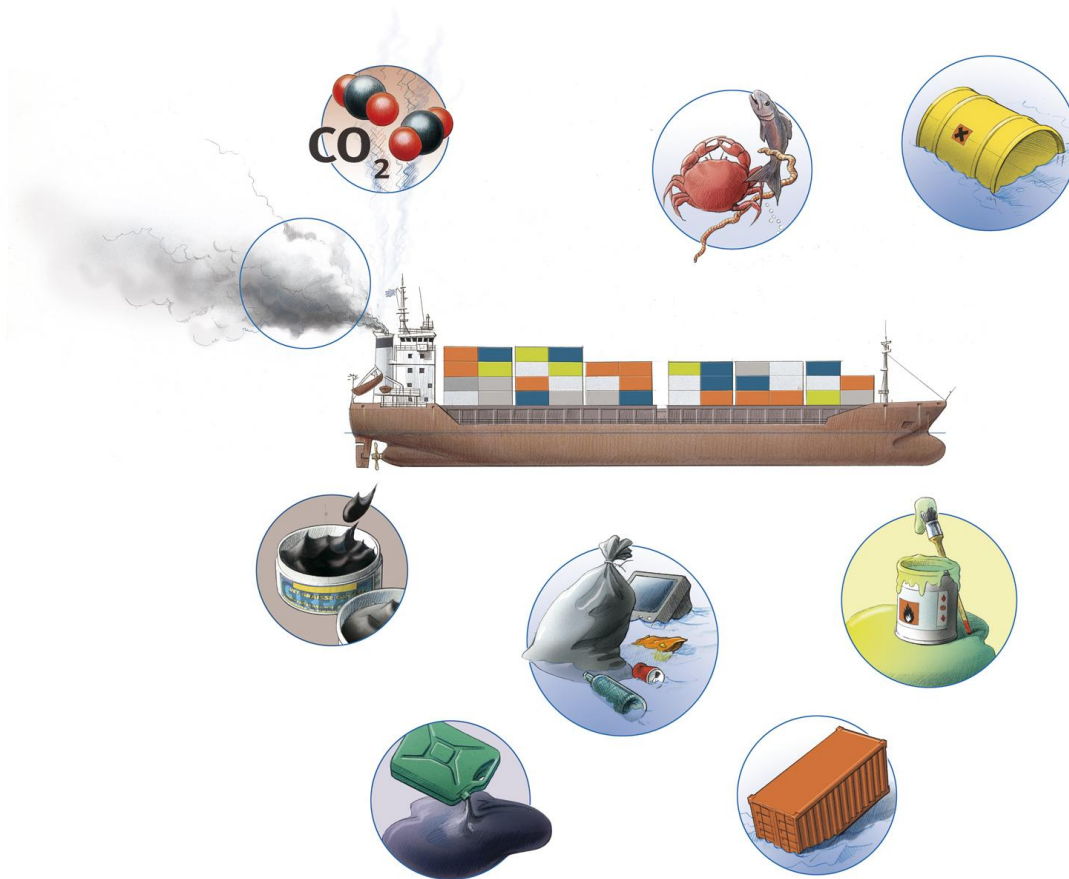


Greening International Shipping through Private Governance

A case study of the Clean Shipping Project



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Summary

The Clean Shipping Project (hereinafter the CSP), established in 2007 in Sweden, is an ambitious initiative beyond conventional state-based governance, which could help to uncouple growth in shipping activities from environmental harm. The CSP developed the Clean Shipping Index, which can be used by cargo-owners for supplier evaluation and decision-making during sea freight procurement. This should create financial incentives for shipping companies to invest in environmentally-adapted transport services.

This research analysed the CSP from a private governance and partnership perspective. By placing firms central in analysis, this research generated analytical and empirical insights on both private governance and partnership theory.

Furthermore, this research also improved understanding of institutionalisation of private governance systems. To have a significant effect on the shipping industry as a whole, the Clean Shipping Index has to be integrated in sea freight procurement processes world-wide. In other words, it has to become a standard norm that steers the choices and behaviour of societal actors. This research therefore examined the institutionalisation process of the CSP, how it may develop into a private governance system that has authority and can enforce compliance among cargo-owners and shipping companies.

To analyse this process in detail, a theoretical model was developed that incorporates different aspects and mechanisms which influence to what extent a partnership gains legitimacy, trust and robustness and can generate collaborative advantage. Ultimately, these properties should contribute to commitment and cohesion among network members, which determine the long-term durability and effectiveness of a governance system.

The theoretical model was used to identify a set of enabling and constraining factors that influence the institutionalisation process of the CSP. There is a basic level of commitment and cohesion enabling cooperation within the CSP network, because network members share certain environmental principles and support a common objective. However, given the early development phase, the CSP is not yet optimally developed and implemented, which undermines system robustness. This, in combination with unfavourable market characteristics and conditions, makes it difficult to generate collaborative advantage. The CSP does have a relatively high level of (moral and pragmatic) legitimacy, which is important to create commitment among network members. Cohesion between network members mainly builds on personal trust due to good communication with the developers of the CSP and interaction among participating cargo-owners.

Overall, the CSP cannot be considered a full-fledged private governance institution, because the level of commitment and cohesion has to be improved in order to exercise a high level of control over the behaviour of network members. Yet institutionalisation is a complex and ongoing process, and this assessment is merely a snapshot in time. The future outlook for the CSP remains promising because there are many enabling factors, and future developments may create opportunities to establish and expand its sphere of authority. To effectively catalyse clean shipping internationally, more equitable burden-sharing has to be established, which requires the dedication and support of a large group of private and public actors.

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List of Abbreviations

AFS	Anti-Fouling Systems
BWM	Ballast Water Management
CCWG	Clean Cargo Working Group
CO2	Carbon dioxide
CSI	Clean Shipping Index
CSP	Clean Shipping Project
CSR	Corporate Social Responsibility
DNV	Det Norske Veritas
ESI	Environmental Ship Index
EVO	Dutch Association for Transport and Logistics
GHG	Greenhouse gases
GR	Göteborg Region Association of Local Authorities
HCFC	Hydrochlorofluorocarbons
IMO	International Maritime Organisation
ISO	International Standard Organisation
MARPOL	International Convention for the Prevention of Pollution from Ships
MEPC	Marine Environment Protection Committee
NOx	Nitrogen Oxide
NSF	North Sea Foundation
PM	Particulate Matter
SAR	Seas at Risk
SECA	Sulphur Emissions Control Area
SEL	Stora Enso Logistics
SH	Spliethoff
SOx	Sulphur Oxide
SRF	Swedish Ship-owner Association
TBT	Tributyl Tin
TL	Tetra Laval
VG	Västra Götalandregionen
VL	Volvo Logistics
V&W	Dutch Ministry of Transport, Public Works and Water Management
WB	Wagenborg
WM	Wallenius Marine
WPCI	World Ports Climate initiative

Chapter 1 INTRODUCTION

International shipping¹ is a subject area that has not been researched very extensively in social science studies, and even less so from the perspective of environmental policy. More research is needed mainly because of two reasons. Firstly, the urgency of environmental impacts caused by shipping calls for a better understanding of how shipping activities can be made more sustainable through societal steering. Secondly, governance practices in the shipping industry are currently subject to change, which provides interesting material for social analysis. International shipping is a challenging subject not only because there are few past studies to rely on, but also because of the complex organisation of the industry and transboundary nature of environmental impacts, while the high seas are still regarded as a common.

1.1 Problem Description

Shipping and the marine environment

Oceans cover approximately 70% of the Earth's surface and are one of the most important natural resources. They play a critical role in atmospheric gas and climate regulation, as well as water, nutrient, and waste cycling. Marine ecosystems also provide us raw materials, recreational, cultural and economic services. Most importantly, they are sources of primary and secondary production and support a high level of biodiversity. Estimates of the economic value of the ecosystem services of the oceans (marketed and non-marketed) indicate a huge contribution to human welfare (Costanza, 1998).

Currently, no marine area is unaffected by human influence and 41% is strongly affected by multiple drivers, which undermine ecosystem functioning (Halpern et al., 2008). International shipping is one of the main anthropogenic drivers (next to fishing and land-based pollution) that negatively affect marine and coastal ecosystems. The external environmental costs associated with shipping amount to EUR 260 billion for the world fleet (TRT, 2007). Environmental impacts caused by shipping can be divided in five different categories: 1. air pollution (incl. greenhouse gases); 2. marine pollution (chemicals, oil and litter); 3. invasive species (through ballast water), and 4. environmental degradation due to ship dismantling (also posing health hazards). For convenience, these are generally referred to as marine impacts.

More than 90% of global trade is carried by sea (IMO, 2010a). In principle, shipping could be an environmentally sound way of transporting goods and people, because it is energy-efficient and has low demands on infrastructure. Since 1970 however, the world merchant fleet has grown by over 70% and the transport capacity has almost tripled (Eyring et al., 2005). Various sources confirm a further increase in shipping (in number of vessels and cargo volume) and average ship size in the foreseeable future². This trend further exacerbates environmental impacts caused by shipping.

For instance, mid-range emissions scenarios show that by 2050, in the absence of policies, ship emissions may grow by 150% to 250% as a result of the growth in shipping (compared to the emissions in 2007) (Buhaug et al., 2009). It is estimated that by 2020 the emissions of NO_x and SO_x from international shipping around Europe will surpass the total emissions generated from all land-

¹ International shipping encompasses shipping activities between ports of different countries, as opposed to domestic shipping (Buhaug et al., 2009). International shipping excludes military and fishing vessels. By this definition, the same ship may be engaged in both international and domestic shipping operations. Occasionally, the more specific term 'sea freight' is used, which encompasses commercial transportation of goods.

² The average size of ships gradually increased over time, because bigger ships have lower unit costs and cargo-handling and storage area are cheaper at high throughput volumes (Stopford, 2009).

based sources in the 25 EU member states (Friedrich et al., 2007). Undoubtedly, the scale and intensity of all forms of marine pollution will increase if no action is taken to control and mitigate these impacts.

Regulatory framework

There is a multitude of environmental rules and regulations related to shipping in place at various government levels. The most important rule-making authority is the International Maritime Organisation (IMO), which oversees 21 international Conventions that govern different environmental issue areas related to shipping.

Environmental protection regimes established by the IMO are however flawed in several respects. Firstly, multilateral decision-making is slow and encumbered because of the nature of legislative processes. Secondly, regulatory standards lag behind current best available technologies and practices. Shipping is exempted from a large portion of environmental requirements that do apply to land-based transport and industries (CSP, 2010a)³. Thirdly, many existing international standards that should ensure safety and pollution control measures are not effectively enforced and adhered to (Tan, 2006). Lack of compliance is largely due to the characteristics and functioning of the shipping industry, which is very much focused on cost-reduction and short-term profitability, and the fact that environmental regulations provide few financial incentives. As a result, there are many 'sub-standard'⁴ ships still in operation today, which poses significant environmental risks (Tan, 2006).

Overall, the shortcomings of regulatory environmental protection regimes necessitate new approaches beyond IMO instruments, which can hopefully set higher standards in a shorter time frame and create financial incentives to stimulate compliance.

1.2 Case: The Clean Shipping Project

A possible strategy to uncouple growth in shipping from environmental harm is the Clean Ship approach. This approach adopts an integrated view on the life-cycle of a seagoing vessel, by considering sustainability aspects during vessel design, construction, operation and the reselling/recycling phase (SAR, 2005). A clean ship is a vessel designed, constructed and operated in an integrated manner with the objective to eliminate harmful discharges and emissions throughout its life cycle (SAR, 2005).

In line with this approach, the Clean Shipping Project (hereinafter the CSP⁵) aims to catalyse clean shipping on an international basis. The CSP revolves around the Clean Shipping Index (hereinafter the CSI), which ranks shipping companies according to their environmental performance. Cargo-owners⁶ can use this information for sea freight procurement. If cargo-owners decide to select high-ranking shipping companies, this can create a competitive advantage for environmentally-responsible shipping companies, who now occupy a niche position on the sea freight market. This creates financial incentives for other shipping companies to invest in pollution control measures in order to improve their environmental performance and thus market position.

³ The current fuel sulphur limit applying to merchant vessels is 4.5 percent, which is several thousand times the sulphur level of fuels used on-road in Europe and North America (Friedrich et al., 2007).

