was to identify the most important stakeholders' roles in the process, their functions and lessons learned for transferring them to Port of Aalborg. Within SED Project's scope strategic stakeholders' interests, attitudes, expectations, roles, impact and actions and the 'attention needing points' was found necessary to be explored in order to try engaging stakeholders and to develop a general stakeholder engagement model.

The last step in the analytical framework is not developed within this research, though the results of the previous steps are used to develop a tailored stakeholder engagement model/tool for the SED Project.

3 Methodology

This chapter presents an overview of the overall research approach and design and then the specific methods for data collection and analysis is presented. Discussions of data validity and reliability are explored.

3.1 Research approach

The overall research approach of the study is a problem-centric one (Gray & Stites, 2013) that revolves around the Port of Aalborg's desire of developing a strategic environmental management project with a proactive environmental approach as a value-creation factor. The project is seen implemented together with its stakeholders so sustainability –based value is created by, for and together with the project stakeholders. A stakeholder engagement tool is missing though. The research therefore takes a pragmatic point of departure and tries to solve this problem. The research is anchored in action research (Gaffney, 2008) (Kemmis & McTaggart, 2007) with the aim of an immediate application in real life (Ottosson, 2003).
Action research is defined as an approach to knowledge generation based on collaborative-problem-solving relationship between researcher and client (e.g. Port of Aalborg), aiming at solving problem and generating new knowledge (Saunders, et al., 2015) (Kemmis & McTaggart, 2007).

The present study questions the practitioners' 'actual practices' of stakeholder engagement and acknowledge the fact that they are embedded in social (cultural, economic and political) and 'historical circumstances that produced them and by which they are reproduced in everyday social interaction in a particular setting' (Kemmis & McTaggart, 2007). A new participatory and inclusive stakeholder engagement model and tool is therefore elaborated for approaching strategic environmental port development. This is not a final model and tool of knowledge and practices generation, because the action research is based on a cyclical approach (Saunders, et al., 2015) where self-reflection and process reflection revolve around several phases: '…planning, acting and observing, reflecting, re-planning, etc.' (Kemmis & McTaggart, 2007) (Anderson, et al., 2015). The stakeholder engagement model and tool is hereby elaborated (planned), then it will need to be applied (acting) and observations of how it works on stakeholders and what knowledge it generates will follow (observing). A reflexion period then will come where the model/tool will be analysed and re-thought again. The cycle then will continue with planning, etc.

Action research has several other important features (McIntyre, 2008). The most relevant key features, which can refer to this research as well, are that action research:

- Acknowledges the institutional embeddedness and constraints of the actions (Kemmis & McTaggart, 2007)
- Engages people in self-reflection and process-reflection (McIntyre, 2008)
- Helps people to be critical to own actions and release themselves from 'social structures that limit their self-development and self-determination' (Kemmis & McTaggart, 2007) by undertaking new collaborative actions in relations with one another (McIntyre, 2008)
- By reflecting continuously on the process new knowledge is generated, though not with the aim of generation of abstract theories, but a theory than could support the practical challenges(Kemmis & McTaggart, 2007) 'The underlying aim of action research is not to produce knowledge, but to create social change in the settings within which it is used' (Gaffney, 2008). Theory, as Saunders, et al. (2015) puts it 'is a systematic body of knowledge, grounded in empirical evidence, which can be used for

explanatory and predictive purposes' The empirical evidence gathered through exploring the case of Port of Rotterdam and the stakeholder analysis together with SED Project's context were used to develop the stakeholder engagement model/tool.

This form of research was not deliberately chosen from the beginning of this study, rather its dominance was perceived later in the process. The established collaboration between Aalborg University and Port of Aalborg and the common management of the SED Project requires a collaborative communication, where the university was assigned the role of coordinator of the project's shaping process. As the SED project is about to be shaped, a participatory and inclusive approach to stakeholder engagement has been set in place, drawn from the experiences of Port of Rotterdam case. This approach was grounded as well in the desire of involving strategic stakeholders in the early process, so that ownership and participation is fostered from the beginning of the process. Such an action research is referred to as an 'action science' (Kemmis & McTaggart, 2007). Using the action science was done for ensuring the practical relevance and applicability of the knowledge created, while maintaining the scientific rigidness so that it can stand alone as a master thesis. This is a small attempt to be a 'researcher as practitioner' as put by Saunders, et al. (2015).

3.2 Research design

The study is structured around several parts. Each part has been driven by one of the research sub-questions (RSQ):

- *RSQ 1: How can project stakeholders be engaged in shaping a sustainable development project?*
- *RSQ 2: How can stakeholders be engaged within a port strategic environmental development?*
- *RSQ 3: How can SED Project stakeholder be engaged in the project's development process?*

All research sub-questions answer the main research question of this study:

How can the Port of Aalborg's stakeholders be engaged in the port's sustainable development process?

A more in-depth description of the research design is represented by the following Figure 3:

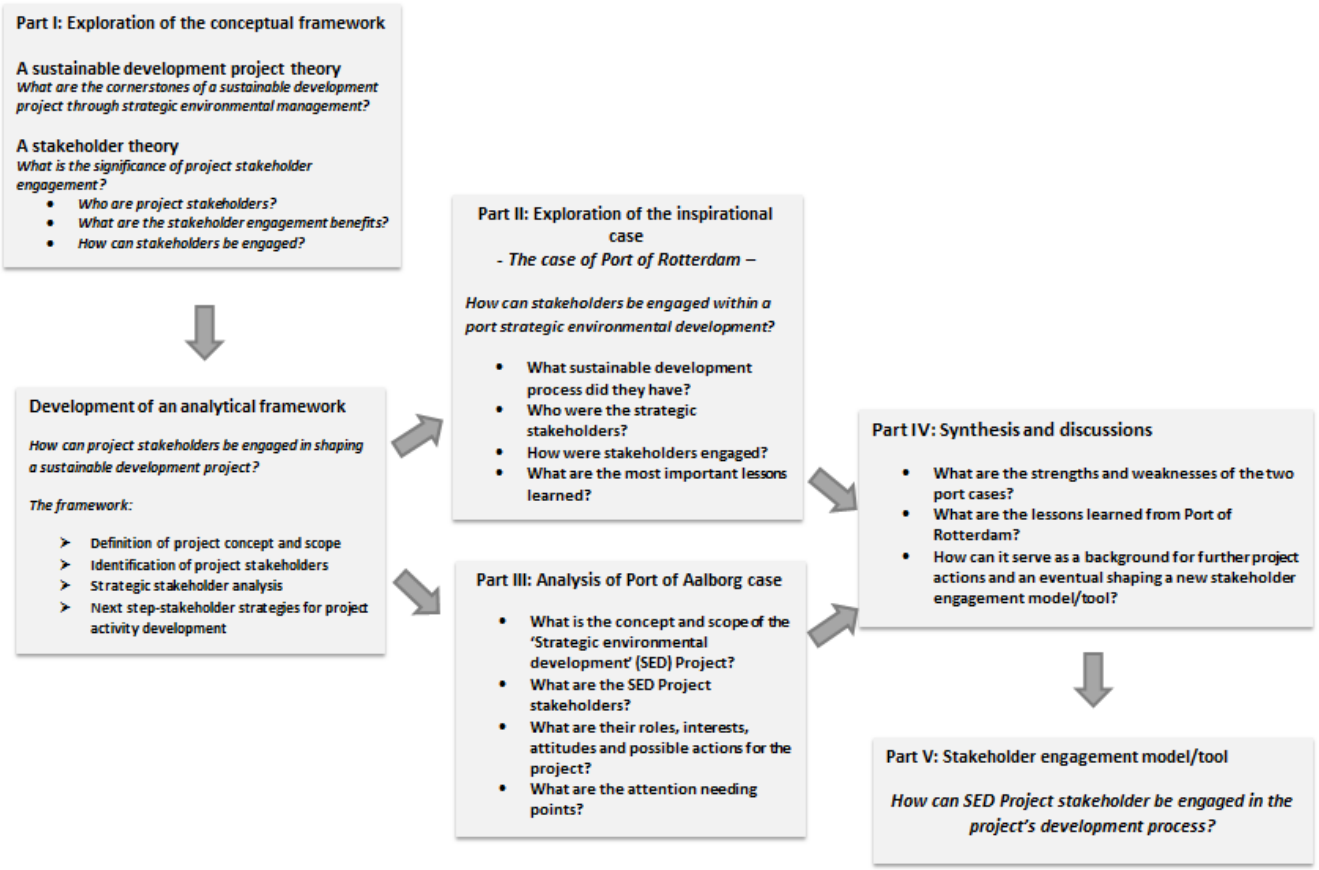

Figure 3: Research design (a larger version of this figure is offered in Annex V)

In order to delimit the conceptual framework of this study, theory on sustainable development project with strategic environmental management approach and the stakeholder theory is explored. The findings within these theory fields have set the framework for the further analysis of the two cases.

First the inspirational case of Port of Rotterdam is presented. Here the specificities and the scope of the strategic environmental processes and the stakeholder management system used is presented. The aim of presenting Port of Rotterdam case is to operationalize the conceptual framework and to present one scholastic example on how stakeholder relations can be managed in a port development context. Based on the theoretical framework and the findings from Port of Rotterdam, the case of Port of Aalborg is analysed. The context and scope of the SED Project is explored, the project stakeholders are identified and analysed. The project stakeholder identification was driven by questions such as *who the potential beneficiaries can be? Who can be affected or affect the project? who can contribute to the project?* Who holds specific resources important for the project development?, etc.

Stakeholder analysis was driven by questions such as: *what are/ can be stakeholders' roles in the project? What are their interests, attitudes for the project? How can they contribute to the project?* ; etc.

A synthesis and discussion part is then generated based on the two cases. Here, the findings from the two cases are compared and set in the light of the theoretical framework. The need for a new stakeholder engagement model/tool tailored specifically for SED Project is identified.

The stakeholder engagement model/tool is finally developed, presented and discussed. A general discussion of the thesis is then offered.

3.3 Data processing

This research is a qualitative one. It aims at developing concepts that will contribute to the understanding of social phenomena in rather natural than experimental environment (Flick, 2007). The theoretical background inspires and informs the methodological approach.

Throughout the research there has been used a triangulation of methods, i.e. several different methods have been used to data collection as well as for data analysis. The theoretical background inspires and informs the methods used. A summarized representation of the methods and their use within each research part are visualized in the following Table 2.

Table 2: Data collection and analysis methods, and their relation to theoretical background

The research part	Data collection and analysis methods	Relation to theoretical background
Exploration of the conceptual framework	**Data collection** • Literature review • Document analysis • (Snowball technique) **Data analysis** • Content analysis • Synthesis	• The theoretical background was limited to *the proactive, strategic environmental project management theory* and to the *stakeholder theory*. These were found necessary in order to develop the research.
Analysis of Port of Rotterdam case	**Data collection** • Literature review • Document analysis • Case study • Interviews **Data analysis** • Content analysis • Interpretation • Organizing • Triangulation	• The literature review and document analysis was done through the lens of the theoretical background • The interviews were established with persons that had both knowledge of the proactive environmental process and the stakeholder management • The questions to interviews were informed by the theoretical framework and structured around its relevant aspects • The theoretical background helped structure the presentation of findings in this research
Analysis of Port of Aalborg case	**Data collection** • Literature review • Document analysis • Workshop (on Boot camp) • Questionnaire (evaluation forms) **Data Analysis** • Classification (the answers from evaluations put in the table with predefined classes) • Interpretation	• The literature review and document analysis was done through the lens of the theoretical background • The workshop implementation and the questionnaire and the analysis of its results were structured on the stakeholder theory • The proactive environmental project theory contributed to setting the context within stakeholder analysis was done • The theoretical background helped structure the presentation of findings in this research
Discussion of empirical results	-	• It is based on institutional theory • It is as well seen in the light of sustainability through partnerships theory
Development of Stakeholder engagement	Synthesis	It is especially the stakeholder theory that informed and supported it

3.3.1 Data collection methods

3.3.1.1 Literature review and document analysis

Literature review and document analysis is one of the most used research method (Bowen, 2009). It was also used as a method for the different parts of this thesis e.g. to inform the delimitation of theoretical framework and the exploration of the two cases, the case of Port of Rotterdam and the case of Port of Aalborg.

The theoretical framework is based on the data collected through literature review and document analysis. Literature from different fields such as environmental management, sustainable development projects, project management, sustainability management, strategic management, stakeholder theory, stakeholder management, action research etc. has been reviewed, analysed and set together to form the context of the study. Snowball technique was used to dive deeper in the field of sustainable development projects, environmental management and stakeholder theory for shaping the conceptual field of this study.