⁴ A sub-standard ship or operation is one that is 'substantially below' the relevant IMO requirements. There are also ships which do the barest minimum needed to comply with standards and pose significant risks as well (Tan, 2010).

⁵ Though the website uses the term 'Clean Shipping Project' for the managing organisation behind the initiative, this study uses it to refer to the entire system, including stakeholders, rule system and steering mechanism (i.e. the Clean Shipping Index). The term 'Clean Shipping Project organisation' is used for the managing organisation behind the CSP.

⁶ Cargo-owners are companies that own (any type of) good and charter shipping companies to transport these. More official terms are 'charterer' or 'shipper', but 'cargo-owner' is preferred by the CSP.

The CSP is based on the idea that private companies, which are generally seen as the main perpetrators of environmental degradation, can serve as agents of change. This is a powerful idea, because non-state, private actors can be very influential and a substantial driving force in sustainable development.

A recent phenomenon is that businesses increasingly establish environmental initiatives, rather than passively following government-set standards. This gave rise to a theoretical domain called private governance, which focuses on the role of private actors in the establishment and maintenance of issue-specific rule systems (Pattberg, 2004). Until recently, most of these private initiatives were restricted to land-based industries, now it seems like the shipping industry is slowly catching up.

Another increasingly popular approach to achieve sustainability are partnerships. Glasbergen defines partnerships as "(...) collaborative arrangements in which actors from two or more spheres of society (state, market and civil society) are involved in a non-hierarchical process through which these actors strive for a sustainability goal" (Glasbergen, 2007, p. 2). Within the CSP, public and private actors (profit and non-profit) collaborate to stimulate more sustainable shipping practices. There are few (if any) other examples of environmentally-oriented partnerships in the shipping industry that have been thoroughly researched.

1.3 Research Objective

This thesis aims to analyse the CSP from the perspective of private governance and partnership theory, which are linked by the notion of institutionalisation.

In order to effectively steer the environmental behaviour of private actors, the CSP has to develop into a private governance system that can enforce compliance. In other words, the CSI has to become a standard norm that is widely accepted and used, an integral part of sea freight procurement. Because of the international character of shipping, the institutionalisation of the CSP should lead to an expanding sphere of authority to effectively promote sustainable development in the shipping industry.

The main objective of this thesis is to analyse the institutionalisation process of the CSP and to identify important factors that shape the outcome of this process. The research question can therefore be formulated as follows:

"To what extent has the Clean Shipping Project institutionalised as a private governance system?"

The following sub-questions are used to answer the general research question:

- *What constitutes the institutionalisation process?*
- *Which partnership features characterise the Clean Shipping Project?*
- *To what extent does the Clean Shipping Project qualify as private governance?*
- *What enabling and constraining factors influence the institutionalisation process?*

The first of these sub-questions will be dealt with in the theoretical framework while the following sub-questions can be answered after elaborate scrutiny of the CSP. Therefore, the research strategy used is a case study, which enables in-depth analysis of various aspects of the CSP, particularly the roles, perceptions and interaction between the network members.

The theoretical value of this research is twofold. Firstly, it intends to create analytical insights on private governance by placing private firms central in analysis. Governance studies are often rather abstract and tend to focus on macro-level developments. Detailed and empirical inquiry should enable a better understanding about the actual practice of private governance.

Secondly, it aims to resolve uncertainties surrounding the institutionalisation process. Institutionalisation, and particularly that of private governance systems, is a very complex and abstract process about which little is still known. The identification of enabling and constraining factors in a real-life context will hopefully generate relevant knowledge for future institution-building towards sustainability by private actors.

This research also hopes to have practical relevancy. It therefore formulates a set of recommendations which outlines possible action to improve different aspects of the CSP (and could facilitate further institutionalisation). This thesis is therefore particularly interesting for professionals involved in the CSP.

1.4 Thesis Structure

The theoretical framework of this thesis combines private governance and partnership theory, which will be elaborated in chapter 2 together with the institutionalisation model. The following chapter explains the methodological aspects of this research: case study selection, data collection and processing, and research validity. Chapter 4 provides background information on the nature and scale of environmental problems caused by shipping and the regulations that govern these issue areas. To help understand the relations between various actors and market characteristics, chapter 5 provides a general description of the shipping industry. The next chapter focuses on the basic set-up and organisation of the Clean Shipping Project and the index itself. All the relevant interview results are compiled in chapter 7, which are subsequently analysed in detail in chapter 8. The discussion identifies strengths and weaknesses of this research by evaluating the private governance and partnership theory but also the institutionalisation model. The most important insights and findings will be presented in the conclusion after which a set of recommendations are presented.



Chapter 2 THEORETICAL FRAMEWORK

This chapter describes private governance and partnership theory, which constitute the theoretical framework of this research. Within this framework, the concepts of institutionalisation and legitimacy will also receive elaborate attention. At the end of this chapter, an attempt is made to synthesize important insights in a conceptual model.

2.1 Private Governance Theory

Traditionally, governments have used command-and-control policy instruments to regulate activities in society. Since the 1990's, state policy-making authority is increasingly shared with business, environmental and other organised interests. This development gave rise to the concept of governance, which has attracted a lot of academic attention the past decade or so and has grown into a powerful paradigm. There are many different views on the definition of governance, which all emphasize the changing role of public and private actors due to a shift in policy-making authority from government to other actors and levels. Some of these views are discussed, focusing primarily on environmental governance, with occasional reference to political science scholars.

There is a strong tendency in political science literature to regard government and governance as two opposites: a strong state as opposed to a self-organising and coordinating network of societal actors. Government is thus associated with traditional form of regulation and governance with new policy instruments (often non-regulatory instruments proposed, designed and implemented by non-state actors). According to Stoker (1998), the essence of governance is its "focus on governing mechanisms which do not rest on recourse to the authority and sanctions of government" (Stoker, 1998, p. 1). Cashore (2002) makes a clear distinction between government (traditional top-down regulation) and governance, which can be either shared private/public governance or so-called non-state, market-driven (NSMD) governance. However, according to Van Leeuwen government steering is not necessarily always "state-based, hierarchical in nature and based on command-and-control regulation" (Van Leeuwen, 2010, p. 27).

Governance can also be interpreted more broadly as "the steering of society" (Van Leeuwen, 2010, p. 26). According to Van Leeuwen global governance is about "those collectivities (spheres of authority⁷) and those steering mechanisms (systems of rule) that generate compliance from the target group" (Van Leeuwen, 2010, p. 28). Pattberg (2004) identifies different modes of governance, depending on the purpose and actor-constellation involved. They can be positioned along a continuum, from traditional inter-state negotiations involving non-state actors, to hybrid public-private partnerships, to fully private co-operations (Pattberg, 2004).

Private actors increasingly take the initiative in setting up and implementing their own environmental management systems, rather than just following top-down regulations. An increasing number of firms use certifications (e.g. ecolabels), standardization schemes (e.g. EMAS) or codes of conduct such as the Valdez principles. These business initiatives, often accomplished in partnership with NGOs, are an increasingly important component of the global environmental architecture (Levy and Newell, 2005). This serves as the main source of inspiration for private governance, which is a theoretical domain that focuses on the role of private actors (firms, business associations, advocacy

⁷ Rosenau (2002) defines a sphere of authority as "collectivities that have the ability to generate compliance on the part of those actors, groups, or persons to whom the governance practices are directed" (as cited by Van Leeuwen, 2010, p. 24).

networks, think tanks, and non-profit organisations) in the establishment and maintenance of issue-specific rule systems (Pattberg, 2004).

Van Leeuwen sees private governance as “shifts in the locus and focus of governance” (p. 17, 2010). This implies shifts towards multiple actors and levels, which creates new types of rules and steering mechanisms. Under private governance, financial incentives through the workings of the supply chain can be used to establish steering mechanisms. The market then becomes the institutional setting within which governing authority is granted, which is the main premise of NSDM governance (Cashore, 2002). Although private standards are voluntary in nature, some degree of compliance is necessary to qualify as private regulation. Private governance systems therefore necessitate internal evaluation processes and compliance mechanisms. Pattberg (2005) identifies three important political developments that enable private governance:

1. Locus of authoritative problem-solving does not rest with governments alone;
2. Partnerships between companies, governments, and civil society;
3. Institutionalisation of cooperation, resulting in social practices that effectively govern specific issue areas.

In addition, the growing demand for corporate social and environmental responsibility and the pressure exerted by civil society play an important role in corporate responses.

The concept of private governance institutions is rather important in this research, because it is considered an optimised form of societal steering by private actors. Pattberg (2004) sees private governance institutions as self-coordinated networks of two or more private actors (non-profit and/or profit), engaging in the establishment, implementation and monitoring of voluntary norms and rules. Private institutions “govern a distinct issue area through the development and subsequent implementation of regulations directed at the behaviour of various actors” (Pattberg, 2005, p. 593). These observations largely overlap with definitions of (private) governance described above. However, Pattberg adds that governance institutions perform a wide range of additional functions, they: 1) provide a forum for deliberation and conflict resolution, 2) produce and disseminate valuable knowledge and information, 3) provide opportunities for organisational learning, and 4) secure independent verification of norm compliance (Pattberg, 2005). Private governance institutions thus provide collective goods, reduce transaction costs, and decrease uncertainty.

2.2 Partnership Theory

Pattberg identified partnerships as one of the developments that enable private governance. Recently, partnerships have gained popularity as an alternative strategy to tackle environmental (management) problems. The Forest Stewardship Council is often used as an example of an influential partnership that successfully convenes different stakeholder groups to promote responsible management of the world’s forests. Partnerships are however very diverse, they can vary in scope, type of environmental issue, as well as size and nature (Glasbergen, 2007).

Glasbergen defines partnerships as “(...) collaborative arrangements in which actors from two or more spheres of society (state, market and civil society) are involved in a non-hierarchical process through which these actors strive for a sustainability goal” (Glasbergen, 2007, p. 2). Partnerships are essentially self-organizing and coordinating networks, which are voluntarily initiated as supplement or alternative to government regulation. These characteristics clearly overlap with those of (private) governance systems. In addition, Pattberg (2004) emphasizes that partnerships are based on relations between various transnational actors who decide to collaborate because of shared principles and norms. While conventional private cooperation is based on market-coordinated relations and is primarily profit-orientated, within a partnership interests of individual actors converge in a common objective.

Glasbergen (2007) distinguishes three types of partnerships depending on the level of government involvement, of which the third type is most relevant for this paper. This partnership type is based on cooperation between business and NGOs, which could potentially deal more efficiently and effectively with public affairs, without the use of government authority or sanctions.

Even though collaboration within a partnership is not principally built on a profit-based rationale, it is important that it does offer some form of benefit to participating actors. After all, the main purpose of collaboration is to gain 'collaborative advantage': something has to be achieved that could not have been achieved by any of the partners acting alone (Glasbergen, 2007). This relates to both individual interests and the common objective of the partnership. In other words, its viability not only depends on whether the shared objective can be achieved through collective action, but also on its capacity to generate value for the partners individually (e.g. reduction in transaction costs, better market positions, reputation gains). If actors perceive that collaboration does not have added value, or that benefits are distributed unfairly, they may become demotivated and abandon the partnership.

There are several factors of success and failure that determine the outcome of cooperation between actors. These factors are related to the nature of interaction between actors, the process phases, partnership structure, and contextual environment (Glasbergen, 2007).

Mutual trust and respect are crucial to establish a self-coordinating network and facilitate collaboration. Building trust is a delicate process for which bureaucratic mechanisms to minimise power differentials and compliance mechanisms have to be in place (Glasbergen, 2007). Furthermore, the magnitude, type and configuration of resources deployed partly determine the outcome of the collaboration. Skills for leading and managing partnerships are also of critical importance. Gray (2007) calls these 'leadership intervention tasks', which include: appreciation or visioning, convening, problem structuring, designing the process, reflective intervention, conflict handling, brokering and institutional entrepreneurship (Gray, 2007). The necessary type of skills to effectively lead and manage a partnership depends on the phase of collaboration in which the partnership finds itself. Austin (2007) made a list of factors that are important in successful alliances between businesses and NGOs:

- Clarity and congruence of objectives: there has to be overlap of clear objectives to create alignment and cohesion;
- Value generation and distribution (described above);
- Capabilities and accountability: actors must have the institutional capacity to generate value for the partnership;
- Communication and trust: fluid and frequent communication through formal and informal channels are essential to facilitate collaboration;
- Learning and commitment: successful partnerships have a problem-solving attitude.

Interestingly, Gray (2007) identifies four phases of collaboration in partnerships:

1. Phase 1: problem setting to identify the relevant partners and getting them to commit to a collaborative partnership;
2. Phase 2: direction setting involves exploring the issues and reaching any necessary agreements to address them;
3. Phase 3: implementation entails putting those agreements in place and ensuring that follow-through occurs;
4. Phase 4: institutionalisation, structuring and regularization of ongoing interactions among stakeholders and/or replication of partnerships in other contexts.

This last stage is important to actually establish a private governance system. As Falkner observed, "governance emerges out of a context of interaction that is institutionalised and of more permanent

nature” (Falkner, 2003, p.73 as cited by Pattberg, 2005). A partnership therefore has to reach some degree of institutional permanence based on durable relations between actors in order to gain authority and ensure compliance. This requires a basis in trust rather than calculation of immediate benefit.

Institutionalisation is a “process of social construction by which individuals come to accept a shared definition of social reality that includes ‘the way things are,’ ‘what is important’ and ‘the way things are done’” (Scott, 1987, as cited by Cashore et al., 2000, p. 2). Institutionalisation thus involves the development of shared principles and norms, a rule system to guide the behaviour and interaction between actors.

Private governance institutions do not emerge easily. Institutionalisation is a complex and dynamic process which is influenced by a large set of both practical and abstract factors and is spread over a long period of time. Still little is known about the institutionalisation of governance by private actors without the involvement of governments (Pattberg, 2005). One thing is certain though, “individual actors adjust their behaviour out of recognition of the legitimacy of the governance system” (Falkner, 2003, p.73 as cited by Pattberg, 2005). Simultaneously, social rules, procedures and role divisions are shaped and stabilised. The next section explains the concept of legitimacy in more detail.

2.3 Legitimacy

According to Cashore (2002), to achieve legitimacy external audiences have to accept the rule system established by a partnership. External audiences is the term he uses for tier I and tier II audiences. Tier I audiences are organisations that have a direct interest in the policies and procedures of the organisations they legitimate (economic actors, environmental groups, state actors). Tier II are audiences within civil society that have a less direct but equally important role in granting legitimacy (customer behaviour, values and attitudes). The tiers are linked and broader societal values also affect long-term durability of legitimacy (Cashore, 2002).

Legitimacy is a crucial precondition for a partnership to develop a rule system that is acknowledged and can enforce compliance. Suchman defines legitimacy as the “(...) perception or assumption that the actions of an entity are desirable, proper, or appropriate within some socially constructed system of norms, values, beliefs and definitions”(as cited by Cashore, 2002).

There are however three forms of legitimacy: 1) interest-based pragmatic legitimacy; 2) value-oriented moral legitimacy, and 3) culturally focused cognitive legitimacy (Cashore, 2002). Pragmatic legitimacy results from perceived business-opportunities (economic and material benefits, such as market access and price premiums), whereas moral legitimacy stems from value-driven motivation and a sense of ecological responsibility (the right thing to do) (Cashore, 2002). Cognitive legitimacy depends on norms and values that are embedded in a certain culture which determine whether a rule system is seen as desirable, proper, or appropriate. Each category has a different level of durability: pragmatic legitimacy is easiest to achieve but also easiest to lose, while cognitive legitimacy is the hardest to achieve but the easiest to maintain (Cashore, 2002).

Legitimacy is gained from external audiences who are guided by a complex interplay of motivations (Cashore, 2002). Motivational factors not only determine the type of legitimacy, but also influence relationships between actors and how a network may develop over time. Austin (2007) explains that motivations of companies to adopt sustainable initiatives can be:

- 1) Compliance-driven (fulfilling legal obligations);
- 2) Risk-driven (warding off external threats);
- 3) Values-driven (following core beliefs);

- 4) Business-opportunity driven (based on economic self-interest).

These partly overlap with Bansal & Roth's (2000) motivational categories incorporated in their corporate ecological responsiveness model⁸:

- 1) Competitiveness: ecological responsiveness is expected to lead to sustained advantage and improved long-term profitability.
- 2) Legitimation: directed toward complying with institutional norms and regulations to avoid sanctions. Firms aim to meet standards rather than exceed them.
- 3) Ecological responsibility: firms act out of a sense of social obligation and philanthropy rather than self-interest.

Firms are usually motivated by concerns for legitimation, secondly by competitiveness, and thirdly ecological responsibility (Bansal & Roth, 2000). Companies however operate under multiple contextual conditions, which influence their motivations resulting in a wide range of organisational responses. Bansal and Roth (2000) observe three contextual dimensions:

- 1) Issue salience: the extent to which a specific ecological issue has meaning for actors, which is determined by certainty, transparency, and emotivity.
- 2) Field cohesion: the intensity and density of formal and informal network ties between actors within an industry.
- 3) Individual concern: the degree to which companies value the environment and the agency they possess to act on their environmental values.

There are both similarities and differences between the motivational categories of Austin (2007) and Bansal & Roth (2000). Competitiveness is linked to business-opportunities, while ecological responsibility and values-driven overlap. However, Austin identifies an additional motivational category (risk-driven), while 'legitimation' according to Bansal & Roth (2000) goes beyond legal obligations and also takes into account compliance with institutional norms.

2.4 Institutionalisation Model

In order for a partnership to institutionalise into a private governance system, the following conditions have to be met:

- Legitimacy of the rule system, partly building on shared principles and actor motivations (amongst others);
- Self-organising and coordinating network, but also establishment of behaviour-oriented steering mechanisms that can generate compliance (system robustness);
- Durable commitment and cohesion between network members within a collectivity, partly enabled through mutual trust and collaborative advantage.

If these conditions are met, a system can establish and may be able to expand its sphere of authority, if it can also gain legitimacy among non-members.

Based on this set of assumptions, a model can be developed to explain the institutionalisation process of a partnership (see diagram 1). In this model a set of factors determine whether a partnership acquires institutional legitimacy, trust and robustness (these are referred to as institutional properties). Each of these properties is crucial to generate collaborative advantage, but also to ensure commitment and cohesion between network members (referred to as institutional dimensions). This process can be compared to constructing a house, which is explained in more detail below.

⁸ Corporate responsiveness is defined as "a set of corporate initiatives aimed at mitigating a firm's impact on the natural environment" (Bansal & Roth, 2000, p. 717).

Some of the elements in the institutional model are directly derived from the theories described above: actor motivation, communication, monitoring and compliance mechanisms, resources, management, legitimacy, trust and collaborative advantage. The other elements do not have a clear theoretical underpinning, but nevertheless have an important function in the institutionalisation model as will be explained below.

2.4.1 Legitimacy

Firstly, the construction of a house starts with a decision of the future owners, but also has to be permitted by the municipality. The concept of legitimacy has already been discussed above, including the importance of actors motivations. However, there are also other factors at play, which are stakeholder representation and external rule systems.

Fair stakeholder representation necessitates that the views and needs of relevant network members are adequately taken into account. This can be achieved through active involvement of these network members, their participation in developments and discussions to influence their outcomes. If members have sufficient opportunities for input and feedback, they are likely to positively evaluate the legitimacy of rules, procedures and outcomes within a partnership. Stakeholder representation also determines power relations within a network and may create system bias, if not properly managed. If stakeholders are excluded from processes and perceive unjust power differentials, they are less likely to support the partnership. This does not mean however that power has to be evenly distributed within a network.

The legitimacy of a partnership is also influenced by its relation with external rule systems, which can be for instance state-based governance (e.g. government rules and regulations) or other private initiatives. Legitimacy can be confirmed in three ways: 1) the partnership matches and strengthens other governance systems; 2) the partnership has a clear added value, for instance because the effectiveness of other rule systems is inadequate; 3) other rule systems express their support for the partnership or maybe even try to align (e.g. by adopting the same standards).

2.4.2 Trust

Secondly, there should be mutual trust between the people involved in the building project, i.e. between the client and contractors. The client should be able to trust the contractor to do his job properly and the contractor should trust the client to pay the right price for his services. Within a partnership, there are two types of trust: personal trust between network members (in each other's integrity) and abstract trust in the functioning and effectiveness of the system.

Good communication promotes personal trust among network members. Fluid and frequent communication (exchange of views and ideas, constructing agreement) through (in)formal channels improves understanding, mutual respect and goodwill among network members. Certain leadership skills such as conflict handling and brokering facilitate communication processes.

Accountability mechanisms consist of monitoring and reporting (through self-assessment or an independent party), which may positively contribute to personal and abstract trust. These mechanisms ensure that the performance of network members is transparent and that they can be held accountable for their actions. Without monitoring and reporting, it is simply not possible to check if actors comply with shared principles and rules and whether they contribute to the common objective. Compliance mechanisms constitute the next step, which requires performance to be compared against minimum standards. In case of non-compliance, sanctions could follow to prevent free-riding, which undermines trust within a partnership.

Abstract trust in a system is influenced by its robustness, which is discussed below.

2.4.3 Robustness

Thirdly, the materials used to construct the house should be of good quality to make it sturdy so that it can serve its purpose well. Institutional robustness thus refers to operational and practical dimensions of the partnership, which enable it to be self-organising and coordinating (simply put, to function properly). Another dimension of institutional robustness is steering potential, whether the system is adequately set-up to enforce compliance. Robustness can be achieved through a set of five institutional factors.

In order for a system to have a significant steering potential, effective accountability and compliance mechanisms have to be set in place. If there is for instance no monitoring nor minimum requirements, it may be difficult to exert control over actor decisions and behaviour, because basically they can do anything they want.

A private governance system that makes use of market incentives, should involve both supply-side economic interests (those firms that have to implement the rules) and demand-side economic interests (put pressure on suppliers to accept the rules). Furthermore, the steering potential of a system depends on which stakeholders are involved as incentive providers. The network should therefore include influential economic actors in the market to increase its power.

The way a partnership is managed and the resources available are crucial, because they determine how effective and efficient processes (problem setting, direction setting and implementation) take place. The amount, type and configuration of resources available (e.g. money, time, knowledge, expertise, contacts) create opportunities but also set restrictions on the way a partnership operates and what it can achieve.

A lot also depends on the steering mechanism used to influence actor behaviour. Steering mechanisms can take many different forms, they can for instance be regulatory or market-based instruments. It is important that the instrument deployed is knowledge-based (both scientific and professional knowledge) and properly designed (realistic and feasible) to be effective.

2.4.4 Collaborative Advantage, Commitment and Cohesion

If all conditions are met, a house can be constructed that suits the inhabitants' needs and which is durable. In this case it means that all institutional factors work in tandem to ensure durable commitment and cohesion as well as collaborative advantage. This enables a partnership to develop into a private governance institution that has authority over network members and strongly compels them to comply with its rule system. This creates opportunities for the system to expand its sphere of authority among actors outside the network.

Collaborative advantage

There may be a high level of trust and legitimacy among network members, but if cooperation does not generate any benefits they might cease cooperation anyway. The viability of a partnership therefore depends on its capacity to generate value for the network members and the overall objective. There are different forms of benefits possible, depending on the type of partnership and actors involved (e.g. reduced costs, better market positions, service provision).

Whether a partnership can generate collaborative advantage is mainly influenced by institutional robustness and external forces arising from market characteristics and conditions. Institutional robustness influence collaborative advantage because it enables a partnership to function properly on a daily basis, but also determines whether the steering mechanism is effective (can enforce compliance). Therefore, if robustness is impaired, the system is not able to create collaborative advantage. Yet despite solid robustness, if market characteristics and conditions are simply unfavourable, collaborative advantage may nevertheless be impeded.

Commitment and cohesion

A basic level of commitment and cohesion is needed for collaboration to occur in the first place. On the long run, strong and sustained commitment and cohesion ensure system durability, which is necessary for a partnership to develop in a private governance institution. Commitment and cohesion are combined in the institutionalisation model because they both depend on legitimacy and trust and are strongly interrelated.

On the one hand, the commitment of an actor to a partnership depends on the collaborative advantage generated. If a partnership creates attractive benefits, actors are more willing to support and invest in collaboration. On the other hand, commitment depends on a high and stable level of legitimacy, because if a system matches their needs and/or principles actors feel more obliged to comply with institutional norms and rules. Trust, but also accountability and compliance mechanisms also play a role in ensuring actor commitment.