Concerning the case of Port of Rotterdam and the case of Port of Aalborg the literature review and document analysis was used with the aim to create an overview over the cases. In the case of Port of Rotterdam reports, relevant Port webpages, academic articles were used to collect as much data about the environmental management process they have been through over the years, and about the stakeholders who have been involved in the process, their roles and the stakeholder management system. Snowball technique was also used here to find the relevant data. The literature review was as also used with the aim to identify relevant persons for meetings and interviews during the visit of the port.

In the case of Port of Aalborg, the literature review and document analysis (such as relevant port websites, reports, power point presentations, etc.) were used to get an overview on the Port of Aalborg and its activities concerning sustainability in general the 'Strategic environmental development' in specific. Specific internal documents such as project initial description documents, compliance report (Haugaard &Nielsen, 2014) have been studied to explore the project background and to inform the stakeholder approach.

1.1.1.1 Case study

The research is grounded in the problematic of the 'Strategic environmental development' project initiated by Port of Aalborg and Aalborg University. The project aims at applying environment as a strategic parameter for the Port of Aalborg development. By this, the research has Port of Aalborg as a case within which's context the research takes place.

In addition, the research takes Port of Rotterdam as an inspirational case in order to learn from its experience and practices regarding the strategic environmental development approach the port had for the last more than twenty years and to get inspired by their management for stakeholder system.

Later in the research the processes regarding the proactive environmental management and the stakeholder management activities of the two ports will be presented. However, an initial presentation of the two ports' organization, size, etc. is necessary to understand fully the context within which the proactive environmental management projects and stakeholder systems take place.

Port of Aalborg

The Port of Aalborg A/S, is a limited company with the municipality of Aalborg owning 100 percent of the actions (Haugaard &Nielsen, 2014). Its organization bases on the board of the port, the leadership of the port and the subsequent specific departments such as infrastructure and environmental development, traffic and operations, etc. (PoA, 2015c). The Board of the Port of Aalborg consists mainly of city municipal councillors with the mayor as chairman (Haugaard &Nielsen, 2014).

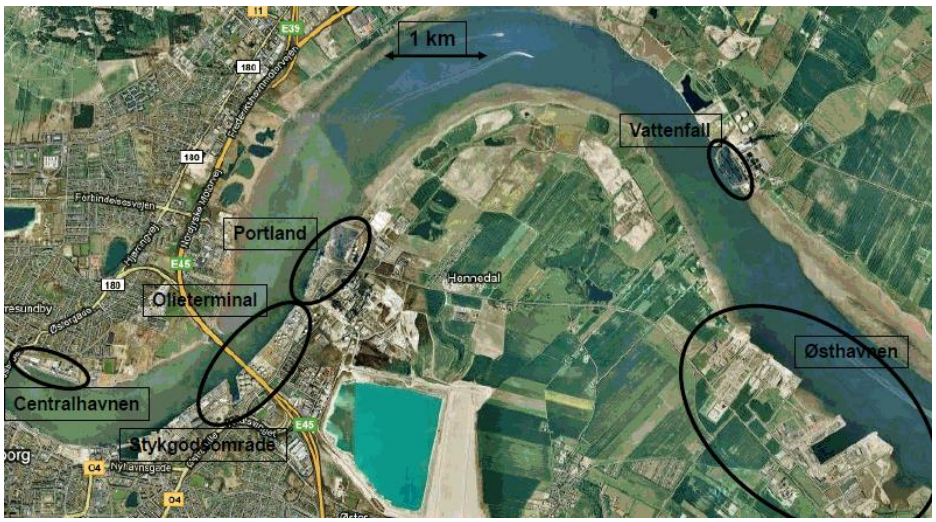

Figure 4: Port of Aalborg (Holstein, n.d.)

Port of Aalborg is a company mother to other 3 daughter companies (100%) and main actioner in 4 other companies with a share between 30 and 55% (Holstein, n.d.).

With its 420 ha of port area, Port of Aalborg is the second largest port in Denmark after the port of Odense, that stretches on 600 ha (DP, 2014). The port area stretches on several areas around Aalborg (as seen in the Figure 4) having their names according to their location, e.g. Centralhavnen, placed close to the central part of the city, Østhavnen, placed in the Eastern part of the city and Nordhavnen- in the northern part of the city (Figure 5) (PoA, 2016).

Figure 5: Aalborg's port areas: Portland, Oliehavnen (oil terminal), Østhavenen (Eastern port area) and Centralhavnen (Central port area), Nordjyllandsværket (North of Jutland power plant). (PoA, 2016) (Holstein, n.d.)(a larger version of the pictures is offered in Annex I)

Regarding the goods managed on its area Port of Aalborg is the 4th biggest container terminal in Denmark with a turnover of 145 million DKK in 2015. The company has around 75 employees but keeping busy up to 6331 persons in indirect jobs. (PoA, 2016)

Geographically, as seen in the Annex I, Port of Aalborg has a sailing distance of 30 km from Hals Harbour and 67 from the Buoy B7 point in the Kattegat (PoA, 2016).

With its 420 ha Port of Aalborg accommodates commercial sites leased to different businesses such as cargo, logistics, services, etc. (PoA, 2015d) The main industries located on the port's area are within oil, grain and feed , bulk and handling of cargo (including the offshore structures). The wind industry is as well represented by the presence of the company Siemens Wind Power on the port's area. Besides, Port of Aalborg is the base for Greenland traffic from Denmark and accommodates Royal Arctic Line and Aalborg Container Terminal. (DP, 2014)

Port of Rotterdam

The Port of Rotterdam is an independent company with shares from Municipality of Rotterdam (ca. 70%) and the Dutch government (ca. 30%)' (PoR, n.d.a) (Hiranandani, 2014) As an organization it has an hierarchical structure with the Shareholders in top of the decision-making process through the General Meeting of Shareholders, followed by the Supervisory Board that is controlling the Executive Board. The Executive Board is responsible for the corporate development of the port. It is the head of the several daily management departments such as commercial department (responsible for finding and binding companies

that conduct their business in the port) and environmental management department ('responsible for the development and implementation of policies in the field of environment, spatial planning and sustainable development' (PoR, 2015a)). (PoR, n.d.b)

Geographically, Port of Rotterdam occupies 12,603 ha of marine and terrestrial area.

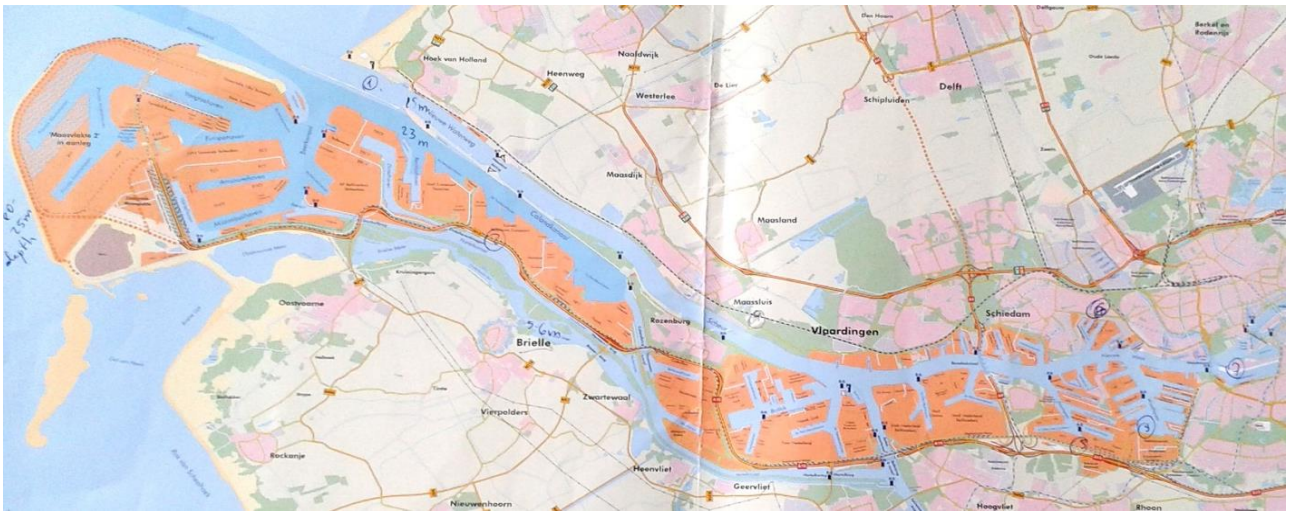

Figure 6: Port of Rotterdam geographic position

With its 5,965 ha of land territory and 6,638 ha of water and railway lines Port of Aalborg accommodate commercial sites leased to different national and international businesses (PoR, 2016b) (Hiranandani, 2014). The length of port area is approximately 42 kilometres as also pictured in the Figure 6 (PoR, 2016b).

The port authority has 1100 employees while offering a direct employment to around 90.000 jobs within over 1500 companies with their offices on the Port of Rotterdam area in more than 60 categories such as transport(maritime, airfreight and terrestrial), industry (offshore, oil/refineries, and(petro)chemical), cargo handling and port promotion (PoR, 2016b) (Havenkoerier bv, n.d.). The port Authority's turn -over is around 660 million euro in 2014 and 676,9 million euro in 2015. The PoR manages 466 million tons of goods per year while handling 30.000 sea-going vessels and 111,000 inland vessels yearly. (PoR, 2016b)

To conclude is worth mentioning that Port of Rotterdam is considerably larger than Port of Aalborg. The following Table 3 visualizes the difference between these two ports on several sectors. The ports cannot be compared, and it is also out of this research's scope. The reason for choosing Port of Rotterdam as a case in this research was simply to get inspiration on the implementation processes of a strategic environmental development process and the stakeholder engagement approaches within a port context, as the Port of Rotterdam intends to become the most sustainable port in the world. Port of Rotterdam, by being an ambitious port regarding sustainability and the environmental work especially, presents the perfect inspirational case for Port of Aalborg. Learning from the best in the branch was an aim of the visit.

Table 3: Overview of difference between Port of Aalborg and Port of Rotterdam

Indicator	Port of Rotterdam(PoR)	Port of Aalborg (PoA)	PoR times bigger than PoA
Area	12,603 ha (5,965 ha- commercial sites, 6,638 ha - water and railway lines)	420 ha	30 times
Length of port area	42 km	-	-
The Port Authority's employees	1100	74	14 times more employees
Jobs	90.000	1.200 – 6331(2007)	More than 14 times more (indirect) jobs
The port Authority's turn over (per year)	660 (2014) and 676,9 (2015)million euro (in DKK 5.043)	145 million DKK	35 times more turn over per year
Goods managed (per year)	466(2014) and 466,4 (2015) million tones	2,6 million tonnes (2015)	179 times more goods
Vessels managing (per year)	30.000 sea-going vessels and 111,000 inland vessels	1.656 - 2200 (2007)	18 time more sea-going vessels

1.1.1.2 Interviews

As a result of the literature review and document analysis the Strategy Advisor and Senior Manager of Port of Rotterdam has been contacted. He sent further contacts to relevant persons from Stakeholder relation department and persons that have been directly involved in the sustainable development process and stakeholder management. Three relevant persons have been identified:

- The Manager Hospitality & Events, Communications & External Affair
- The Professor Ports and Waterways, Hydraulic Engineering Section, Civil Engineering and Geo-Sciences, Delft University of Technology, Director Environmental Monitoring Maasvlakte 2, Project leader for the development and the implementation of the Environmental Ship Index, Port of Rotterdam
- The Programme Manager External Affairs at Port of Rotterdam

They have been contacted, the purpose of the desired interview was explained and guiding questions of a semi-structured interview were sent. The questions were formulated around the theoretical framework of this research: strategic environmental management process and stakeholder management. The questions were only guiding the later meetings and discussions with these three relevant persons during the visit at Port of Rotterdam.

Besides meetings with these port employees, another meeting was organised with:

- The Policy Advisor Environmental and Sustainability at Deltalinqs.
- The Cluster Commissioner

This meeting had the aim of getting insights in their experience with industrial symbiosis creation and development. Semi-structured interview guide was sent by email previously to the meeting[1].

At the meetings, presentations and open discussions, inspired by the previously sent semi-structured interview guides were taking place. The aim of this approach to the meetings was to hear as much as possible of the employee experiences and to get as much inspiration as possible from their work until now regarding the strategic environmental management and stakeholder engagement. Questions have been asked during both presentations and conversations in order to specify the points of interest. Notes have been taken, that were later used in the analysis of the Port of Rotterdam experience together with data collected through other methods.

1.1.1.3 Workshop (on Boot camp)

In the development of the SED Project, initiated both by Port of Aalborg and Aalborg University, a working group with representatives from The Danish Centre for Environmental Assessment, a special consultant at Aalborg University and me was formed. My role in the group was to contribute to the development of the project by conducting this thesis. Furthermore, I was active part of the meetings where the further process of the project was designed. Some of those meetings relied on the tasks to design and conduct the Boot camp. Boot camp was a one day working meeting, where representatives of the strategic stakeholder groups such as business representatives, municipal and regional authorities, knowledge institutions (Aalborg University and its sub organisations: the Danish Center for Environmental Assessment (DCEA), Center for Logistics (CELOG)), consultants' representatives and of course Port of Aalborg leadership was present. The following Table4 presents the number of representatives from each stakeholder group present at the Boot camp.