Closely connected to the notion of commitment is cohesion. Cohesion implies that actors are tightly interconnected through strong network ties, which contributes to the durability of a partnership. Cohesion is positively influenced by principles and norms shared among network members, which culminate in a common objective (the glue that binds network members together). The network ties themselves are based on personal trust (and therefore good communication and accountability mechanisms). Strong cohesion within a network raises the commitment of actors to stay on board because of social pressure.

The level of commitment and cohesion feeds back into the motivation of network members (e.g. due to weak commitment and cohesion network members are less motivated to cooperate).

2.4.5 Process Dynamics

There are no guarantees that a partnership will institutionalise, there are many factors that can impede this process. In fact, many partnerships succumb to collaborative inertia characterized by slow progress or failure to achieve common goals.

It is also important to realize that the institutionalisation process is not static, but highly dynamic, because all factors are subject to change due to external influences (within the socio-cultural/economic and political context). However, only market characteristics & conditions and external rule systems are explicitly integrated in the model as external influences. The institutionalisation model mostly focuses on internal processes, the perceptions and interactions between members of a partnership. Issue salience and environmental concern among the general public (tier II audience) is not explicitly incorporated in the model, but can be considered under both market conditions and stakeholder motivation.

Furthermore, durability does not mean an institution is ever-lasting in the exact same form. It is very well possible for the rule system and steering mechanism to be adapted to changing circumstances.

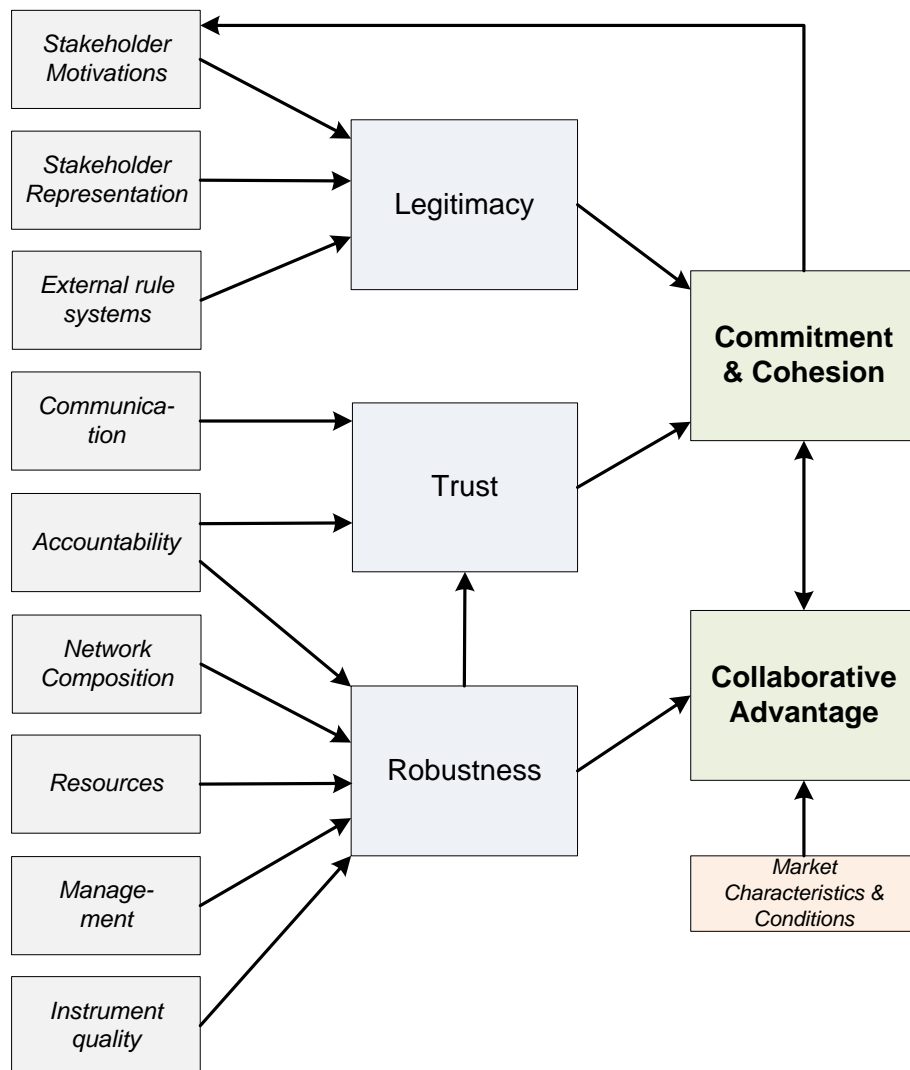


Diagram 1: Institutionalisation process of a partnership as a private governance system

Chapter 3 METHODOLOGY

This chapter describes case study selection, data collection and processing and interviewee selection. It concludes with a short review of the validity of this research.

3.1 Case Study Selection

The research strategy used for this thesis is a case study, which enables empirical inquiry into a “contemporary phenomenon within a real-life context” (Yin, 2009, p. 2). This phenomenon is the CSP and its institutionalisation into a private governance system, which depends on specific contextual factors. A major advantage of this research strategy is that it enables rigorous analysis of different dimensions of the CSP in a lot of detail. Furthermore, it enables the researcher to identify “causal links in real-life interventions that are too complex for survey or experimental strategies” (Yin, 2009, p. 19).

The Clean Shipping Project was selected as a case study, because it corresponds with the area of interest (sustainability and the shipping industry) and is a promising example of a partnership. It strongly builds on the power of supply chain management and has the potential to develop into a powerful governance system. Furthermore, the CSP is quite unique because there are very few other sustainability initiatives in the shipping industry that are voluntarily established and implemented by private actors. Other initiatives only target one shipping segment (Green Award focuses on tankers, the Clean Cargo Working Group on container ships), but the CSP sets high standards for the entire industry. Furthermore, the CSP adopts a holistic approach and addresses all environmental impacts (the indices developed by World Ports Climate Initiative and the IMO only focus on air emissions and energy efficiency respectively).

3.2 Data Collection and Processing

The main method of data collection used for this research is interviewing. A total number of 15 interviews were performed which generated qualitative information. The interview objective was to assess the interviewees’ perceptions and experiences in relation to the CSP. The interview topics were derived from the institutionalisation model described in the previous chapter. Through analysis of interviewee response, enabling and constraining factors were identified that influence the institutionalisation process of the CSI.

All interviews were semi-structured, were conducted face-to-face and lasted 1,5 hours on average. A detailed topic list was used consisting of approx. 20 (mostly) open-ended questions to guide and structure the interviews and ensure consistency. Specific topic lists were formulated for each stakeholder category to ensure relevancy and completeness. The topic lists were used in a flexible manner, which meant that in some cases follow-up questions were added and other cases questions were omitted because they were not considered relevant.

Written notes were made during the interviews, which were also recorded to preserve important details (with permission from the interviewees). These recordings were transcribed on the computer, after which parts were used for the chapter on interview results. Some sentences were slightly rephrased to make them fit in the overall text and thus improve readability. All interviewees received a draft copy of the interview results to check whether they were cited correctly. They could add comments and make changes to the text to correct misinterpretations or wording, which were all incorporated in the final text.

Besides interviews and academic literature, a number of web-based documents were used as a source of information. In preparation of this study, news articles and reports by marine eNGO's (NSF, Seas at Risk) were consulted to explore recent developments related to clean shipping. The section on private initiatives in chapter 5 is based on publications available on the websites of the Clean Cargo Working Group, Green Award and the World Ports Climate Initiative. For chapter 6, most information was obtained from documents published by the CSP on its website (guidance document, brochure and presentation).

3.3 Interviewee Selection

A diverse set of interviewees was selected to ensure that different perspectives is covered. The interviewees can be divided into two broad categories: members of the CSP and non-members (names and functions provided in annex I). Most of the interviewees are network members of the Clean Shipping Project: stakeholders that are actively involved in the project (by contributing to its development) and intend to comply with its rule system. The role and level of involvement of each member is different. Non-members are not actively involved in the project at all, but do represent key stakeholders in the shipping industry. Of course there are many other types of stakeholders involved in the shipping industry (e.g. investors, brokers, ports and classification societies), but they were not interviewed because they do not play a significant role in the project at the moment.

1. *Members of the Clean Shipping Project*

- a. CSP organisation: Ulf Duus and Jan Ahlbom (developers)
- b. Commissioners: Västra Götaland, Göteborg Region (regional public authorities)⁹
- c. Cargo-owners: Tetra Laval, Stora Enso Logistics, Volvo Logistics, Preem¹⁰
- d. Forwarder: DHL Global Forwarding Sweden
- e. Shipping companies: Wagenborg, Maersk, Wallenius Marine
- f. Environmental NGO: the North Sea Foundation

2. *Non-members*

- a. Dutch Ministry of Transport, Public Works and Water Management
- b. Swedish Ship-owner Association
- c. Spliethoff
- d. EVO (Dutch Shippers Association)

Firstly, contact was established with the North Sea Foundation, because they possess a lot of knowledge about clean shipping and have a large network. Secondly, the CSP organisation was approached because they play a central role in the CSP, and are therefore also an important source of information. Both the North Sea Foundation and the CSP organisation provided references to other actors for interviews. The North Sea Foundation referred to the Dutch Shippers Association and the Dutch Ministry of Transport, Public Works and Water Management, which in turn mentioned Wagenborg and Spliethoff. The developers provided the contact details for: the cargo-owners, Maersk, Wallenius Marine, the commissioners, DHL SE and the Swedish Ship-owner Association. The developers provided a list of cargo-owners that would be willing to cooperate. Of this list, companies were selected from various trades, because each type of company may have different needs and experiences. A practical criterion was the location of the head office, which had to be near Goteborg or Stockholm.

⁹ The officials of Västra Götaland Göteborg Region were interviewed simultaneously, which is why they are often referred to as VG/GR in the chapter on interview results (they share the same view on various matters).

¹⁰ Formally, Stora Enso Logistics and Volvo Logistics are not cargo-owners, but because they are closely linked to Stora Enso and Volvo Cars they are nevertheless referred to as cargo-owners in this research.

Bias in the interview results was avoided because this research incorporates perceptions of both (a wide range of) network members and actors outside the network. Not only core network members who are very much engaged and enthusiastic about the CSP (e.g. Volvo Logistics, Wallenius Marine), but also others who are less active (e.g. Stora Enso¹¹, Wagenborg).

The branch organisations EVO (Dutch Shippers Association) and the SRF (Swedish Ship-owner Association) were selected to provide information about the position of cargo-owners on the one hand and ship-owners on the other. The Dutch Ministry of Transport, Public Works and Water Management was selected because of its important role as state agency, while Spliethoff should represent middle-sized shipping companies not involved in the CSP.

(The Dutch Ship-owners Association (KNVR) was not able to participate in an interview due to time constraints on their side, while the European Community Shipowners Association never replied to the invitation. Overall, the number of interviews was quite satisfactory given the time available.)

3.4 Validity

An important strategy in case studies to achieve internal validity¹² is the use of multiple sources of evidence (documents, interviews and observation), with data needing to converge in a triangulation fashion (Yin, 2009, p. 2). This was accomplished to limited extent.

Firstly, this research mostly depended on information generated by interviews. Considering the time available, a relatively large number of interviews was performed and a wide range of perspectives is covered. These are positive aspects which contribute to the validity of research findings. Verification was partly achieved through use of (web-based) documents and literature about the shipping industry. A complicating factor was that there are very few documents available about the CSP, and no scientific literature at all. Furthermore, this research did not make use of direct observation of stakeholder interaction, because no CSP meetings took place during the period of data collection. As a result, there is limited supporting evidence to enable verification of interview results and causal statements.

External validity requires a definition of the domain to which a study's findings can be generalized (Yin, 2009, p. 40). This can be assessed in two ways: the findings related to the case study at hand and the theoretical insights. In the first case, the findings cannot be generalized because they only apply to this specific case study. However, the case study does generate theoretical insights about private governance and partnership theory in general. Furthermore, the institutionalisation model can be applied to other partnerships that aim to establish private governance, also in other issue areas.

¹¹ Even though Stora Enso Logistics is not really actively involved at the moment, the CSP organisation still considers them part of the network.

¹² Internal validity: seeking to establish a causal relationship, whereby certain conditions are believed to lead to other conditions, as distinguished from spurious relationships (Yin, 2009, p. 40).

Chapter 4

MARINE IMPACTS AND REGULATIONS

The urgency of marine degradation and air pollution is one of the reasons why this study was undertaken. This chapter describes the nature and scale of environmental impacts caused by shipping. It focuses on the current state of the environment and does not detail future scenarios or environmental techniques.

During routine operation of vessels at sea or berth, due to intentional or accidental pollution, legal or illegal discharge, and even after it has been sent to a scrap-yard, sea-going merchant vessels impact the marine environment and atmospheric quality in several ways. These environmental impacts can be subdivided in four categories: 1. air pollution (incl. greenhouse gases), 2. marine pollution (chemicals, oil and litter), 3. Invasive species, and 4. ship-breaking. The level of impact depends on specific ship features (e.g. tonnage, engine type, resource consumption), but in principle they apply to all vessel types. The figure below depicts the main external effects caused by shipping (according to a slightly different categorization and excl. ship-breaking).

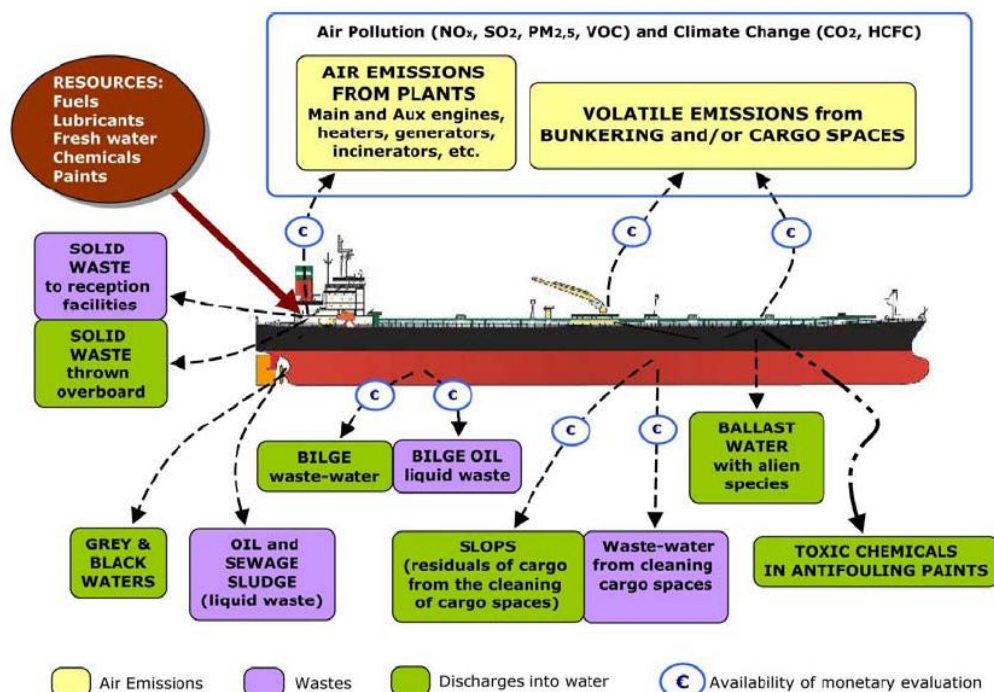


Figure 1: Environmental impacts caused by a vessel during operation (TRT, 2007)

This chapter also describes the regulatory regimes governing these environmental issues, established by the International Maritime Organisation (IMO). The IMO is the main regulatory authority dealing with shipping issues on a global level. The following section describes the basic functioning of the IMO together with the main piece of legislation governing vessel-source pollution, MARPOL 73/78. After this section each of the environmental impacts will be discussed separately.

4.1 International Maritime Organisation

The IMO is a specialized agency of the United Nations whose main task is to develop and maintain regulations on matters relating to maritime safety and pollution prevention and other matters

related to shipping. It acts as the custodian of about 50 international conventions containing standards for ship design, construction, equipment, operation and manning (of which 21 directly environment related) (IMO, 2010a). The IMO has 166 members states and is governed by the Assembly, which meets every two years (in between Assembly sessions a Council consisting of 32 member states acts as the governing body). The technical and legal work is carried out by five specialized committees, including the Marine Environment Protection Committee (MEPC).

Decision-making within the IMO is based on the principle of state sovereignty, which means that states decide individually whether or not to support and ratify conventions. Entry-into-force of adopted conventions requires not only a certain number of national ratifications, contracting parties should also represent a sizeable proportion of the world fleet (Tan, 2006)¹³. This slows down the implementation of IMO conventions considerably, after adoption it normally takes 2-5 years until a convention enters into force.

Once a convention is ratified actual enforcement of pollution control standards is rather weak. Enforcement entails that compliance with discharge standards is monitored (through vessel inspections) and that those who violate standards are prosecuted. However, the IMO mostly focuses on the technical features of pollution control, while procedures for monitoring compliance by member states (e.g. through analyzing state reports) and sanctions are inadequate or lacking (Tan, 2006). The difficulty is that the IMO does not possess enforcement powers and is not able to impose sanctions on member states for non-compliance. It depends on member states that have ratified a convention to transpose international law into their national legislation and enforce it through mandatory compliance mechanisms. Furthermore, primary jurisdiction over vessels resides with the flag states¹⁴, who have unlimited competence to prescribe rules and standards for their vessels. However, flag states usually do not have the resources (or interest) to inspect vessels and monitor compliance on the high seas, let alone to bring violators before court. Not only the over-reliance on flag state enforcement is a persistent problem, the lack of shipboard monitoring equipment and waste reception facilities also complicates matters (more about the role of other stakeholders in the legal framework in the next chapter).

The legal framework which determines the rights and responsibilities of nations for their ocean-going merchant ships is laid down in the UN Convention on the Law of the Sea (UNCLOS, 1982)¹⁵.

4.2 MARPOL 73/78

The International Convention for the Prevention of Pollution from Ships, or simply MARPOL (amended in 1973/78), sets out the framework for the multilateral development of measures to prevent, reduce, and control ship-source pollution. MARPOL includes six technical Annexes, of which only the first two are obligatory:

1. Annex I: Regulations for the Prevention of Pollution by Oil (150 contracting states¹⁶);
2. Annex II: Regulations for the Control of Pollution by Noxious Liquid Substances in Bulk (150 contracting states);

¹³ Traditional MARPOL formula which conditions entry into force upon the acceptance of states representing at least 50% of global shipping tonnage (Tan, 2006). There are exceptions however, such as AFS which required 25%.

¹⁴ The flag state refers to the state with whom a vessel is registered or whose flag the vessel flies (Tan, 2006). The coastal state refers to the state that claims jurisdiction over its surrounding waters. The port state is the state whose ports and internal waters a vessels sails into.

¹⁵ UNCLOS poses some restrictions on the capacity of coastal states to act unilaterally, especially beyond their territorial waters (i.e., 12 nautical miles) (Tan, 2006). When under certain conditions unilateral measures are taken, restrictions would not apply to a vessel en route to a port not within the sovereignty of the Coastal State.

¹⁶ As of July 2010 according to IMO's summary of status of conventions.

3. Annex III: Prevention of Pollution by Harmful Substances Carried by Sea in Packaged Form (133 contracting states);
4. Annex IV: Prevention of Pollution by Sewage from Ships (125 contracting states);
5. Annex V: Prevention of Pollution by Garbage from Ships (140 contracting states);
6. Annex VI: Prevention of Air Pollution from Ships (60 contracting states).

Reporting of enforcement efforts for the MARPOL Convention remains an issue. In 1999, only 25 states submitted reports to IMO and in 2001 only 29 out of 162 states (Mattson, 2006). Inadequacy of port reception facilities is seen as one of the main reasons for non-compliance of the MARPOL Convention (Van Leeuwen, 2010).

The other annexes (except Annex III) will be described in more detail below, together with a selection of unilateral standards and regulations established outside the IMO arena.

4.3 Air Pollution

Heavy fuel oil is used as bunker, which is a carcinogenic (class 2) residual from oil refining. During vessel operation, exhaust gases are emitted from onboard installations such as the main and auxiliary engines, heaters, generators and incinerators (CSP, 2003).

Calculation methods and uncertainty ranges of emission data are not explained in detail for each figure provided in this chapter. Therefore, two remarks have to be made beforehand which are important to take into account. Firstly, there are different approaches to calculate emission data, which is why there are studies on the same parameters with different outcomes. Generally, to calculate ship emissions, data on the following aspects is needed: 1) activity levels (e.g., hours of operation, engine load), 2) engine emission factors, and 3) geographic location (Friedrich et al., 2007). There are different estimates for each of these variables¹⁷. Furthermore, one also has to bear in mind that there are a lot of uncertainties associated with calculating global shipping emissions. For instance, the fuel consumption estimates used in the second IMO greenhouse gas study have an uncertainty range of approx. 20% (Buhaug et al., 2009).

4.3.1 NO_x and SO_x

Recent studies have estimated around 15% of global NO_x and 5–8% of global SO_x emissions can be attributed to oceangoing ships (Corbett et al., 2007).

The main fraction of SO₂ emitted from ships will oxidize in the atmosphere to form sulfate (SO₄), while nitrogen compounds will form nitric acid and nitrate. Deposition of sulphur and nitrogen compounds causes acidification of natural ecosystems and threatens biodiversity (Endresen et al., 2008). Furthermore, sulfate and nitrate aerosols (together with directly emitted particles like organic and black carbon) negatively affects human health. Ground-level ozone formation due to NO_x emissions aggravates existing respiratory problems (Corbett et al., 2007).

Regulations

Annex VI of the MARPOL Convention entered into force in May 2005. Due to the powerful lobby of the oil industry, the maximum allowed fuel sulphur content (a global cap) was set at 4.5% (45,000 ppm S). This is almost twice the average sulphur content of fuels in use in ships today¹⁸ and several thousand times the sulphur level of fuels used on-road in Europe and North America (Friedrich et al., 2007). In 2008, the MEPC approved proposed amendments to Annex VI. The changes focus on a

¹⁷ For instance, CO₂ emissions can be based on two different approaches: the bunker fuel sales accounting and the so-called bottom-up approach based on ship features and traffic data over time (TRT, 2007).

¹⁸ The global average for sulphur levels in bunker fuels is about 2.7 % (Friedrich et al., 2007).

progressive reduction in SO_x emissions from ships, with the global cap reduced initially from the current 4.5% to 3.5% in 2012 and then progressively to 0.5% by 2020 (IMO, 2010c).

May 2006, the Baltic Sea became a Sulphur Emission Control Area (SECA) under MARPOL Annex VI. Ships operating within the SECA are required to use bunkers with a sulphur content of no more than 1.5% by mass or have in place an approved exhaust gas cleaning system (IMO, 2010c). The sulphur limits in SECAs will be reduced from the current level of 1.5% to 1% in 2010 and further reduced to 0.1% in 2015 (use of scrubbers is allowed).

In addition to Annex VI, some European countries and the U.S. have set more stringent standards relating to for instance engine standards for the domestic vessel fleet and fuel sulphur standards for vessels operating in coastal waters and harbors. August 2007, the EU Sulphur Directive 1999/32 (amended by 2005/33) brought into force the North Sea SECA.

The IMO has set a NO_x regulation curve, which stipulates a 16-22% reduction by 2011 and ~80% reduction by 2016 for all new ships (2000 as baseline) (CSP, 2010c). Vessels with large engines (>5000 kW) built from 1990-1999 have to achieve a NO_x reduction 10-20%.

4.3.2 Greenhouse Gases

It is estimated that international shipping emitted 870 million tonnes, or about 2.7% of the global emissions of CO₂ in 2007 (Buhaug et al., 2009)¹⁹. Figure 2 shows how this relates to global CO₂ emissions of other industries. Though 2.7% may seem marginal and shipping is in fact more energy-efficient than other modes of freight transport, this figure still surpasses rail and aviation, and is expected to grow in the future.

In addition to CO₂, there are also other emissions that affect the radiative balance of the atmosphere (either positively or negatively): SO₂, methane, aerosols (e.g. sulphate), chlorinated hydrocarbons, but also NO_x, carbon monoxide and volatile organic compounds which induce tropospheric ozone formation (Endresen et al., 2008). The total atmospheric forcing as a result of all ship emissions combined, i.e. the net impact on climate change, is still uncertain. However, both in terms of quantity and global warming potential, other greenhouse gases (GHG) from ships are less significant.