Table 4: Stakeholder representatives present at the Boot camp

Stakeholder group	No. of representatives
Authorities (municipal and regional)	6
Port of Aalborg	4
Business companies	7
Consultants	3
Knowledge institutions	6

The Boot camp focused on getting feedback from these stakeholder groups on the SED Project's possibilities, challenges, etc. but also to get their input regarding their own roles, interests, actions, etc. as seen by themselves. The Boot camp was therefore planned on two workshops: one in the first part of the day that focused on the project, and a second workshop in the second part of the day that focused on stakeholder self- analysis.

[1] The visit at Port of Rotterdam was organized and arranged by the author of this research, but the SED Project director from Aalborg University and, in the same time also supervisor for this research, together with the Technical Director of Port of Aalborg were joining the meetings.

I was mostly involved in the second workshop by developing the content together with the other three university representatives and the technical director of Port of Aalborg. Furthermore, I made the presentation on stakeholders' general role in such a project, and presented the Port of Rotterdam experience with engaging stakeholders (see Annex II). I was also conducting the workshop facilitating the discussions.

During the stakeholder-focussing workshop the stakeholder representatives present were identifying and discussing their interests, roles and contribution to the project and the attention needed points. The workshop was organized as a 'dialogue-café' where the stakeholders with the same functional role (authorities, knowledge institution, business and consultants) were grouped in one group. They were given a flipchart paper with three points they had to discuss: their interests, roles and contribution and the attention needing points. The groups had 45 minutes to discuss and write down their findings. At the end of the 45 minutes, one representative from the group remained at its place, while the other joined other groups, at their own choice. The new persons joining a group were presented with the previous findings and had to brainstorm and discuss other points that have not been indicated. Each group had 15 minutes for this process. At the end of the session each group presented their own results (see Annex II). These results were serving as primary data for the stakeholder analysis. The data were summarized and gathered in two common tables, which's content was analysed and the results presented in the section 5.3. of this report.

At the end of the Boot camp, participants got a questionnaire with them home to complete and return. An example of the questionnaire is presented in the Annex II. The aim of the questionnaire was to shed light and generate data on the stakeholder's attitudes and expecting actions towards the sustainable development project Port of Aalborg is currently conceptualizing.

Seven questionnaires were returned. The data from them was grouped according to the functional role of the stakeholder, i.e. knowledge institution (Aalborg University, The Danish Center for Environmental Assessment (DCEA), Port of Aalborg, business, etc. Then, the data was analysed, interpreted and classified according to the pre-established parameters (attitudes for the project, effects of the project on stakeholders and vice-versa, and stakeholders' expectations from each other and from the project) based on the theoretical framework and introduced in a common table. The overall summary of the findings is then presented.

Aalborg University has been represented at the workshop II by persons having different positions at the university (DCEA representatives, directly involved in the SED Project; researchers collaborating with the port on other issues than SED Project; researchers with probability for collaboration), having therefore different relations with the Port of Aalborg and different interests. The results within this group revolve merely on how university as knowledge institution rather than how specific actors within this institution can act.

The data from this and the first-part of the day workshops are introduced in the Boot camp report (Kørnøv, et al., 2016) where my contribution was especially in regards to the stakeholder analysis part.

3.3.2 Data analysis

For the purpose of data analysis there were used a triangulation of methods. Triangulation as an analytical method refers to the fact that data from different sources (conversations, meetings, literature review and observations) have been analysed and set together in a common analysis text (Flick, 2007). The analysis of the data was done with the conceptual framework in mind and with the aim to operationalize it.

The data acquired from literature review, document analysis, interviews, meetings and workshop was organized by cases and by relevant subject (by corresponding to the proactive environmental projects, and by stakeholder engagement). Content analysis was then done by classifying larger groups of texts with the same meaning in common groups. By texts are not meant only actual texts, but also notes from interviews, information from websites, etc. (Bowen, 2009). The texts within grouped categories were then interpreted, organised and synthesised so they responded to the purpose and aim of this research. The analysis was then presented in the form they are in this research.

3.3.3 Data validation

The planning, designing and conducting the workshops were effectuated together with two professors and a consultant from Aalborg University. The validity of the methods was assured (Flick, 2007). In addition, the results from the workshops are planned to be sent back to the participants and get their validation. Meetings with the Port of Aalborg Authority about the results of this study and especially regarding stakeholder analysis part and further process are planned after the handing of this thesis. Furthermore, the stakeholder assessment model was developed in cooperation with the senior consultant at Aalborg University, based on the findings of this research. Besides, the triangulation of different methods assures the validity of this research (Olsen, 2004).

4 Inspirational case: Port of Rotterdam

The following chapter answers the RSQ 2: *'How can stakeholders be engaged within a port strategic environmental development?'* and aims at exploring the strategic environmental development process and the stakeholder engagement approach within Port of Rotterdam.

The reason for having Port of Rotterdam as an inspirational case it was to learn from their experience with a strategic environmental development approach the port had for the last more than twenty years and to get inspired by their management for stakeholder system. In the context of strategic environmental approach of Port of Rotterdam it is worth mentioning that since more than a decade the port is the frame for several industrial symbioses and is as well entering symbiotic relationships with the surrounding industrial complex.

The findings presented here are the results of literature review, document analysis and the notes accumulated during the meetings held in Port of Rotterdam. The data gathered have been analysed and structures based on the theoretical findings concerning the sustainable development projects and stakeholder theory.

4.1 Port of Rotterdam's proactive environmental management approach for sustainability

According the sustainable development projects theory, it is important first to define the characteristics of such processes, i.e. the project's scope, value and principle basis, specific environmental approach and actions, etc. It is especially through these characteristics that Port of Rotterdam experiences with a proactive environmental development process will be described.

The Port of Rotterdam is the largest European port with Europe's largest, most modern and sustainable industrial clusters (petrochemical and energy complex of Europe) (Hiranandani, 2014). It is a port activating after the 'landlord' model, outsourcing the services to extern companies. The Port Authority, having the overall management responsibility has the ambition of and works towards making the Port of Rotterdam the 'world's most sustainable port' (PoR, n.d.d).

Sustainability is deeply integrated in the management and development practices of the different port departments. Port of Rotterdam's sustainable development is as well an integrative part of the Rotterdam city's sustainability strategy. Together with several other actions, the sustainable port should enhance the chances for Rotterdam city becoming sustainable. (Soffel & Maguder, 2013) The ambition is that the city of Rotterdam becomes 'a fully-fledged World Port City that can serve as a home base for the leading firms in the cluster of marine service providers (insurance, legal services, financial) and the marine industry' while Port of Rotterdam becomes the most sustainable port in the world. (PoR, 2014)

Following sustainable development path is about optimizing the entire system through industrial symbiosis, smart technologies, flexible port planning and sustainability requirements for customers. 'It is about creating added value through establishing synergies and clustering, the last being the essence of reducing costs and making one more competitive' (Interview, 2016d). The key to success is seen as the fact of moving together as 'one organism' with one vision and sharing the same values. Furthermore, equal commitment is absolutely necessary for the common success.

Sustainability-based value creation is anchored in both business and environmental activities. Within these fields all activities are focused on the ability to achieve future growth of the port industrial complex, coupled with an improvement in the quality of the environment. Thus the Port of Rotterdam investments and commitment values, including those important for their stakeholders are not only created for the economic sake but also for society and environmental sake. (PoR, 2015b) (PoR, 2015a)

Strategic environmental management approach within Port of Rotterdam has a longer history. The thought of doing '…more than just improve efficiency' (PoR, 2014) has longer been in the organization and gave tangible results nowadays. Since beginning of 1990's, when the need for port enlargement appeared, strategic environmental development actions have been set in place. The first 69 business corporations, headed by the industrial association Deltalinqs have advanced implementation of environmental management systems, during the INES project in 1994-1997 period (Baas, 2007) (Baas & Huisingh, 2008) During the INES process 'The INES Declaration', a joint agreement formulated by 50 environmental business co-coordinators and members of the Deltalinqs organization was accepted by all the Deltalinqs members.

Even though it was not formally accepted it was respected, it showed what companies mean by sustainability and created environmental commitment among businesses. (Baas, 2005)

INES project being a success it was continued by INES Main port project within the period 1999-2002 and focused on several themes such as water, CO2/energy, utility sharing, rest products/Waste management, soil, and logistics with the aim of identifying, supporting and creating industrial symbiosis projects among different businesses. Along with this process, a more strategic process started. The industry (businesses), port authority, government, university and environmental advocacy organization come together in a strategic decision-making platform. They have been however not encouraged to contribute with new ideas, concepts or technologies, even though much interest was shown. (Baas, 2007) (Baas & Huisingh, 2008) Within the period starting with 1999 many smaller projects based on industrial symbiosis concepts have been set in place. (Baas, 2005)

Beginning with 2003 the activities related to industrial symbiosis were included in the regional development program ('*Sustainable Rijnmond'* and the '*Energy 2010* programme') under the umbrella of the ROM-Rijnmond programme. Here industry representatives become members of different working groups at regional level. Parallel, a new project have been initiated ('*R3: Sustainable Enterprises in the Rotterdam Harbour and Industry Complex')* where a new strategic discussion platform between relevant stakeholders have been set in place. This was a 'part of the driving mechanisms towards a sustainable region' (Baas, 2007) (Baas & Huisingh, 2008) and had the aim to 'share the reflective learning processes from projects within and around their own organizations' (Baas, 2008). The project runes from 2003 to 2010 and included several stakeholders from different sectors (Baas, 2008)(see Figure 8)

In the same time beginning with 1997 the planning of the Rotterdam Main port Development Project (PMR) started (Kelly, 2005). It was the planning of the port expansion area of the nowadays already opened Maasvlakte 2, with a strategic focus on sustainability.

Sustainability and especially the strategic environmental management was included in all port activities. Port of Rotterdam has included strategic environmental considerations in 'the general process of port management: we have a port environment policy on a more strategic level'. (PoR, 2015a) The port's environmental philosophy is that 'sustainability results in economic value' Therefor the port has the focus on circular economy and bio based economy, among others. (PoR, 2015a) It is the port's ambition to be the company creating economic value while taking care of its employees, society and environment, at local, regional, national and maybe European level (Interview, 2016a) (Interview, 2016b)

The work with sustainability (industrial ecology and sustainable development while extending the port area) in Rotterdam have been taking place through many collaborations and at least establishment of 2 strategic platforms, where stakeholders could meet, share knowledge and develop common trust and plans. (Lange, et al., 2012) (Baas, 2005) 'What is less evident, however, is that trust is not just an interpersonal good feeling but an outcome of many other actions taken by partners.' (Gray & Stites, 2013)

The industrial symbiosis (energy and chemical cluster) established back in late '90's is now developed not only including the companies on port area, but also far beyond it, including the surrounding industrial

complex. Port of Rotterdam offers attractive cluster advantages with numerous synergy possibilities for the different businesses. Some companies can 'supply their neighbours with raw material or semi-manufactured products'. The waste products of some other companies can serve as raw material for others. (PoR, 2016b)
The strategic environmental management approach over the years has brought considerable results. The industrial clusters account for over 55 percent of the port's revenues; around 40 percent of the added-value in the port of Rotterdam, over 13000 direct jobs, etc. (PoR, 2016b)

Existences of such symbiotic relations and their benefits however have not solved the port's environmental challenges. The port is in a continuous development and challenges such as expansion into new markets, environmental issues, resource efficiency and circularity are pressing issues. These are though approached with a systematic approach by working in partnerships with businesses, industry, knowledge institutions, municipal and regional authorities and other relevant organizations. Besides, focus is raised on the attraction and facilitation of new start-ups and supporting innovative companies in their further growth by means of funding distributed via innovation funds. (PoR, 2014)This resulting in already several major projects already functioning such as e.g. Energy Infrastructure Delta Plan, the Circularity Center and the Bio based Hub (PoR, 2014) and four specific strategic incentive programs ('Accelerator programmes' (PoR, 2016c)) targeting strategically the environmental management:

- **Port XL** – an open innovation program where ten start-ups receive intensive coaching and support for establishing a new enterprise. (PoR, 2016c) Port of Rotterdam Authority has joined forces with industry and appointed around 150 mentors and 200 investors, corporate partners and sponsors to support port-related industry innovations.
- **Smart Port 2.0 – is an** initiative of Deltalinqs, the Port Authority, the Municipality of Rotterdam, Delft University of Technology and Erasmus University Rotterdam for knowledge generating regarding the PoR. The initiative develops through a five-year programme that focuses on different themes among which the transition to a circular economy is of high importance. (PoR, 2016c)
- **Innovation Lab** – is a partnership between incubator 'YES! Delft' and the Port of Rotterdam Authority, that works to convert the existing and new port challenges into new 'business models and start-ups that can make the difference in making the Rotterdam port and its extended hinterland cleaner, smarter, safer and more efficient.' (PoR, 2016c) From the meetings it was specified that innovation is generated and encouraged through new start-ups and the competition on sustainability. Specific requirements for sustainability are posed to the new companies, but also to the existing companies. This is to encourage the port clients to work with, support and promote sustainability in their own practices. Both start-ups and the sustainability requirements are in line with the goals of the corporation. (PoR, 2016c)
- **Rotterdam Innovation Districts –** are those locations where an industry cluster connects with new start-ups to generate innovative outputs to serve the benefits of the port and its stakeholders. These districts are the product of a partnership between knowledge institutions and business.