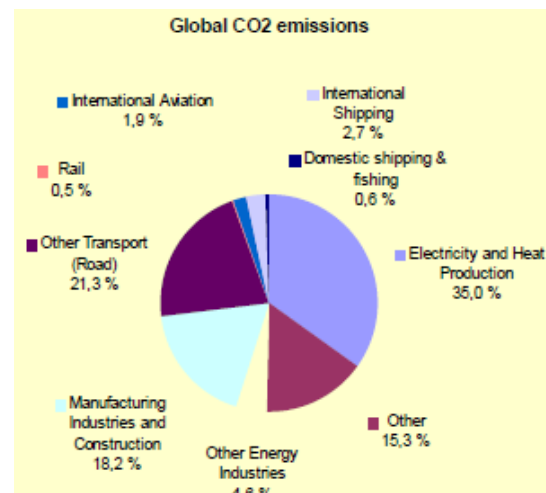


Figure 2: Global CO₂ emissions (source: Buhaug et al., 2009)

Regulations

At present there are no targets for limiting or reducing greenhouse gas emissions. At the 59th meeting (held in July 2009), the MEPC did agree on a package of technical and operational measures consisting of (IMO, 2010d):

1. **Energy Efficiency Design Index (EEDI):** based on ship design data, an indicator of a vessel's GHG emissions (in relation to its value for society). The EEDI is meant to stimulate innovation and the design and construction of energy efficient ships. There are Interim Guidelines on the method of calculation available, but further development of formula is required;

¹⁹ Emissions from international ships with 100 metric tons and greater gross registered tonnage (GRT), including other ocean-going vessels not dedicated to cargo transportation (Buhaug et al., 2009).

2. *Ship Energy Efficiency Management Plan (SEMP)*: on-board management tool that provides best practice guidance on: voyage planning, speed and power optimization, ship handling, fleet management, cargo handling, and energy management;
3. *Energy Efficiency Operational Indicator (EEOI)*: based on fuel consumption, voyage (miles) and cargo data (tonnes). The EEOI enables operators to assess the fuel efficiency of a vessel, evaluate the effectiveness of energy efficiency measures and compare with other vessels. Is still under revision, but has been implemented on a trial basis since 2005 (voluntary use by owner and operators).

Also at the 59th meeting, the MEPC adopted a work plan to develop market-based mechanisms to supplement technical and operational reduction measures. The current MEPC proposal focuses on an international GHG emissions contribution fund, a global emission trading scheme and trading with efficiency credits using the EEDI (IMO, 2010d).

4.3.3 Particulate Matter

Shipping currently emits approximately 1200 times more particulate matter (PM)²⁰ than aviation (Eyring et al., 2005). A study by Corbett et al. (2007) indicated that shipping-related PM emissions are responsible for approximately 60,000 cardiopulmonary and lung cancer deaths annually. They estimated that annual mortalities could increase by 40% by 2012 under current regulation and with the expected growth in shipping activity (Corbett et al., 2007). By 2030, the US Environmental Protection Agency estimates that international shipping will account for 45% of the US total diesel fine particle emissions (Friedrich et al., 2007).

There are currently no regulations to control or mitigate the emission of particulate matter. Reduction of NO_x and SO_x emission is expected to also reduce PM emission. The revised Annex VI does allow for an Emission Control Area to be designated for PM (IMO, 2010c).

4.3.4 Ozone-depleting Substances

Hydrochlorofluorocarbon (HCFC-22), hydrofluorocarbons (HFCs) and chlorofluorocarbons (CFCs) are used on board vessels for refrigeration/freezing of cargo or provisions and in air conditioners (Buhaug et al., 2009). Almost 90% of all reefer ships use HCFC-22 and there are still about 50,000 container units using HCFC-22 (but no new HCFC-22 systems are built) (Buhaug et al., 2009).

These compounds have a strong ozone-depletion potential and are emitted to the atmosphere through leaks during operation and maintenance of equipment. Emissions of refrigerants from shipping and other modes of transport have been estimated in the 2006 assessment report of the United Nations Environment Programme. The shipping industry only seems to contribute significantly to the emission of HCFC-22: 3,100 tonnes of 4,143 tonnes in total in 2003 (Buhaug et al., 2009).

Article 12 of Annex VI prohibits deliberate CFC emissions as well as new installations based on their use (IMO, 2010c). HCFCs however may be used until January 2020. HCFCs are also controlled under the Montreal Protocol for ozone-depleting substances. In the EU, the use of HCFCs is banned from January 2015 (No. 2037/2000).

²⁰ A distinction can be made between primary and secondary PM: primary PM is formed by incomplete combustion and has a high toxic potential due to high content of metals (CSP, 2003). Secondary PM mainly consists of sulfate and nitrate salts that are formed in the air from SO_x and NO_x.

4.4 Marine Pollution

Marine pollution is caused by the operational discharge (both deliberate and accidental, legal and illegal) of chemical substances or solid waste material into the marine environment, which lowers seawater quality and thus poses a threat to marine ecosystems (and indirectly maritime activities). This section describes the most detrimental forms of marine pollution: TBT-based anti-fouling paint, oil pollution and marine litter.

4.4.1 TBT-based Anti-fouling Paint

Anti-fouling paint is used to coat the hull and bottom of a ship to prevent the attachment of marine organisms like barnacles, bacteria and algae. The paint contains a toxic biocide called tributyl-tin (TBT), an organotin compound which slowly leaches into the seawater, causing mortality, deformation and imposex among non-target species (e.g. oysters, mussels) (Gipperth, 2009). It is a highly persisting compound, which can bio-accumulate and cause toxic effects higher up the food chain, e.g. in fish, dolphins, seals, whales, and other sea mammals (Gipperth, 2009). As a result, TBT may also indirectly affect commercial fisheries, tourism and even human health. Unfortunately, there are no cost-effective, environmentally-friendly alternatives available, which means that use of TBT will continue to be widespread (Gipperth, 2009). Unfortunately, no aggregate data about the scale of the problem on a worldwide basis is available.

Regulations

The Convention on the Control of Harmful Anti-fouling Systems on Ships (AFS Convention), was adopted in 2001 and came into force in September 2008. The convention includes a restricted list of controlled antifouling systems as well as procedures for surveys and the issuance of anti-fouling systems certificates (IMO, 2010e). It bans both the application and presence of TBT-based antifouling paint on ship hulls. Violations are to be prohibited under the law of the flag state, ports states are allowed to conduct thorough inspections and detentions if necessary. There are however no provisions for prosecution, which is the sole competence of flag states. Not surprisingly, there are significant enforcement and compliance problems in areas where TBT compounds are still widely available (Gipperth, 2009).

4.4.2 Oil Pollution

Large, accidental oil spills receive most attention, but there is actually a continuous discharge of oil due to operational activities. Oil may for instance be present in wastewater discharge from bilge separators, in engine and fuel oil wastes and cargo tanks washings²¹ (CSP, 2003). Instead of discharging the oily wastes into shore reception facilities, ship operators typically release them into the sea (Tan, 2006).

The most visible effect of oil pollution is mortality of marine wildlife. Seabirds are particularly vulnerable to oil because it damages the insulating properties of their plumage²². However, fish stocks and marine mammals are also susceptible to toxic effects after direct contact or ingestion.

²¹ Oil is used for the lubrication and smooth operation of engines, machinery spaces and equipment on board a vessel. Furthermore, oil tankers clean their tanks with seawater to remove residual oil before a new load of ballast (CSP, 2003).

²² Small amounts of oil in the plumage cause a bird to give up feeding, while large amounts of oil cause instant immobility and possibly immediate death through suffocation and drowning (Camphuysen, 2007).

Operational discharge from merchant vessels has declined over the past decades due to crude oil washing systems (which eliminates discharge of dirty ballast) and double-hull requirements (Camphuysen, 2007). However, according to the latest GESAMP report²³, operational discharges from ships still account for 45% of the estimated average annual input of oil entering the marine environment (Camphuysen, 2007).

Regulations

Oil pollution from shipping has been one of the first and most extensively regulated environmental topics. At the moment, Annex I of the MARPOL Convention aims to completely eliminate intentional pollution by oil and to minimize accidental or operational discharges (IMO, 2010b). It includes provisions on: oil discharge standards (discharge is prohibited in 'special' areas); Port Reception Facilities Construction; design and equipment standards (e.g. segregated ballast tanks, crude oil washing); survey and certification of ships and operating procedures (IMO, 2010b). By 2010 at the latest, all single hull oil tankers have to be phased out.

4.4.3 Marine Litter

Marine litter, or marine debris, is any manufactured or processed solid waste material that enters the marine environment from any source (Sheavly et al., 2007). Marine litter consists for 60–80% out of plastic, which may disintegrate into 'micro-plastics'²⁴ or accumulate on the seabed, beaches or at the water-surface (Moore, 2008). Not only does this spoil natural habitats, it also causes chemical contamination and poses a direct threat to marine wildlife²⁵. Approximately 80% marine debris actually originates from land, it is unclear how much shipping contributes to the total amount (UNEP, 2009).

Based on regional surveys and cleanup operations marine litter continues to be a widespread and pervasive problem (Moore, 2008). There are three disposal possibilities for solid waste on board a vessel: 1. discharge overboard (typical of food waste), 2. incineration (onboard or elsewhere), 3. and reception facilities (Sheavly et al., 2007). At a global level, only about 27% of waste production is given to reception facilities, while the majority is dumped or incinerated (Sheavly et al., 2007). On the one hand this is caused by insufficient or inadequate provision of port waste reception facilities (PRFs). On the other hand, shipping companies try to save on waste-handling fees, by dumping their waste out on the open seas.

Regulations

Annex IV and V of MARPOL regulate the disposal of respectively sewage and garbage. In principle all dumping of waste is prohibited except for materials on an approved list (only at a distance from land and according to certain guidelines) (IMO, 2010b). Article 9 of Annex V requires all ships (> 400 gross tonnage) to maintain a Garbage Record Book. Incineration of wastes at sea is prohibited by article 5 of the 1996 Protocol.

There is also an EU Directive on Port Reception Facilities for Ship-generated Waste and Cargo Residues (2000/59/EC). The purpose of this Directive is to reduce the discharges of ship-generated waste and cargo residues into the sea from ships using ports in the Community, by improving the availability and use of port reception facilities for ship-generated waste and cargo residues .

²³ GESAMP Report No. 75 (Estimates of Oil Entering the Marine Environment from Sea-based Activities)

²⁴ In 2002, the Algalita Marine Research Foundation (AMRF) estimated 6 kilos of plastic for every kilo of plankton near the surface in the central Pacific gyre (Moore, 2008).

²⁵ Sea mammals, birds and fish often view marine litter as food, resulting in entanglement, suffocation and starvation as their stomachs fill with plastic (Sheavly et al., 2007).

4.4.4 Other Chemicals

Vessels consume chemical substances during operations, a great portion of which leaks into the environment, via bilge waste-water, tank washing waste-water, grey or black water. These include lubricants (e.g. stern tube oils and hydraulic fluids), cleaning agents (containing carcinogenic solvents or surfactants), chemicals for sewage treatment²⁶, anti-corrosion paint (e.g. sodium nitrite) and boiler water treatment agents (e.g. hydrazine) (CSP, 2003). Most of these substances are toxic and persistent (non-biodegradable).

Chemical tankers clean their cargo tanks with seawater and discharge the wastewater into the sea, which amount to 7 million tones polluted wastewater annually worldwide (TRT, 2007). The same study estimated that globally more than 250 million tons of grey and black water²⁷ is discharged into the sea. These contain organic matter and nutrients that may cause marine bacteriological pollution and eutrophication.

Regulations

Annex II (Regulations for the Control of Pollution by Noxious Liquid Substances in Bulk) includes a list of dangerous substances and their discharge criteria. It also sets the mandatory International Code for the Construction and Equipment of Ships Carrying Dangerous Chemicals in Bulk (IBC Code).

Annex IV (Prevention of Pollution by Sewage from Ships) regulates black water discharges. It requires vessels to be fitted with treatment systems to achieve a biological oxygen demand (BOD) concentration < 50 ppm. Only 10% of the existing fleet is fitted with these systems, other cargo ships have a standard BOD content of approx. 200 ppm (CSP, 2003).

4.5 Invasive Species

International shipping, followed by aquaculture, represents the main pathway of invasive species introduction (Molnar et al., 2008²⁸). This occurs through ballast water, which is usually collected by ships on the return trip in order to maintain the ship's stability and is then released at the port of arrival. However, the ballast water and sediments inside these tanks contain harmful organisms (as well as pathogens and contaminants), of which a (small) fraction is able to thrive and invade new habitats. Invasive species have thus transformed marine habitats around the world displacing native species, changing community structure and food webs. This may also affect fishing and aquaculture yields, dinoflagellates even impact human health. Once alien species invade marine habitats, it can be nearly impossible to eliminate them. Initial analyses show that only 16% of marine eco-regions have no reported marine invasions (Molnar et al., 2008).

Regulations

In 2004, the International Convention on the Management of Ships' Ballast Water and Sediments (BWM Convention) was adopted. It will enter into force 12 months after ratification by 30 states, representing at least 35% of world merchant shipping tonnage (IMO, 2010f). The BWM Convention subjects all ships to baseline requirements for ballast water management²⁹ (e.g. management plan, survey and certification) while state parties can designate special ballast water discharge control

²⁶ According to TRT (2007), 124 000 tons of cleansing agents are used (for deck, laundry, the engine room, cargo spaces) and 11 000 tons of chemical substances for sewage treatment.

²⁷ Grey water consists of laundry, kitchen, and shower waste water, while black water consists of sewage.

²⁸ Molnar et. al. (2008) synthesized information on 329 marine invasive species, including their distribution, impacts on biodiversity, and introduction pathways.

²⁹ According to IMO: "ballast water management means mechanical, physical, chemical, and biological processes, either singularly or in combination, to remove, render harmless, or avoid the uptake or discharge of harmful aquatic organisms and pathogens within ballast water and sediments" (David et al., 2008).

areas (David et al., 2008). At the moment, because safe, cost-effective and environmentally-friendly ballast water treatment systems (BWTS) are not yet commercially available ballast water exchange³⁰ (BWE) is used as an interim measure (David et al., 2008). The approval of BMTS is an ongoing process within IMO, where several management systems have received basic or final approval, but none have received the necessary type approval yet (IMO, 2010f).

4.6 Scrapping

One of the market places within the shipping industry is the scrapping market (other possible terms to denote this activity are decommissioning, dismantling or shipbreaking³¹). As ships grow old, they fall in value and become suboptimal until after 20-30 years the only buyer is the scrapyard, mostly located in developing countries, such as India, Bangladesh and Pakistan (Andersen et al., 1999). Basically, hull and machinery will be taken apart in order to be recycled. Ships' hull and parts however often contain hazardous substances including asbestos, ammonia, chlorofluorocarbons, oily residues and lead (Moen, 2008). Gases due to cutting and burn-off operations thus present a threat to the environment as well as to the individuals exposed. However, in most developing countries where ship-breaking takes place, labour safety, occupational health and environmental standards are largely disregarded (Andersen et al., 1999).

Regulations

In 2003, the IMO issued voluntary Guidelines on Ship Recycling and in 2009 the Hong Kong International Convention for the Safe and Environmentally Sound Recycling of Ships was adopted. Until the Convention is ratified and can enter into force, the 1992 Basel Convention applies (regarding the Control of Transboundary Movements of Hazardous Wastes and their Disposal). The Basel Convention Working Group also drafted Technical Guidelines for the Environmentally Sound Management of the Full and Partial Dismantling of Ships. At EU level, regulation No. 1013/2006 prohibits the export of hazardous waste from the Community to non-OECD countries. In addition, there is the 2007 Green Paper on Better Ship Dismantling by the European Commission, which consolidates a European strategy on ship-breaking issues.

4.7 Other Regulatory Fora

Besides the IMO, there are also several other regulatory fora dealing with marine pollution in general and/or environmental impacts by shipping in specific. Some IMO instruments and regulations have come about as a result of initiatives within these fora at various governance levels.

On a regional level, the European Commission installs directives, decisions and recommendations related to shipping, which have a 'pro-coastal' tendency that is more ambitious than IMO regulations. Examples include the EU Sulphur Directive, the Port Reception Facility Directive and grey wastewater discharges standards, amongst others.

The UNEP Regional Seas Programme encompasses Regional Seas Conventions for the protection of the marine environment in different parts of the world. The Convention for the Protection of the Marine Environment of the North-East Atlantic (also known as OSPAR) addresses marine pollution by

³⁰ Ballast water exchange is based on the idea that near-coastal organisms released into the deep sea generally do not survive (as oceanic organisms released into coastal waters would also have less chances of survival) (David et al., 2008). The effectiveness of BWE is however limited, it is costly, causes delay and may undermine vessel safety.

³¹ 'Shipbreaking' connotes the entire process of breaking apart the hull and milling steel from the parts, from beaching to transport of parts for domestic use or export (Moen, 2008). 'Ship dismantling' refers to the physical process of taking apart the ship, not including beaching, and is preferred by the Secretariat of the Basel Convention. 'Ship scrapping' can be seen as a neutral term for the process of taking a ship apart, regardless of the procedures used.

dumping as well as land-based sources; The Helsinki Convention on the Protection of the Marine Environment of the Baltic Sea Area deals with the marine pollution problem in general.

Every few years, the International Conference on the Protection of the North Sea (the North Sea Conference) is held at ministerial level. At these conferences political commitment and ideas are developed for improved environmental protection (related to different types of anthropogenic drivers) , but execution of these takes place nationally or in other forums (e.g. IMO).

On a national level, coastal states may unilaterally impose additional restrictions on vessels sailing their waters as a “condition of port entry” (i.e., UNCLOS Articles 211 (3) and 25(2)). Some examples have already been provided above, the US Oil Pollution Act (OPA 90) also sets more stringent standards for foreign vessels. Sweden introduced a system of environmentally differentiated fairway and port dues that vary with ship emissions. This measure led to increased use of lower-sulphur fuels and to the installation of scrubbers on a number of ships calling on Swedish ports.



Chapter 5 SHIPPING INDUSTRY

The organisation of sea transport but also the distinct nature of maritime law and economics, make the shipping industry a very complex field of research in itself. This chapter only outlines basic dimensions of sea freight, to provide the reader with necessary background information to understand relations between different actors but also prevailing market characteristics and conditions. The last section of this chapter gives a short overview of other private initiatives that aim to make the shipping industry more sustainable.

The information in paragraphs 5.1 to 5.4 is largely derived from Maritime Economics (2009) by Stopford (unless stated otherwise) and therefore do not contain explicit references.

5.1 General

Shipping is needed for the transport of raw materials to processing or manufacturing plants as well as transport of products to end users and/or markets³². It is a world-wide business that accounts for roughly a third of the total maritime activity³³. The commodities transported can be arranged into four trades:

1. Energy trade, e.g. coal, oil;
2. Metal industry trade, e.g. iron, steel;
3. Agricultural trade e.g. grain, sugar, and
4. Other cargoes e.g. industrial materials and (semi)manufactures.

The energy trade accounts for 44% of seaborne transport by weight, while the metal trade and agricultural trades account for 18% and 9% respectively. The remaining part consists of other cargoes, but the overall share of this trade in value is close to 50%. Transport of these commodities can occur either inter-regional (deep-sea shipping) or as short-sea shipping (cargoes are transported for short distances).

5.2 Market Segments

Shipping companies provide different transport services to meet the specific needs of different customers. Different customer groups have different requirements about the type and level of service, depending on the commodity that is transported. The four main aspects of sea transport services are price, speed, reliability (on-time performance) and security, which enable 'product' differentiation. The shipping market is thus divided into three segments, each with different characteristics:

1. Bulk shipping: carrying price-sensitive cargo in large homogenous parcels³⁴ big enough to fill a whole ship (mostly commodities from the raw material trades, such as oil, iron ore, coal and grain)³⁵;
2. Specialized shipping: requires investment in specialized ships to transport a specific cargo type in large volumes (mainly cars, forest products, chemicals, LNG and refrigerated produce);

³² The main end users are power generation, transport and construction. The main end markets are companies and consumers, which are connected by retailers (Stopford, 2009).

³³ The maritime industry consists of: 1. vessel operations; 2. shipbuilding and marine engineering; 3. marine resources; 4. marine fisheries; and 5. other marine activities (e.g. tourism, services) (Stopford, 2009).

³⁴ A parcel is an individual consignment of cargo for shipment (Stopford, 2009).

³⁵ Bulk tonnage accounts for about three-quarters of the world merchant fleet (Stopford, 2009).

3. Liner shipping: transports general cargo, which consists of commodities that are high-value, delicate and have a fixed tariff (e.g. manufactured, consumer goods, machinery) in smaller parcels that individually are not voluminous enough to fill a ship.

As a result of product differentiation, the type of companies involved, the shipping policies, and even the sort of people employed are different in each segment. Nevertheless, there is some overlap between the segments, liner companies may for instance compete with bulk shipping for minor bulk cargoes such as steel products, building materials, etc. This can make it difficult to categorise shipping companies.

Liner shipping is the most common form of sea transport, carrying about 60% of goods (by value). A liner company operates high-capacity vessels (mostly container ships) which transport many small parcels at fixed prices on a specified trade lane according to fixed schedules (e.g. Maersk, with a market share of 16% in 2006). This leads to more complex administrative tasks and management-intensive organisation to deal with the cargo-owners and planning the ship loading and through-transport operations. Speed, reliability and competitive pricing are crucial in order not to lose customers to other shipping companies operating on the same trade routes.

Bulk shipping companies focus on minimizing the cost of providing safe transport through economies of scale. Bulk vessels usually handle few transactions of large parcels and as a result have little overhead costs. Since bulk cargo are usually lower-value commodities the transport cost is a significant part of the delivered price. Prices are therefore subject to intense competition and companies often discount heavily to win the business.

The specialized segment provides higher service levels and adherence to precise timetables, which requires close cooperation between the shipper and the ship-owner.

Demand for shipping services is volatile, quick to change and unpredictable, which makes it a competitive business. Financial performance is the key to survival in the shipping market, cash is basically the 'stick and carrot'. The shipping industry has an extremely high cost performance due to a combination of factors such as economies of scale³⁶, new technology, and efficient cargo handling. As a result, the transport cost element in the shelf price of consumer goods is marginal.

5.3 World Fleet

The types of sea-going merchant vessels that make up the world fleet can be divided into four main categories:

1. Bulk: oil tankers, bulk carriers and combined carriers (22,796 in total);
2. General cargo: container ships, roll-on-roll-off carriers, multi-purpose carriers (MPP) and others (25,784)
3. Specialized cargo: reefers, chemical/specialized tankers, vehicle carriers, and gas tankers (6,978)
4. Non-cargo: tugs, dredgers, cruise etc. (26,880).

The merchant fleet (excl. non-cargo) mostly consists of general cargo ships, followed by bulk carriers and specialized ships. Although there is much specialization in the shipping market, there is also a high degree of substitution between ship types. Shipowners may redeploy surplus vessels into more profitable applications in other sectors of the market (multi-purpose carriers can for instance also be deployed in the bulk segment).

³⁶ The unit cost of transporting a ton of cargo is defined as the sum of the capital cost of the ship, the cost of operating the ship, and the cost of handling the cargo, divided by the parcel size (Stopford, 2009).

Merchant ships generally take about a year to build and delivery may take 2-3 years, which prevents rapid response to sudden changes in demand. The new-building market is strongly influenced by investors (e.g. German Kommanditgesellschaft), often bankers who finance shipbuilding activities and can exert financial pressure on shipping companies to scrap in a weak market.

Usually, as ships grow old and become suboptimal they remain to be deployed. In fact, there is an entire sale and purchase market trading in second-hand ships (providing the shipowner a useful source of cash, especially during recessions). Old ships fall in value until after 20-30 years the only buyer is the demolition market.

5.4 Economic Actors

The freight market which trades in sea transport is the most important market place in the shipping industry³⁷. There are different groups of companies involved in the freight market, each having a different perspective on the business.