The Port targets as well development of 'an optimized Port Innovation Ecosystem' (PoR, 2014) through its hi-tech terminals at Maasvlakte 2. Therefor it is especially on the new port area Maasvlakte 2 that special environmental requirements are established. There have been introduced special, pro-environmental requirements for new build environment and environmental requirements for transport means such as

trucks (see Annex III). Furthermore, sustainability requirements have been introduced for the companies renting area on Maasvlakte 2. (Interview, 2016a) (Interview, 2016b)
Besides, these specific environmental requirements and promotion of clustering and industrial symbiosis, the Port Authority, working together with its customers and surrounding community, focuses as well on CO_2 capture and its storage in the North Sea, on renewable energy and 'on the recycling of waste heat, steam and CO_2 (energy efficiency) in order to hold Port of Rotterdam attractive as a business location' (PoR, 2016a).
To summarise the strategic environmental development process the following Figure 7 is proposed.

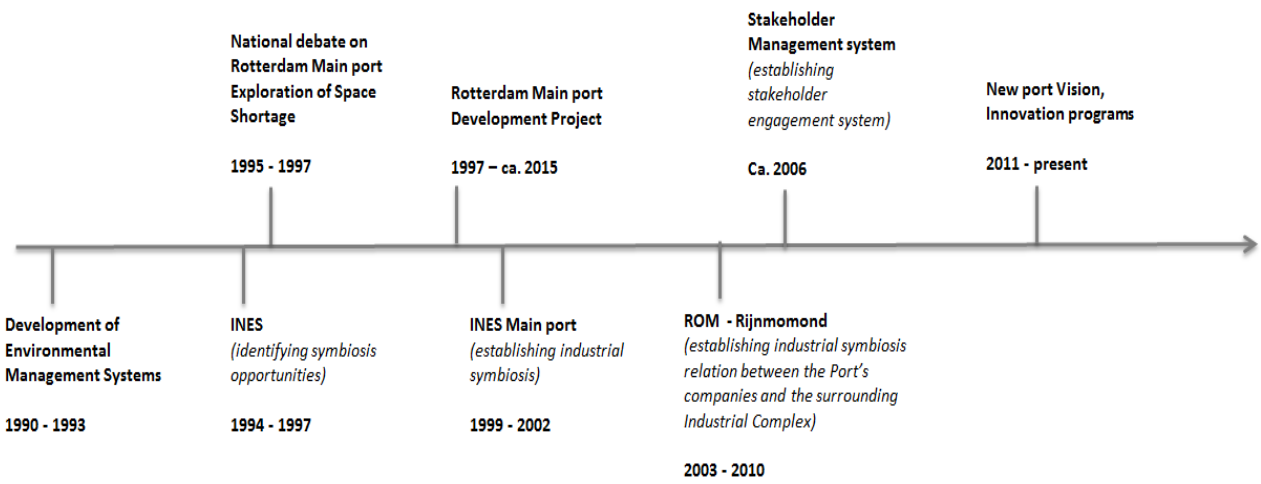

Figure 7: Strategic environmental development at Port of Rotterdam

In the figure, it can be seen that parallel processes of development of the new main port area, Maasvlakte 2, and the development of industrial symbiosis have been going on. In reality it is not only these processes that have been taking place, but many other formal and informal processes as well. Such processes are very complex and they will always interconnect with each other and therefor very difficult to be pictured within a figure. That is as well the case of Port of Rotterdam strategic environmental development processes.

All the port's outcomes until now and nowadays activities, the Port of Rotterdam is only achieving in partnership with its stakeholders. Engaging stakeholders in different processes is a crucial aspect for the port. Exploring the Port of Rotterdam stakeholder management system is therefor of a crucial importance for the scope of this research.

4.2 Stakeholder engagement

This section presents the findings on Port of Rotterdam's input regarding the stakeholder engagement. The structure and the findings described here are based on the stakeholder theory, i.e. describing the overall management system that the port uses for their stakeholder engagement, the way they integrate the stakeholder values in the port's activity, description of specific stakeholder identification and analysis methods, etc.

The Port Authority has an integrative approach to development, involving all relevant stakeholders in the development process (PoR, 2014). Stakeholders and their values occupy a strategic role in the port

development. The cooperation and dialogue with business, government, social partners, and local residents is seen as the key for port enhancement and preservation. Great attention is paid especially to stakeholders' values such as 'transparency, honesty and respect for different viewpoints and interests'. (PoR, n.d.c)
At the meetings in Rotterdam it was as well mentioned the importance of sharing common values and making common agreements and common long-term visions that identify these. Some of these agreements are presented in the Annex III. The further respect of the common values, by e.g. using 'like for like' principle (where a stakeholder is compensated for its loss with a similar product or service) is one of the ways the value respect and creation for the stakeholder takes form. (Interview, 2016a) (Interview, 2016b) It has to be mentioned that it is still Port of Rotterdam that brings the proactive environmental approach to the client and initiates the dialogue and collaboration on sustainability issues with it. 'The philosophy of the port is brought to the client' (Interview, 2016b).

The engagement of stakeholders is perceived as an unavoidable thing if sustainable development should be achieved. 'We need to resolve common problems jointly. It is a matter of making them sustainable liveable together'. By sustainable liveable it is meant that the stakeholders are invited to collaborate on sustainable matters and to invest in liveability issues such as working and living environments, biodiversity, landscape, education and jobs, etc. (Interview, 2016b)

An early, transparent stakeholders' involvement is at the core of the recommendations for how to achieve sustainability. A transparent process was however not assured from the beginning of the sustainable development process Port of Rotterdam still is. The planning process of Maasvlakte 2 and the establishment of industrial clustering and symbiosis relations for example was enormous and lasted more than a decade involving different groups of stakeholders at different times, as pictured in the Figure 8 (Kelly, 2005) (Baas, 2005) (Baas, 2008). These are however not the exhaustive list of stakeholders involved in the process. Many other stakeholders have been informally involved without playing a strategic role in the development process.

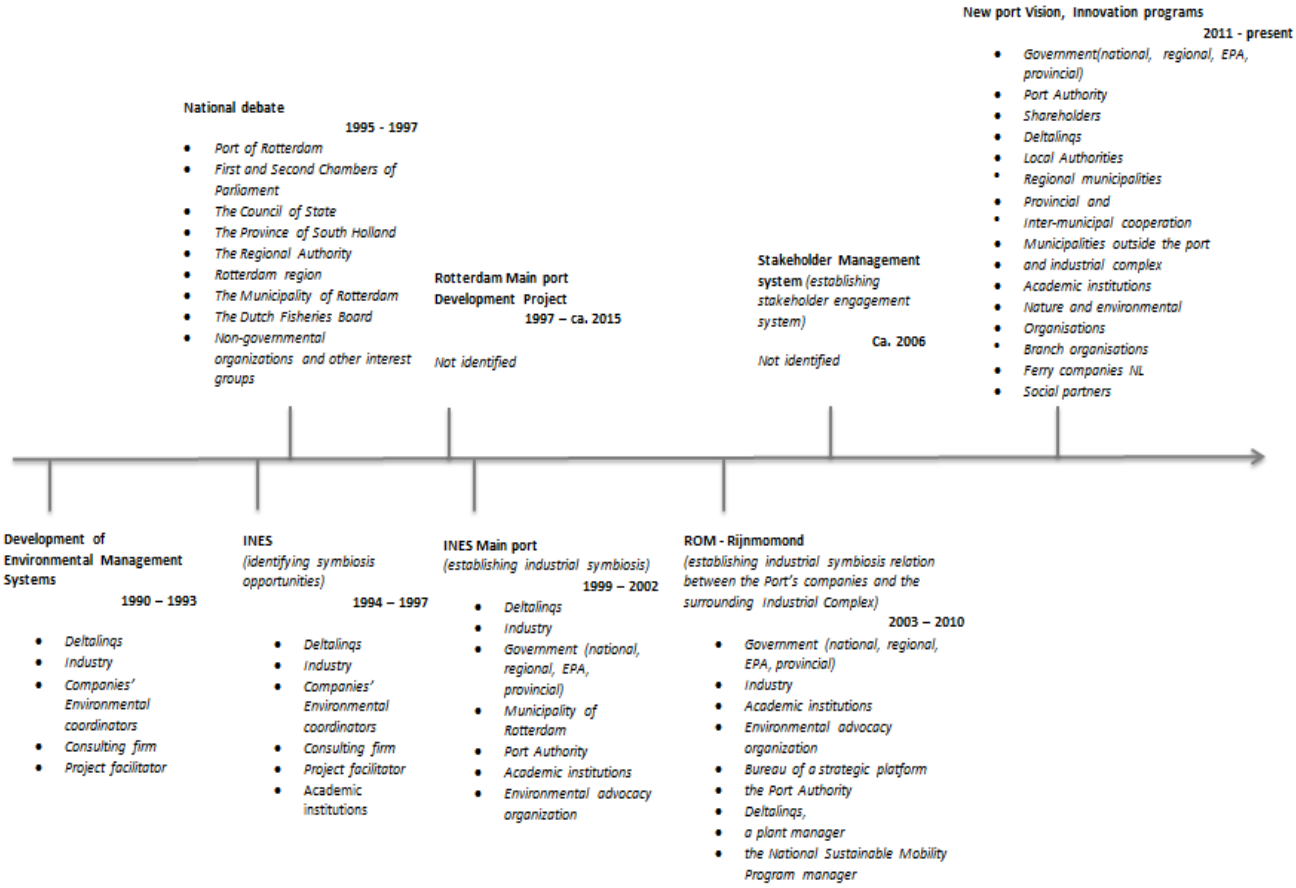

Figure 8: Strategic environmental development at Port of Rotterdam and stakeholders involved

Kelly (2005) describes in details how problematic the planning process of Maasvlakte 2 was and who exactly played an important role. Baas describes the establishment of industrial symbiosis relations within and beyond Port of Rotterdam in different academic articles (Baas, 2005) (Baas, 2008) (Baas, 2007) (Baas & Huisingh, 2008).

Different stakeholders have played a crucial role within the strategic environmental development process. Among them, especially several key stakeholders have to be mentioned:

- **Management teams** (both at local and regional level) were created with governmental, regional and local authority representatives. They were responsible for 'environmental and spatial planning, energy supply, social work, sport and cultural affairs within their jurisdictions' (Kelly, 2005).
- **Port Authority –** being in the centre of different coalitions and trying to alienate conflicts with stakeholders, but also to adjust the implementation of the port strategy with a more inclusive approach. (Kelly, 2005) (Interview, 2016a) (Interview, 2016b)
- **Environmental NGOs** – played a crucial role for the formation of the whole Maasvlakte 2 project's physical frame, for the formation of new habitat area for the Natura 2000 area that the project has occupied (Interview, 2016b). Furthermore, the environmental NGOs played a key role for the Port of Rotterdam future strategic work with stakeholders and their stakeholder management system. The history of relations between environmental NGOs and governmental authorities was based on previous conflicts. This contributed to other conflicts during the sustainable development project of

Maasvlakte 2. Coming into conflict with decisions that have been taken by governmental authorities during the project planning, the NGOs got the media attention and were putting the whole project at risk. (Kelly, 2005) Besides, at the meetings in Rotterdam it was mentioned that the conflicts with different other stakeholders have taken the Port authority in the court several times. (Interview, 2016c) This fact has made the port authority to take a more inclusive approach to stakeholders and develop a stakeholder management system.

- **Interest organizations** (such as Deltalinqs, etc.) – played a key role especially in the work for achieving environmental improvements through creating industrial symbiosis and clusters among the businesses on the port area, but also beyond it (ICCT, 2016)
- **A facilitator** –played a key role in the negotiations between different stakeholders in the conflict situations. He was employed specifically to be neutral and help alienate the conflict. (Kelly, 2005)
- **Consultants** – assisted with the Port development projects (Kelly, 2005)
- **Academic institutions** – Both Erasmus University in Rotterdam and University of Delft have contributed with their research to the sustainable development project. At different point in time, different universities had different roles. (Baas, 2005)
- **Deltalinqs –** the coordinator role for identifying and creating synergies relations in the context of industrial symbiosis and clustering

It is worth mentioning that these are not the exhaustive roles that stakeholders played during the development process. Their roles have changed many times during the process. For example, the Rotterdam municipality has shifted from being observer to a process, to being totally involved in the process and to being a decision-making body during the process. The same situation applies to other stakeholders as well. (Interview, 2016c)

Thus working, collaborating and creating together with stakeholders in a transparent way and as early as possible in the process became a tradition, born from necessity of minimizing risk and creating added value to the port, businesses and industry, society around the port and to the natural environment. It is now deeply encrypted into the development way of the port. It is included in the port's strategic documents such as Vision 2030. Here it is acknowledged that a close collaboration with strategic stakeholders, such as governmental, regional and municipal authorities, businesses and knowledge Institutions 'can result in high – quality outcomes for entire living environment'. (PoR, 2014) The meetings in Rotterdam confirmed the necessity and importance of continuing working with stakeholders and for stakeholders.

4.2.1 Stakeholder management approach

A corporate stakeholder management department has been established with several employees to manage the relations with stakeholders. This implies stakeholder identification and their analysis, but also stakeholder relations monitoring and evaluation. The department works with a strategic stakeholder management system based on the Mutual Gains Approach, which focuses on identifying stakeholders based on different projects, listing and understanding the stakeholders' interests, consciously inform and involve them for creating added value for business and industry, society and environment. It is also about 'searching for solutions together' so that 'win-win' situations are created. (Interview, 2016c) (Langbroek, 2016)

The approach that stakeholder engagement has is issue-based (see Annex III). This implies identification of issues within a project and then identification of stakeholders that are involved in it. The findings from such a stakeholder identification process are then plotted in a large table visualizing the stakeholders involved in specific issues. A thorough analysis of issue stakeholders is then made based on identification of stakeholders' stake (interests) and contribution (power, legitimacy, urgency, emotion and cooperativeness) for the specific issue. (Langbroek, 2016). A specific strategy can then be tailored for each stakeholder. This could imply either to inform, to involve or to make them as participants. The strategies tailored have the focus on creating win-win situations. (Langbroek, 2016)

The official stakeholder groups that the department enters into structural collaborations and dialogues with are:

- Shareholders
- Governmental and regional authorities
- Local authority
- Deltalinqs
- Nature and environmental organizations
- Other interest organization such as fishery
- Ferry companies NL
- Provincial and inter-municipal cooperation organizations
- Municipalities outside the port
- Industrial Complex

All these stakeholder groups are part of a so called Pilot Program, where structured dialogue takes places through strategic consultations several times per year, variating from stakeholder group to stakeholder group. (PoR, n.d.c) The customers (business and industry) and the port neighbours are not part of the Pilot program so the dialogue with them has another form (PoR, n.d.c). For example meetings with neighbouring municipalities are organized two-three times a year, depending on the urgency of the issues with a specific municipality, i.e. the influence the exact municipality could exercise on the port (Interview, 2016c).

Monitoring and evaluating stakeholder relations are documented in several published reports such as 'Stakeholder engagement survey 2015' and 'The reputation survey' where Port of Rotterdam reputation among stakeholders is studied (PoR, n.d.c). These documents are however not available for the public, therefor their closer analysis was not possible.

Based on the historical experiences with stakeholders a stakeholder management system was set in place. The aim with such a strategic stakeholder management system in Port of Rotterdam is to obtain a balanced growth (this 'requires a sustainable dialogue' with both stakeholders and regulations). A balanced growth, as also pictured in the Figure 9, is activating with respect for all relevant regulations ('license to operate') while based on stakeholder interests ('license to grow') (Langbroek, 2016).

Figure 9: Balanced growth equation (Langbroek, 2016)

The many years already strategic stakeholder management system in place it has created outcomes that can easily be named as best case examples. It is especially in the development area of Maasvlakte 2 that the importance of stakeholders was perceived and understood. Involving and engaging stakeholders in the processes have brought 'no bad surprises' for the project. The interests and possible objections have been known and action to alienate them could be taken in advance. Support from neighbouring areas was obtained instead of the previous contrarious position. The strong objections from environmental organizations were transformed into fruitful collaboration 'helping in finding solutions for the nature and environment such as e.g. the fishery dilemma in the North Sea' (Langbroek, 2016). Furthermore, the Port of Rotterdam Masterplan was changed and adjusted according to the interests of different stakeholders and the whole construction plan of Maasvlakte 2 met the requirement of inhabitants of the neighbouring communities. (Langbroek, 2016)

To summarise it can be mentioned that without a stakeholder management system Port of Rotterdam wouldn't have achieved the present results. A stakeholder engagement approach is therefore crucial for the sustainable port development process. Now that these findings have been made, a question arises: how these findings can be transferred to Port of Aalborg case? The answer to this question will be offered by first exploring the case of Port of Aalborg and SED Project in regards to stakeholder identification and analysis. A synthesis then is offered where the transferable findings from Port of Rotterdam to Port of Aalborg are discussed.

5 The case of Port of Aalborg: The 'Strategic Environmental Development' Project (SED Project)

This chapter aims at answering the RSQ 3: '*How can SED Project stakeholder be engaged in the project's development process?*' It is proposed to apply the analytical framework developed on basis of the theoretical context. In the following sections the SED Project context and scope is identified, strategic SED Project Stakeholders are identified and their roles, interests, attitudes and possible actions for the project are assessed.

5.1 Definition of SED Project context and scope

The SED Project is a very ambitious strategic commitment of Port of Aalborg and Aalborg University and aims at creating added value for all the project stakeholders through a proactive strategic approach to environment. The aim is to change the environmental attitude from being a threat to the port and its stakeholders to being an adding-value parameter for the existing and new businesses. The project aims at establishing new business models based on circular economy and in this way to establish mutualistic,

symbiotic and synergetic relationships between businesses, and between businesses and whole surrounding society (Kørnøv, 2015).

The SED Project is only at its very initial phase and project description is only in its shaping phase. The project initiators, Port of Aalborg and Aalborg University, acknowledge the role of stakeholders as crucial resources for creation of sustainability-based value within this project and therefor take an inclusive approach of stakeholders from its early phase.

At this initial phase the initiators of the project considered important to create a positive spirit and ownership of the project among its stakeholders and therefor decided to engage the stakeholders in designing the project so that it creates value for everybody. The project activities are to be identified together with the stakeholders so that they correspond stakeholders' needs and interests. The opportunities that circular economy brings such as industrial symbiosis are to be explored and new sustainable business models are to be created by and together with stakeholders. An integrative approach to stakeholders is desired so that the SED Project succeed and with it the port, business and society around them. Before being able to develop such stakeholder engagement approach, the SED Project stakeholders have to be identified and assessed.

5.2 Identification of project stakeholders

In relation to the SED Project several stakeholder groups have been identified. The stakeholder groups have been identified mostly with a focus on their role for the establishment of the desired industrial symbiosis within the project scope. However, other strategic environmental activities will as well include these stakeholder groups.

The identified stakeholders and their functional role are included in the SED Project stakeholder register. Such a project stakeholder register is always a large document in different table formats and occupy large spaces. Due to its measurement the stakeholder register for the Port of Aalborg sustainable development project is pictured in in the Annex IV.

'…as a business starts up, sometimes one particular stakeholder is more important than other' (Freeman, et al., 2010). As the SED Project just takes shape there are specific stakeholders that are more important than others at this specific project stage, while the other stakeholders can gain importance during the later project development phases. At this phase of the SED Project development several strategic stakeholder groups have been identified:

- Knowledge institutions (Aalborg University, DCEA, CELOG, etc.)
- Consultants
- Business companies
- Authorities (municipal and regional)
- Port of Aalborg authority

These stakeholder groups are found strategically important for the SED Project at this phase. As specified in the section 2.2. stakeholders are dynamic entities. Their attributes such as roles, positions, interests, needs, etc. can change over the time and with the change of the person representing the stakeholder group. It is

therefore crucial to revise the stakeholder register systematically and to assess them, in order to adjust their attributes and importance in relation to the SED Project's specific phase.

5.3 Strategic stakeholder analysis: interests, expectations, attitudes, roles, impact, action and attention needing points

Engaging stakeholders in shaping a project is a process where many interests are meeting and different attitudes are put in place. There can as well be many expectations from the project while different roles can be perceived by different stakeholders. In the following section the results from the workshop II at the Boot camp with the strategic stakeholder groups are presented in regards to several attributes.

5.3.1 Strategic stakeholders' attitudes, impact, action and expectations

As a result of the workshop II at the Boot camp and the evaluation questionnaires completed at the end of the Boot camp the stakeholders' attitude for the SED Project, the impact of the SED Project on stakeholders and vice versa, together with the stakeholders' expectations from the SED Project and from each other and possible further actions were identified.

The **Table 5** presents the outcomes organized per strategic stakeholder.

Table 5: Strategic stakeholder attitude for, effect of and expectations from the project

Stake-holder	Attitude for project		Effect of the project on St.		Expectations
	Support	Action	Affect	Affected	
PoA	Yes* 4,5	Active (but the degree depends on the position in the organization) • Active role in project description • Waiting for specific activities within the project	Yes • New sustainable businesses • Robust industrial area • Promote active implementation of circular economy • Contribute to symbiosis relations among businesses in Aalborg 9220 area	Yes • New customers • New business relations • Promotion & implementation of port sustainable strategy • Get a greener profile	For PoA the project will: • assist in implementation of its Intelligent port strategy • contribute to a greener and more sustainable port • give clear strategic priorities For businesses on port area: • Take ownership of the project, its implementation of new concepts and business models
Authority	Yes 5	Yes (but the degree depends on the position in the organization) • Waiting for further happenings	Yes • Regulation • Planning • Issue Permits	Yes • Can profile themselves together with businesses	• Expect that PoA, municipality and businesses get something positive out of the project
Business	Yes 4	Yes (but the degree depends on the position in the organization) • By Implementing different initiatives	Yes • By being part in planning process of new business possibilities in Aalborg East area (9220)	Yes • Companies are expected to implement new business models • Changes in organizations can happen	• Create a good, solid development framework for industry and business • Bring benefit to all businesses in Aalborg region
Consultants	Yes 5	Active (but the degree depends on the position in the organization)	Yes • By directly participating in project	Yes • Enter new partnerships • Organization competences and	From businesses: • To move the limits of thinking environment into their land use, activities, etc.

		• Directly involved in the project • Depends on the leaders	development • Partnership suggestions (e.g. between PoA, AAU and other businesses)	capacity building	• High expectations
Knowledge institutions	Yes 5	Active	Yes • By being one of the coordinative bodies • By directly involvement in project development	Yes • New knowledge production • New job possibilities (also for students)	-

*1 – do not care about the project; 2 – do not want the project; 3 – neither/or; 4 –looking forward; 5 – looking very much forward

The strategic stakeholders' attitude for a proactive sustainable development project is unanimously very positive and supportive. They are full of hope for and trust in the project environmental, social and economic benefits.

The stakeholders are looking forward to the SED Project's next phases and are ready to involve in different activities. At this phase though, when the SED Project description is yet under formulation some stakeholders (such as local and regional authorities, company employees, etc.) are waiting for the decision-makers, responsible parties of this project to take further action, and then they will adjust.

All stakeholders are found having possibility to affect the SED Project development and to be affected by it. The business customers, inclusive Port of Aalborg can affect the SED Project by establishing new sustainable businesses, and thereby promoting circular economy. They can also affect the SED Project by taking actively part to it and implementing the project activities. The authorities can affect the SED Project by their regulative power, through spatial planning and the permits' issue procedures. The university and consultants can contribute with their expert knowledge and experience for innovative idea generation. Furthermore, their web of contacts and networks can contribute to a larger input in the project.

In turn, the SED Project can affect as well the stakeholders. The SED Project is perceived as bringing new sustainable customers to Port of Aalborg and growth to the municipality and region. By developing this project, Port of Aalborg will be able to profile itself as greener and more sustainable port, but also as one that is 'acting what it preaches' i.e. implementing its sustainability strategy. Implementation of new sustainable business models within the project can though bring (considerable) changes and adjustments deeper within the organizations involved. This fact is expected to have a solid economic viability if changes should happen.

The authorities can have a chance to profile themselves as Green municipality and region together with businesses. The university and consultants can get the chance of new knowledge and experience production and to enter new partnerships, which will contribute to capacity building and new (research) occupation/job possibilities, especially for students.

Concerning expectations, both Port of Aalborg and consultants mentioned, among others, that it is expected that business companies are those who should think and introduce environment more strategically in their activities. They should take ownership for the project and implement new business models if the project should succeed. The municipal and regional authorities mentioned the benefits Port

of Aalborg, business companies and the regional society could get as a result of the project. These three stakeholders are perceived as crucial for a regional growth. The business representatives mentioned that they expect 'Creation of a good, solid development framework for industry and business' based on sustainability values and are presented an awareness of their important role for the implementation of more sustainable business models. It is specifically the roles and stakeholder interests that are presented in the next section.

5.3.2 Strategic stakeholders' interests, roles and attention needing points

Following the workshop II results, the notes from discussion during the Boot camp day and the evaluation questionnaires received the roles, interests and attention needing points have been identified by the strategic stakeholders as perceived by them-selves. The table in the Annex IV presents the results. In the following sections the results from the table are analysed and summarised.

5.3.2.1 Port of Aalborg

5.3.2.1.1 Roles

Port of Aalborg is the key player in the project. It is one of the initiators of and the drivers for the SED Project. It is Port of Aalborg who initiated the project together with the Danish Center for Environmental Assessment (DCEA) at Aalborg University and who conveyed to allocate resources and commitment for it. The SED project has its roots in the Port of Aalborg sustainability strategy and the aim of becoming an integrator for other businesses and the society around the port. Port of Aalborg was as well perceived by other stakeholders as the stakeholder who has the role of 'engaging other stakeholders in the process' and the one who is expected to 'establish new cooperation and partnerships with different stakeholders.

5.3.2.1.2 Interests

The interests of Port of Aalborg are both of an economic character, but also of environmental and social one. The highest interest is that the port becomes more sustainable by having symbiotic relations with its customers and the society around it based on a proactive environmental management approach. In this way they can achieve their aim as an integrator and create sustainability-based value for all its stakeholders.

5.3.2.1.3 Attention needing points

The attention is needed especially on the further process. The sustainable development project idea is clear, the context is clear, now the further process needs to be developed. In this regards, it is of crucial importance that all stakeholders should be engaged, exact roles and responsibilities to be formulated and agreed on and partnerships to be created. By 'all stakeholders', Port of Aalborg means other stakeholders as well besides those present at the Boot camp. Businesses outside the port need as well to be informed and especially the recycling businesses need to be actively involved regarding circular economy businesses.

5.3.2.2 (Municipal and regional) Authorities

The 'Authorities' group included representatives from both municipal and regional authority bodies. The results of the workshop II of this group are therefore general results that could differ if the municipal authority representatives where grouped separately from the regional authority representatives or other persons were representing the two categories.

5.3.2.2.1 Roles

The Authorities (municipal and regional) see themselves very responsible, with both social and political roles (as municipality and region was set together). They see themselves having roles as:

- *Facilitator role* for industrial symbiosis relations between different municipalities
- *Decision-making role* – identification of the framework for action, defining the areas designated for port activities
- *Controlling role* –assuring that the port keeps its agreements and strategies relating to environment
- *Regulatory role* – the authorities have the power of issuing different kind of permits for other stakeholders; the authorities can regulate different activities so that they are in accordance with the EU regulation on circular economy
- *Developers role* – by involvement in this project they can participate directly to the development of the region
- *Branding* the port and the city

5.3.2.2.2 Interests

The municipal and regional authorities expressed their predominant social interest regarding 'the regional development with new jobs created, new growth and green development'. Discussions were going on around the fact that authorities have to represent the interests of different groups from community, many times opposed. They have an interest that 'the port develops in accordance with EU circular economy regulations' but also that place for different kind of businesses are created on most optimal location, and that society is as positively impacted as possible. Therefore the authorities have a high interest in holistic planning and being involved in the shaping phase of this project.

The regulative interest/role is seen as a 'must do' that stays in the authorities' obligation. It was expressed the desire to be a more 'open' social institution, with a proactive approach, allowing changes and adjustments in a new manner. In the same time, they feared that, because of the institutionalized role of (local, regional and governmental) authorities in the society, people in the community might not accept the new proactive approach.

5.3.2.2.3 Attention needing points

Authorities consider that companies must be obliged to follow common sustainability objectives. Besides, not only the companies on the port territory have to be involved in the project, but also those outside it. However, the number of businesses involved must be considered so that it is not affecting the communication process between stakeholders.

5.3.2.3 Businesses

5.3.2.3.1 Roles

The business companies see themselves as those who will actually do the action, as those who are there to implement the project, and therefor as main strategic partners. They perceive their role as new business models implementers and as those who will anchor the change within their organization practices, if the environmental project is to succeed. Besides, they see themselves as stakeholders who are and have to continue to be responsible environmentally and socially.

5.3.2.3.2 Interests

The business companies' representatives expressed a large interest in economic outcomes of the implementation of actions where environment is a strategic parameter. They are interested to implement 'circular and sustainable business models to create business growth and revenue' and to 'create synergies and better opportunities for growth'.

The interest in the society is named in relation to the interest in network creation, 'match –making' and the desire to be part of Aalborg city and its development. Environment is perceived as an added-value factor that can contribute to business development and company development.

5.3.2.3.3 Attention needing points

The business representatives present at the workshop considered environment as a possibility for growth and not a threat. They however mentioned as well that this fact is still not realized by all companies present on Port of Aalborg's territory and on the Aalborg municipality's territory. They mentioned also that the companies are driven by a positive business idea, and if this is missing within this project, involvement of companies could be minimal. Information is therefore needed. Aalborg University could create informational folders or meetings, seminars, etc. for companies and inform them on the challenges, benefits, and possibilities.

Furthermore the new business models need to be sustainable for the companies, meaning to create economic, social and environmental value. Aalborg University could here work very close with companies and research in which business model could apply best for a specific company. Likewise, it was mentioned the importance of taking sustainability in serious by all the stakeholders involved in SED Project. This can facilitate action-taking in a common direction. All the stakeholders must engage in transparency agreements and be loyal to each other. The expectations and risks must be checked and adjusted several times during the process.

5.3.2.4 Consultants

5.3.2.4.1 Roles

The consultants see themselves as those who can assure the implementation of the project, as they have a 'helicopter overview' on the processes and can act in complex situations, bringing 'certainty' and insurance for successes. Having consultants involved in such projects can send a message of having high proficiency in implementation.

Furthermore, several other roles have been mentioned, such as e.g.:

- Their role as risk eliminator through identifying the risks that impedes the project to be implemented
- The role as guide for project implementation through mapping the legislative limits
- The role as the one that gives entrance to a large partner networks and as those who can make the bridge between different parties in the project and the different aspects of sustainability
- The active idea-developer role. It is them that can form the project through proposing different ideas on how to proceed, what exactly to do, including innovative ideas, being different than standard once

5.3.2.4.2 Interests

Consultants have a predominant economic and social interest in the project. The social interest is represented by the interest in contributing to the common visions and aspirations of the regional

development through development of competences and network creation. No environmental interests are expressed. However, the interest in forming the SED Project and having its own 'touch on the project' is expressed. This could be thought to be able to affect the social and economic outcome of the SED Project.

5.3.2.4.3 Attention needing points

One of the points that consultants consider worth for attention is the roles division and consultants representing different interests during the project implementation process. This could lead to the fact that the consultants will not be open with their information towards the different project stakeholders, impeding in this way the project from its normal and successful implementation. Furthermore, there is a need for sharp division of roles and responsibility between them and the client. This can create huge problems and can put the project on hold or on a dark route.

Both universities and consultants have a perception that they could be the guides towards sustainability, and bridge-makers. This could create conflicting interests. Therefor specific and well defined roles, agreements and responsibilities within the project are recommended.

5.3.2.5 Knowledge institution (Aalborg University)

Aalborg University has been represented at the workshop II by persons having different positions at the university (DCEA representatives, directly involved in the SED Project; researchers collaborating with the port on other issues than SED Project; researchers with probability for collaboration), having therefore different relations with the Port of Aalborg and different interests. The results within this group revolve merely on how university as knowledge institution rather than how specific actors within this institution can act.

5.3.2.5.1 Roles

The stakeholders identified different roles a knowledge institution can play during the project planning and development.

It can play a significant role in 'partnerships as bridge-makers', as neutral partners, and as 'critical friend' contributing to new knowledge generating. In this way it could contribute with '360 degrees' new global knowledge' and help build and use of relevant contacts over whole world.

Furthermore, the stakeholders identified knowledge institution's economic role, as being 'the applicant for funds' necessary for different under projects.

Besides, two other roles are seen as important to be mentioned:

- *Empowerment role* in 'creating learning curves', educating other project stakeholders regarding the existing environmental possibilities
- *Continuous information role* – to inform stakeholders on and guide them towards sustainability

5.3.2.5.2 Interests

From the workshop II at the Boot camp it was clear that the knowledge institution as a stakeholder is mostly interested in new knowledge, created through implementation of already existing knowledge. The SED Project is offering social interests in form of new jobs, branding and new partnerships that could answer as well the university's economic interest. Besides, the economic interests are as well expressed

through the possibility of acquiring new external funds. Environment is not promoted within the knowledge institution's interests. It can though be implicit within the work of researchers, contributing indirectly to the empowerment of environment.

5.3.2.5.3 Attention needing points

In order for the SED Project to prosper knowledge institution's representatives believe that attention is needed to different innovation possibilities, as e.g. the possibility for creating a Port University with focus on maritime issues. This could contribute to the creation of new knowledge on ports and environmental management within these.

6 Synthesis

The present chapter presents discussions concerning findings from Port of Rotterdam and Port of Aalborg cases. Furthermore, it presents an overview of the interaction between the two cases and the theory with the aim of reflecting and arguing for the need of development of a strategic stakeholder engagement tool for the SED Project.

6.1 Discussion of the findings from the two cases

As presented in the chapter 3 huge differences exist between the geography and the physical size of Port of Rotterdam and Port of Aalborg; Port of Rotterdam being many times larger and longer than Port of Aalborg. Furthermore, Port of Rotterdam is a local, regional, national and even a European power with influence on port related regulations. Port of Aalborg is of high importance for the local development with potential to become a regional and national power, in regards to the maritime connections with the Arctic. The two ports' location, size, business models etc. have given them different strengths and weaknesses in regards to their sustainability actions and especially stakeholder engagement. The following Table 6 summarizes some of these strengths and weaknesses.

Table 6: Strengths and weaknesses of Port of Rotterdam and Port of Aalborg

Port	Strengths	Weaknesses
Rotterdam	• A national and European Power • Has influence on national and European port related regulations • Large Financial capacity – huge action capacity • A stakeholder management system in place • Etc.	• 'Huge machine' – moves very slowly • Many more stakeholders – slow down the decision –making processes • Different layers of decision • Controversial activities (e.g. coal power plants) • Etc.
Aalborg	• A smaller scale port with high potential • The close relations between people in different sectors can stimulate dialogue and partnerships • The desire to cooperate • The stakeholders' openness for collaborations • The sharing of same values • The positivity towards the project • Etc.	• A smaller scale port • Traditional mind-set among stakeholders • Insufficient partnerships among stakeholders • Competition mind-set among businesses • Lack of best case sustainable business models • Etc.

The strategic environmental management approach is anchored in the business model of Port of Rotterdam since decades ago, while it only takes shape at the Port of Aalborg. On the other hand, Port of Aalborg has a good example to learn from and implement such an approach more constructively than Port of Rotterdam. For example, the strategic platforms created within the Port of Rotterdam strategic environmental development process 'did not encouraged members to come with new ideas'. This could inspire Port of Aalborg to involve stakeholders within strategic processes more goal oriented. Other lessons that could inspire Port of Aalborg are e.g.

1. To involve relevant stakeholders in the decision-making processes as early as possible in the process. This has actually inspired the integrative stakeholder engagement approach the 'SED Project could take.
2. To create a 'common language' among stakeholders. There is a need for a same notion of sustainability (including economic, environment, social aspects), to establish common goals for stakeholder participation in the SED Project in order to minimize the misunderstandings
3. To create the 'end result' idea of the project jointly with all the stakeholders. An open platform for discussions and room for explaining its interests and intentions is of high importance. A room for making mistakes and an acknowledgment of a learning process for all stakeholders is desired.
4. To create, maintain and support transparency in the processes is to support stakeholders' commitment.
5. To have a holistic approach to regional sustainability. Include the strategic environmental management projects with the sustainability frame of the city, municipality, region, country, etc.

Many of these and other transferable lessons have inspired the stakeholder approach adopted within the SED Project. These are though not the only incitements for the new approach; the theoretical background has informed as well the decision. This, together with the need of identifying the stakeholders' position in regards to such an ambitious process and the further actions within SED Project context and scope, while engaging stakeholders has created the basis for the strategic stakeholder engagement approach adopted.

Based on the integrative approach to stakeholder management applied within this initial phase of the SED Project through the workshops at the Boot camp, the following (Table 7) strengths and weaknesses of such an approach can be concluded:

Table 7: Strengths and weaknesses of a participatory stakeholder engagement approach

Strengths	Weaknesses
• It spread a positive spirit about the project among the stakeholders • It created an awareness about different possibilities • Encouraged ownership for the project • Gave a possibility for identifying and balancing the stakeholders' expectations • Encouraged initiatives and action • Initiated an engagement spirit and tradition • Have been the platform for strong relations creation • Have set the stage for an open process with common values as trust and transparency	• It can be time consuming • The results obtained depend on the persons involved • Stakeholders can get upset if 'forgotten' and not involved in the process • Etc.

- Have created the background for commitment
- It was resulting in the first step towards a change
- It gave an inclusive and participative signal
- It was branding the Port of Aalborg as a proactive sustainable port among its stakeholders

The Table 7 does not represent an exhaustive list of strengths and weaknesses of the participative stakeholder engagement. There might exist other (especially) weaknesses that are not thought of and included in this thesis.

The next section explores more in depth the reflections and considerations behind the adoption of such a stakeholder approach within SED Project.

6.2 Reflections and considerations behind the adoption of a strategic stakeholder engagement approach

After analysing the stakeholder engagement approaches in both Port of Rotterdam (PoR) and Port of Aalborg (PoA) and the project contexts they are within, a merge between theory and the empirical findings of the two cases can be done and the following synthesis represented in the Table 8 can be made.

Table 8: A merge between theory, Port of Rotterdam and port of Aalborg case

	Theoretical context	PoR	PoA
Sustainable Development Project Approach	• Proactive environmental development projects are principle based (e.g. economic, environmental and social principles)	• Strategic environmental approach • Economic, environmental and social principles as core principles in all port's visions and activity strategies • 'like for like' principle for value creating for stakeholders	• Strategic environmental approach • The 'Strategic environmental development' project based on the sustainability principle (economic, social and environmental sustainability is desired to be achieved)
	• Proactive environmental development projects are value based	• Value agreements are developed with stakeholders • Transparency, commitment, trust and motivation are some of the value pillars	• The project seeks sustainability-based value creation for its stakeholders • 'Commitment, trust, transparency, a common vision and local anchoring' are central values for success
Strategic Stakeholder Engagement Approach	• Stakeholder management approach context based	• Stakeholder management system is issued based, as derived from the historical disagreements among stakeholder groups	• A desired opportunity-based approach derived from the necessity of further actions identification for project development
	• Stakeholder management approach is value based	• Creating common value for all stakeholders is the basis for port's actions • 'Like for like' principle for value creating for stakeholders • Value agreements are developed with stakeholders	• Creating sustainability-value for all stakeholders is a project objective • The stakeholders acknowledge the need for value-based processes • Commitment, trust,

		• Transparency, commitment, trust and motivation are some of the main value pillars	transparency, a common vision and local anchoring are central values for success
	Stakeholder involvement approach based on: a) Stakeholder identification *Stakeholder register* b) Stakeholder analysis *Stake – interests, expectations, rights and ownership* *Contribution, stakeholder role, attitude(support), power, legitimacy, urgency* *Different methods for visualization (matrices, circles, tables, etc.)* c) Stakeholder involvement strategies *Different strategies such as e.g. keep informed, keep satisfied , minimal effort, etc.*	a) Stakeholder identification – issue-based *Visualization through an issue based stakeholder table* b) Stakeholder analysis *Stake – interests* *Contribution, power, legitimacy, urgency, emotion and cooperativeness* *Visualization method unidentified* c) Stakeholder involvement strategies *Inform, involve, participate*	a) Stakeholder identification is opportunity –based *Stakeholders included in a Stakeholder registered* b) Stakeholder analysis *Attitudes, impact, action and expectations, interests, roles and attention needing points* *Visualization method: tables* c) Stakeholder involvement strategies *To be identified*

Following the findings in the table, it can be mentioned that strategic environmental development processes in both Port of Rotterdam and Port of Aalborg are value based with sustainability (economic, environmental and social) as a goal. Values as commitment, trust and transparency are common values.

Even though the processes' context offers similarities, the stakeholder approach differs. The Port of Rotterdam has an issue –based stakeholder approach as based on their historical relations between different stakeholders. Relations between stakeholders in Aalborg have a positive history, but there is a need to develop the SED Project's activities. Therefore, the stakeholder approach taken within SED Project is opportunity-based, focused on identifying new collaborative ways and partnerships for achieving the SED Project objectives.

In both Port of Rotterdam and Port of Aalborg it is seeked to create value for all stakeholders through the strategic environmental development approach. The stakeholder engagement approach is therefore high on priority list. However, differences exist in the both ports stakeholder engagement approach and methodologies. Port of Rotterdam has a well -established stakeholder management system in place, while within SED Project, establishing a stakeholder approach is only at the initial phase. The project stakeholders were identified and then a workshop with stakeholders was conducted to explore some of the stakeholder attributes grounded in the stakeholder theory, with one of the aim being to develop later a stakeholder engagement model for the SED Project.

Such a model should give the necessary tool for constructive dialogue between different stakeholders and the SED Project managers. This constructive dialogue should as well give the opportunity to contribute to finding new possibilities of collaboration and maintenance of good friendship relations within SED Project. Furthermore, the model should be able to contribute to the increase of trust and transparency level among the project stakeholders.

In order to create such engagement model/tool for strategic stakeholder engagement within the context of the SED Project stakeholder attributes as analytical parameters should be identified. Based on the stakeholder analysis methodologies presented in section 2.2.3. stakeholders' stake (interests and expectations), contribution, role, attitude, actions, influence and affection were identified and used later in the SED Projects stakeholder analysis in the section 5.3.

At the first glance, these attributes seem to offer a large picture of the stakeholders' power and position in the SED Project. Developing a tailored model for SED Project stakeholder engagement, instead of adopting an existing method (matrices, circles, etc.) is grounded in the deficiency of the existing methods and that these do not answer the needs of the SED Project. Examining how stakeholders are engaged in strategic environmental management projects within Port of Rotterdam context and how stakeholder management system for value creation is used, was of crucial importance. Based on the theoretical framework, the findings from Port of Rotterdam case and the findings from analysing Port of Aalborg case the stakeholder engagement model/tool was developed.

7 Strategic stakeholder engagement model

After identifying the strategic stakeholders' possible roles, interests and attitudes, etc. within the SED Project one question arise: how can this information be used in the further development of the project? The answer can come from Mayers (2005) who argues that 'once different stakeholder interests have been identified it may be possible and necessary to 'weight' them'. A model for how to do that is therefore necessary to be developed and later used as stakeholder engagement tool in the SED Project.

The results from the workshop previously presented have shown that stakeholders can have different roles, interests and attitudes during the development of the project thus having different degree of influence on the project development. There is no ONE stakeholder that will only fulfil ONE role, or have ONE specific interest in the project. There will be dominant roles at a given time during the project and in a specific situation or sub-project. For example, in one situation authorities can have regulative role, and in other situations they can have an implementing role; or in one situation Port of Aalborg can be the coordinator of an activity and in other situation it can be the financial body. By having different roles they can also have different influencing power (Mayers, 2005). Defining 'power' is not an easy task. Power is defined very differently by different academics in different situations (Aaltonen & Kujala, 2010) (Mayers, 2005) (Mitchell, et al., 1997) (Nastran, 2014). For the purpose of this study power is defined through the roles stakeholders.

From the findings in the section 5.3.2.several roles could be identified as thought to be predominant within the project: *coordinative, implementing, financial, regulative and knowledge*. Therefor it can be argued that the stakeholders' power in a process can be measured through the detained roles. Thus, power is the first weighting attribute in the stakeholder engagement model.

The second attribute can arise from the dominance of the stakeholders' 'stake' in the project. Stake is almost present in all stakeholder analysis literature and it is therefore considered here as a second attribute for waiting stakeholder engagement. Stake is measured by identifying stakeholders' '*interests*'. Interests represent the stake each stakeholder has in a process and that later can affect their actions and influence on the project and the project's influence on stakeholders. To be more precise, and as the SED Project seeks sustainability achievement, interests concerning *environmental, economic and social aspects* should be measured. Thus stake is the second parameter for weighting stakeholders upon.

The stakeholders' actions and influence can call for an urgent or not so urgent reply from the side of other stakeholders or the project management group. Therefore, urgency is found to be the last important attribute that has to be considered when waiting stakeholders' engagement. There are other attributes such as impact, contribution, rights, ownership etc. that can be taken into consideration. It is however thought that if more weighting parameters are included, the model could become too complex and it could miss the ability to answer the needs within the SED Project and/or it can miss its appliance value. Narrowing down the attributes to the most essential once is therefor found appropriate.

Thus:

$$\boldsymbol{Power\ (roles) + Stake\ (interests) + Urgency\ (actions\ and\ influence)}$$
$$\boldsymbol{= Stakeholder\ engagement\ degree}$$

Power - defined through the roles stakeholders can fulfil (coordinative, implementing, financial, regulative and knowledge

Stake – defined by the interests stakeholders have in a process (environmental, economic and social interests)

Urgency – defined by the stakeholders actions and influence (active, neutral or passive, and the degree of affecting the project or the project affecting the stakeholder)

Stakeholder engagement – is measured in regards to how much the stakeholders are engaging themselves in the process, but also how much the project management group has to do for engaging them more or less in the project.

It has to be mentioned that the model is as well an engagement tool for stakeholders' self-measurement and self-evaluation (as pictured in the Figure 10) within the SED Project. The model/tool is flexible and provides space for the project management group to take in-depth-going narrative notes describing the evaluated position. It is meant that stakeholders measure their own power, stake and urgency in a given sub-project or a specific process previously defined and offer commentaries for the given measurements. In this way a constructive dialogue is created between stakeholders and project management group.

	A	B	C	D	E	F	G	H	I	J	K	L	M
1	**Stakeholder Engagement Model**												
2	**Case**		**Date**										
3	Identifying industrial symbiosis potential												
4	**Stakehold**	**Power**					**Stake**			**Urgency**			
5		**Roles***					**Interests****			**Action**	**Influence** ***		**Total**
6		*Coordinative*	*Implementing*	*Financial*	*Regulative*	Knowledge	Environmental	Social	Economic	Active-1; Neutral-0; Passive-(-1)	Affect	Affected	
7	Stakeholder 1												
8	Stakeholder 2												
9	Stakeholder 3												
10	etc.												
11													
12													
13				*Priority 1 - 5; priority 2 -4; Priority 3 - 3; priority 4-2; priority 5 - 1									
14				**Priority 1 - 3; Priority 2- 2; priority 3 - 1									
15				*** No influence - 1; Little influence - 2; a lot of influence - 3									

Figure 10: Strategic stakeholder engagement tool

The measurements are given per category (power, stake and urgency). It is done by prioritizing the sub-categories. The prioritization variates and two sub-categories can get the same prioritization. Each prioritization gets a variable that corresponds to the degree of prioritization. The action and influence sub-categories get variables corresponding to the degree of action and influence. The variables are then summarized for each stakeholder. The stakeholder with a larger variable sum is found to be most important in the given process at the first glance. The specific importance is though to be found within each sub-category. The stakeholders can as well be compared by sub-categories if relevant.

The strategic environmental development process, within which stakeholder analysis is developed, is a very dynamic process (Mayers, 2005) (Mitchell, et al., 1997). Stakeholder analysis therefore must be done again and again along the project development in collaboration with stakeholders. The model offers a dynamic framework that can illustrate 'the status' of a stakeholder 'position' at a given time in a given situation or sub-project, also in relation to other stakeholders. The information obtained through this engagement tool can be operationalized and used in further development of activities, while engaging actively stakeholders. A collection of results at different stages of project development can then be arranged so that a picture of the dynamics of the stakeholders' position appears. How exactly this model and tool can be applied is pictured in the next section.

7.1 Applying stakeholder engagement model

In order to visualize the functionability of the stakeholder engagement model/tool a fictive example is presented.

As establishing industrial symbiosis is one of the desirable outcomes of the SED Project, identifying industrial symbiosis potential among two companies on Port of Aalborg is taken as example. The example is only a fictive one, based on the suppositions of this thesis author. In order to find out real variables, stakeholders involved in this process should be asked to characterise themselves and to weight their own powers, stakes and urgency. No such analysis was done together with the stakehodlers. In addition, the list

of stakeholders involved in such a process and presented in this example is not exhaustive. These specific stakeholders are taken as an example to only illustrate the functionality of the stakeholder engagement tool.

Stakeholder Engagement Model												
Case			**Date**									
Identifying industrial symbiosis potential												
Stakeholder	**Power Roles***					**Stake Interests****			**Urgency Action**	**Influence*****		**Total**
	Coordinative	*Implementative*	*Financial*	*Regulative*	Knowledge	Environmental	Social	Economic	Active-1; Neutral-0; Passive-(-1)	Affect	Affected	
Port of Aalborg	5	3	4	2	1	3	1	2	1	3	2	**27**
Company 1	4	5	3	1	2	2	1	3	1	3	3	**28**
Company 2	2	5	4	1	3	2	1	3	1	3	3	**28**
Utility company	2	3	1	4	5	1	3	2	-1	3	1	**24**
Municipal Business centers	2	1	1	1	5	1	3	2	-1	2	1	**18**
Regional network and process employee	2	1	2	3	5	3	3	1	1	3	1	**25**
AAU	2	1	2	1	5	3	3	1	1	3	3	**25**
etc.												
	*Priority 1 - 5; priority 2 -4; Priority 3 - 3; priority 4-2; priority 5 - 1											
	**Priority 1 - 3; Priority 2- 2; priority 3 - 1											
	*** No influence - 1; Little influence - 2; a lot of influence - 3											

Figure 11: Strategic stakeholder engagement tool applied

From the Figure 11 it can be concluded that Company 1 and 2 are the most important companies to address, as, when looking into the sub-categories, they are those to implement the industrial symbiosis processes. However, this should not be the final conclusion as other stakeholders have other attributes without which no process can go on successfully. A closer look at the other stakeholders and their weighting variable for different sub-categories is therefore necessary. For example, the Aalborg University and the regional network and process employee have the knowledge necessary for initiating such a process. Without involving these two stakeholders the process could not develop in a sustainable way. The least interesting stakeholder is the municipal business centres. These can offer information on different businesses with potential for industrial symbiosis within the municipality.

After having such primary information collected from different stakeholders, involvement strategies can be identified according to the process desired set in practice.

For example such strategies can be developed, based on Johnson and Scholes power/interest matrix (Aapaoja & Haapasalo, 2014) and shown as in the Table 9. The stakeholders are grouped according to the different strategies SED Project management group can apply for engaging them in the process of identifying industrial symbiosis possibilities.

Table 9: Example on strategic stakeholder strategies (based on a fictive example)

	Probability of impact	
Level of impact	**Keep satisfied** *Knowledge institution* *Regional network and process employee* *Company 3: Utility company*	**Key players** *Port of Aalborg* *Company 1* *Company2*
	Minimal effort …	**Keep informed** *Municipal business centres*

7.2 Discussion of the Strategic Stakeholder engagement tool

The model is a suggestion of how project stakeholders can be involved with the SED Project. It's functionability in the real life has to be proven. Then the tool can be further adjusted. Elaborating such a tool, based on the theoretical findings and the results of the strategic stakeholder analysis of the SED Project and its necessity of applying it in the real context confirm the application of the action research approach of this study. Action research develops in the cycle '…planning, acting and observing, reflecting, re-planning, etc.' (Kemmis & McTaggart, 2007) (Anderson, et al., 2015). Having this model, the stakeholder engagement is planned within the SED Project. Now there is a need of acting, i.e. applying the stakeholder engagement tool on project stakeholders for identifying further actions. Reflecting upon the results of tool application is then necessary with the aim of re-planning and re-adjusting the tool and (maybe) the stakeholder approach as well.

As it is now, it is thought as a continuous dialogue tool between the stakeholders and the project management group and as a tool that can offer background information for further actions in a specific process. The stakeholders will evaluate themselves regarding their power, stake and urgency in the process and by doing this, it can be expected that stakeholders will have some recognitions regarding their position within the project. These can contribute to the identification and adjustment of the specific stakeholder own action, that could benefit the entire project.

Furthermore, approaching systematically the stakeholders through the tool gives possibility to strengthen the communication between the SED Project management group and stakeholders. A strengthened communication can later lead to increase of trust level between the two parties that could encourage more transparency and openness for collaboration. A continuous communication between SED Project management group and stakeholders can give the perfect arena for stakeholders to come up with some other points not included in the tool, for example complains, suggestions, etc. that the project management group can benefit from.

The results from Port of Rotterdam case showed that there will always be formal and informal processes going on parallel. An integrative and participatory strategic stakeholder engagement approach that this tool is offering could uncover the informal processes when in continuous dialogue with stakeholders. In this way the 'surprises' during the project development could be minimized.

The strategic stakeholder engagement model is a dynamic tool that can be used in different ways. The stakeholders can be compared on the basis of variables within one sub-category, several categories or

across categories. The tool can be divided per category e.g. only considering power or stake or urgency, if relevant.

Furthermore, the tool is simple and foreseeable. This could encourage the stakeholders to seriously consider it and answer it. The categories are found enough to approach the needs of the SED Project management group. In the same time the content and extent of the tool can be thought as a limitation for the information gathered through the tool. By considering the specific categories some other stakeholder aspects such as impact and attitude may remain unknown. However, through having the direct contact with SED Project stakeholders, the SED Project management group could ask into these, and the stakeholders have possibility to comment on them and to ask into aspects they are interested in.

Another limitation of the strategic stakeholder engagement tool is that the total sum of the variables calculated for each stakeholder should never be used alone as an argument. It should always be backed up by the narrative information collected together with this tool and/or the variables from relevant sub-categories. The total sum variable is not representative for the stakeholder position in a given process.

It can be that approaching each stakeholder (group) individually might be time consuming. This can though be solved with the methodology selection such as common meetings, focus groups, workshops, etc. each of them having strengths and weaknesses.

8 Discussion

Applying such a strategic environmental development approach, where the process is shaped by and in collaboration with stakeholders can bring huge value to all the stakeholders. Such an approach though needs to acknowledge having several implementing challenges.

The institutional challenge

The proactive strategic environmental approach asks from stakeholders to establish other mind-sets, based on circular economy and cooperation models, based on values and ethics, rather than the traditional once based on competition and survival. The mind-sets of stakeholders and the subsequent approaches do not exist in a vacuum. They are embedded in rigid institutional structures, norms of behaviour and cultural contexts (Kelly, 2005). A proactive strategic approach to environmental development is therefore not an easy task to implement when an integrative stakeholder approach is followed. The path dependency (Gray & Stites, 2013) of the nowadays practices, and the (in)compatibility of the new stakeholder engagement approach with the existing system (Newcombe, 2003) can create huge implementation delays and can impede reaching desirable outcomes of such projects as 'Strategic environmental development' project.

Furthermore, different arenas such as socio-political, economic and financial, etc. can affect the implementation of the project and its stakeholder approach. The cultural arena for example, following Newcombe (2003)is 'represented by the ideology or shared values of the project participants and may be used to shape or constrain changes'. As argued in this thesis, sustainable development is value-based. Changing the stakeholders' behaviour towards more sustainable actions, imply changing the set of values and norms the society is based (Silvius & Schipper, 2014); task which might be challenging in a project

limited resource context. A deeper stakeholder value awareness and common sustainability-based value creation is therefore strongly recommended.

The trust challenge

Sustainable development is value-based. The trust was found as the most important challenge of the new approach to sustainability through implementing circular economy (source). Synergetic and symbiotic relationships between different industries, and industry and society are based on trust. The necessity of high level of trust can come in contradiction with the institutionalized cultural norms businesses have created over the years. This could offer large challenges to the 'knowledge transfer and joint problem solving' process (Lange, et al., 2012).

Sustainability through partnerships

The above challenges are not exhaustive. Many other challenges exist such as e.g. transition management to sustainable development, new sustainable business models, economic sustainability best cases, etc. Solutions to these need however to be found as the nowadays global sustainability through partnerships paradigm has acquired momentum and is here to stay. 'The issues we face are so big and the targets are so challenging that we cannot do it alone' (Gray & Stites, 2013). Collaborations and partnerships are here to offer 'previously unimagined solutions' (Gray & Stites, 2013) to common challenges and to create sustainability-based value for all parties involved. To break the path dependency and to open up to new partnerships is the formula for nowadays sustainable success.

9 Conclusion

The study, this report is based on, was anchored in the 'Strategic environmental development' Project (SED Project) that Port of Aalborg have initiated together with Aalborg University. The project is an ambitious commitment of the Port of Aalborg to become an integrator for the businesses on the port area and for the society around it, while striving for sustainability achievement. Becoming an integrator implies to enter new partnerships and collaborations with the port's stakeholders. This research aimed at exploring ***how the Port of Aalborg's stakeholders can be engaged in the port's sustainable development process.***

The Figure 12 sketches the essence of this research, the core of which is the stakeholders' characteristics, such as roles, interests and influence.

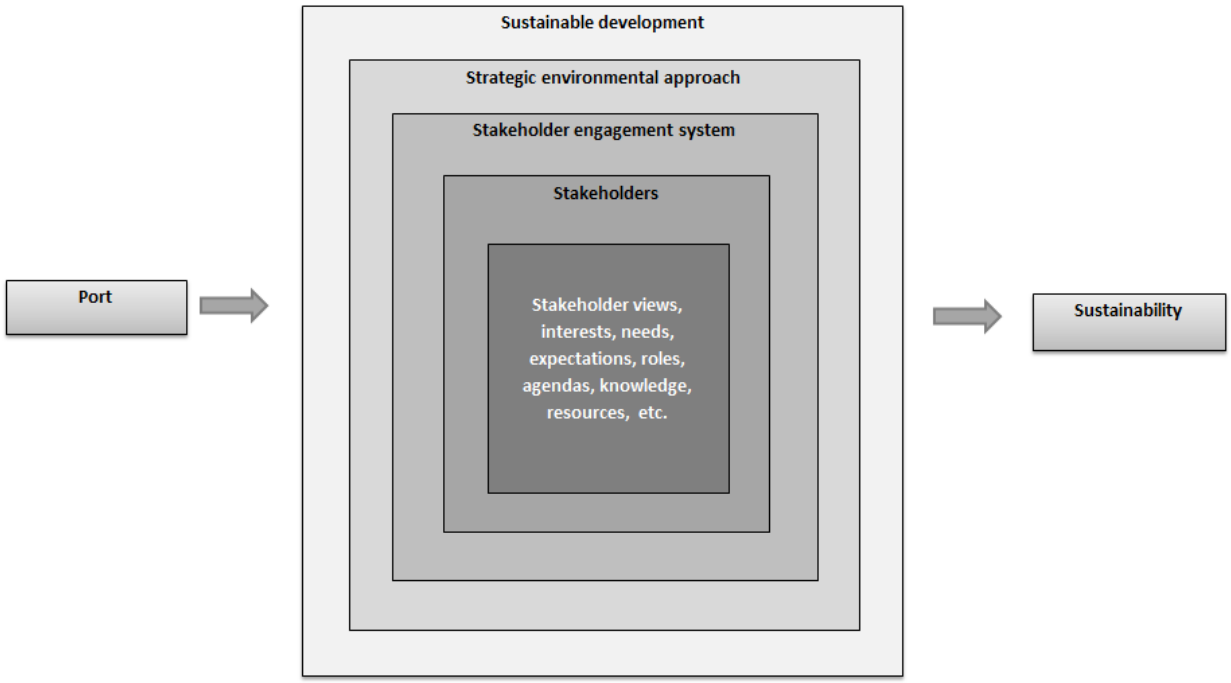

Figure 12: The ports' path towards sustainability

Sustainable development, as pictured in the Figure 12, is the 'bridge' tightening the ports with sustainability. The sustainable development 'bridge' is not existing by default, but rather built by different stepping stones. These could be dynamic processes through which ports can achieve sustainability. There are many approaches to sustainable development. One of them is the strategic environmental management approach. This implies a strategic approach to environment with the desire of creating (economic and social) value through e.g. implementation of circular economy principles and sustainable business models. The role of stakeholders within such processes is increasingly recognised and appreciated. Different approaches to stakeholder engagement are therefore adopted and stakeholder engagement systems are created.

The study of the inspirational case of Port of Rotterdam have shown the significance of engaging the stakeholders from the early phase of a sustainable development process and offered an example of a dynamic stakeholder engagement approach. Such an approach is based on the stakeholder analysis.

Stakeholders are dynamic entities. They change over the time and space. The stakeholder interests, roles, attitudes, expectations change as well, and can variate from process to process. The analysis of the SED Project stakeholders has revealed that e.g. Port of Aalborg could have a coordinator and facilitator role within the SED Project. The municipal and regional authorities could play a regulatory and developers role. The business companies could have an implementing role within the SED Project. Interests of the SED Project's stakeholders also differ. Generally the interests can be grouped within environmental, economic and social interests, with stakeholders showing different degree of interest in each of them. For businesses the economic aspect was very important, while for municipal and regional authorities creating value for the society through increasing number of jobs and regional growth was more highlighted. Knowing the stakeholders' interests and roles, can contribute to forecasting their attitude for the project and avoid conflicts within the SED Project. Engaging stakeholders in self-analysis and self-evaluation could also permit a constructive dialogue, which could in the end result in value-creation for the SED Project and its stakeholders.

Such a dynamic model and tool for strategic stakeholder engagement, tailored for the SED Project was developed by this study. It is an attempt of offering a suggestion on how the Port of Aalborg stakeholders could be engaged in the port's sustainable development process, answering in this way the research question of this study. Further research on the model application is though necessary.

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