Shipping Companies

The central group of actors are the individuals and companies that own, manage and operate vessels. Usually shipping companies do not own the vessels they operate, but charter in most of their fleet from ship-owners. Ship-owners are individuals who own a controlling interest in one or more ships. These vessels join the fleet of a shipping company (or operator), because it saves overhead costs. Vessel ownership structures are often very complex and intransparent so as to shield owners' true identities and thus limit exposure to liability (Tan, 2006). Ship-owners and operators usually outsource management of their vessels to other companies. Ship management companies are responsible for the day-to-day commercial and technical operation of vessels. The organisational structure of Wallenius Wilhelmsen Logistics illustrates this (box 1). Of course, not all shipping companies are organised this way and there are many variations possible.

Wallenius Lines and Wilhelm Wilhelmsen are ship owners, which buy, charter and sell vessels. Wallenius Lines owns specialized vessels for cars, 'high & heavy', non-containerized and special cargo (e.g. windmills). Wallenius Wilhelmsen is an operating company, which charters half of its fleet from Wallenius Lines and half from Wilhelm Wilhelmsen. Wallenius Wilhelmsen provides shipping services to clients such as Volvo, BMW and Ford. Linked to Wallenius Lines is Wallenius Marine, which takes care of the technical and quality management of its vessels. Wallenius Marine is a diversified company, which not only manages maritime vessels, but also deals with real estate and water treatment amongst others.

BOX 1: Organisational structure Wallenius Wilhelmsen Logistics (Source: interview WM, 2010)

To simplify matters, in this study the term 'shipping company' is used in a generic way, to denote transport companies that supply shipping services, without distinguishing between ship owners, managers and operators. Shipping companies can have different company structures, e.g. a private bulk company, a shipping corporate or a shipping division³⁸. Each type has its own distinctive

³⁷ There are three sectors to this market: 1) the voyage market which trades transport for a single voyage; 2) the time-charter market which hires ships for a defined period; and the 3) freight derivatives market which deals in formal contracts settled against an index (Stopford, 2009).

³⁸ Among the biggest shipping companies are the national companies such as China Ocean Shipping Company, the Indian government and Malaysia International Shipping Corporation. Then there are large corporates such as the Japanese trading houses (Mitsui OSK, NYK, K-line) and some very large independent companies such as Maersk, Teekay and the Ofer Group (Stopford, 2009).

organisational structure, commercial aims and strategic objectives. Depending on the type, there are also different pressures and constraints on decision-making and environmental management.

Shipping companies earn revenue by operating vessels for their clients, and incur costs from running the ship (i.e. operating, voyage and cargo-handling costs). Generally, shipping companies do not control the price they receive per ton of cargo transported. Customer strength is often a real issue because large cargo-owners run professional transportation operations and squeeze their transport budget very hard. Shipping companies therefore have to negotiate hard with cargo-owners. Through careful management, clever chartering and flexible ship design they try to increase revenue.

Ports

Ports fulfill several important functions that enable sea trade, they provide: a secure location where ships can berth; shore-based facilities for cargo handling; storage facilities for inbound and outbound cargoes and connections to land transport systems³⁹. Ports charge ships for the use of their facilities by means of an all-in rate or an add-on rate where the shipowner pays a basic charge to which extras are added for the various services used by the ship during its visit to the port.

Port State Control is the inspection of foreign ships in national ports to verify that the condition of the ship and its equipment comply with international regulations and that the ship is also manned and operated in compliance with these rules (IMO, 2010g).

Classification Societies

Classification societies conduct surveys on ships and issue certificates testifying to the ships' compliance with statutory regulations⁴⁰. There are seven major classification societies which certify 95% of current world shipping tonnage. Ship-owners contract classification societies themselves, which in some cases create bias, lack of objectivity and neglect on the part of societies (Tan, 2006). In 1968, the International Association of Classification Societies was set up to introduce uniformity into the rules developed by class societies.

Brokers and Forwarders

Nearly all small- and middle-sized companies arrange ocean freight via intermediary agents and therefore do not have direct contact with shipping companies (some book vessels via a bookingsportal) (interview EVO, 2010). Fixing a ship (agreeing on a freight rate and chartering a vessel) is arranged in much the same way as any major international hiring or subcontracting operation. Shipping companies have vessels for hire, cargo-owners have cargo to transport, and brokers or freight forwarders put the deal together. Both are tasked with the job to link supply and demand on the ocean freight market by taking care of bookings and administration on behalf of their clients. While brokers deal with only one transport mode, forwarders deal with several.

There are many other parties involved in the shipping industry, each with a distinct role to play. Some of these operate in the newbuilding (e.g. ship yards) and scrapping market, but others have a supportive function in the sea freight market (e.g. suppliers, repairers). Ship finance and insurance forms another category of stakeholders.

Diagram 2 provides an overview of the various players in the shipping industry and their respective roles in enforcing the legislative framework. The right-hand side of the figure presents industry

³⁹ A port is a geographical area where ships are brought alongside land to load and discharge cargo. A port authority is the organisation responsible for providing the various maritime services. A terminal is a section of the port consisting of one or more berths devoted to a particular type of cargo handling (Stopford, 2009).

⁴⁰ Responsibility to inspect and certify ships lies with national maritime administrations of the flag states, but almost all flag states delegate this to classification societies because of lack of resources, expertise or interest (Tan, 2006).

interests around the shipowner: banks who finance ships, insurance companies who insure ships, the ship operator and manager.

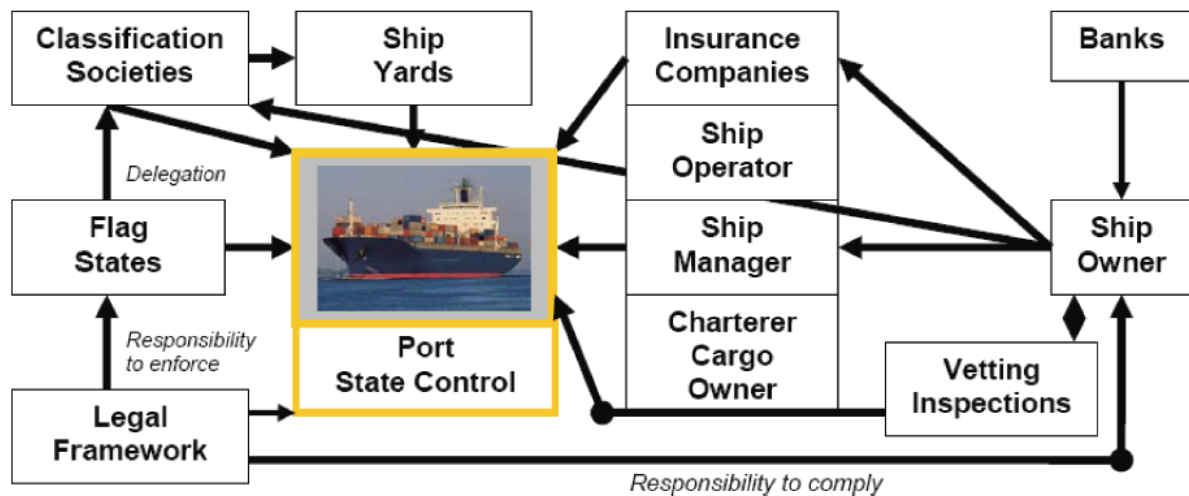


Diagram 2: Actors in the shipping industry and their position in the legal framework (Source: Buhaug et al. 2010)

5.5 Compliance with Environmental Regulations

The previous chapter described the impacts shipping activities may have on the marine environment. These impacts would not be as pervasive if only shipping companies would comply with environmental rules set by IMO and other regulatory bodies. This is clearly not the case, according to Tan (2006) there are many sub-standard ships run by ‘irresponsible’ operators, who do not take heed of safety and pollution control rules. The North Sea Foundation observes a major gap between the intentions formulated in the environmental policies of shipping companies, and what actually happens in practice (interview SDN, 2010).

Part of the reason behind this are the harsh market conditions shipping companies have to face. The pressure to keep freight rates as low as possible and severe competition pushes environmental considerations and investments to the background. Compliance (and particularly going beyond regulations) generally raises costs and puts responsible shipping companies at a competitive disadvantage in comparison with cheaper competitors. Bunker fuel costs for instance account for a substantial part of a ship’s operational costs. Low-sulphur fuels are more expensive than heavy fuel oil, which results in higher freight rates and a decrease in competitiveness (Maersk, 2010).

The proliferation of new environmental rules and regulations only widens the competitive gap between quality and sub-standard shipping companies even more. A number of companies therefore try to circumvent safety and pollution standards in order to lower costs and secure a market share. Other factors such as inadequate flag-state supervision and insufficient shore-based facilities further contribute to sub-standard performance among shipping companies.

It is unknown exactly how many sub-standard vessels ply the oceans and how often intentional discharge/emission violations occur. The generally secretive and fragmented nature of the shipping industry, together with the reluctance among owners to co-operate and share information all add to a lack of transparency (Tan, 2006). Generally shipping companies only provide general information about their vessels (max. volume, speed, power). It is likely though that most of the sub-standard

vessels are registered under so-called 'flags of convenience' or open registries⁴¹. The main flag-of-convenience countries, in numbers of ships registered, are Panama, Liberia, Malta, and the Bahamas.

Not every shipping company poses severe environmental/health risks, a part of the world fleet consists of responsible operators who do respect international standards. Middle-sized shipping companies like Wagenborg and Spliethoff usually employ a Health, Safety and Environmental Quality manager to ensure compliance with relevant rules and regulations and maintaining necessary certifications. Like Wagenborg, most of these companies focus on achieving a safe working environment and secondly prevention of oil spills, before they look at other forms of marine pollution (interview WB, 2010).

Some shipping companies take additional measures to improve the sustainability of their operations. To name a few examples: Canada Steamship Lines signed an agreement with ECOSPEC Marine Technology to develop and install a system to reduce the CO₂, SO₂ and NO_x emissions from its vessels on the Great Lakes (EL, 2010). A consortium of shipping industry entities pursues operational fuel consumption reduction of 15-25 percent (EL, 2010). Maersk is at least in compliance with most regulations and in some cases goes beyond (interview Maersk, 2010). Wallenius Lines is one of the environmental frontrunners of the shipping industry (see box 2).

The objective of Wallenius Marine is to make shipping more sustainable by taking appropriate action instead of only talking about sustainability. By working closely with manufacturers, They try to find solutions for environmental problems, test and implement them. Together with Wallenius Lines they address the following areas of concern: 1) CO₂: renewable energy sources are being explored and used; 2) NO_x/SO_x: vessels run on bunker fuel with an average sulphur content of <1,5%; 3) Anti-fouling: environmentally-friendly alternatives to copper/biocide treatment are being developed; 4) Ballast water: the ballast water treatment system in use is ratified by the IMO. Wallenius Marine prefers 'upstream' solutions that address the source of pollution rather than end-of-pipe solutions, because this is more cost-efficient for society. However, they realize that their actions may not be sufficient to make a difference. Therefore, they try to set the right example, increase knowledge and pull the rest of the industry along with them. Furthermore, through the Swedish Shipowner Association (SRF), they inform policymakers about new techniques so they can take these into account when drafting new rules and regulations.

BOX 2: Environmental management by Wallenius Marine (Source: interview WM, 2010)

Regulatory compliance is therefore not very troublesome for Wallenius Marine, because their corporate principles and strategy already correspond with environmental regulations (interview WM, 2010). When the first set of IMO rules were ratified, they had already achieved these standards. Wallenius Marine does foresee that the future standard of 0,1% in the SECA will be hard to comply with, because this requires a different type of fuel and engines (interview WM, 2010).

Shipping companies are not the only actors in the shipping industry who are responsible for environmental negligence. As Figure 4 illustrated above, all actors have a role to play in enforcing environmental rules. However, classification societies, ship builders, ports, ship financiers (banks) and insurers also tend to overlook safety and pollution standards. Inaccurate vessels surveys and lenient issuance of certificates by classification societies still occur from time to time (Tan, 2010). Shipbuilders respond to the cost-conscious culture by using cheaper, high-tensile steel which renders ships lighter but more vulnerable (Tan, 2006). Many ports worldwide are unable or unwilling to

⁴¹ Tan (2006) defines 'flags of convenience' as the flag of any country allowing the registration of foreign-owned vessels under conditions which are convenient and opportune (e.g. low taxes, less stringent environmental standards and cheap labour). 'Open registry' refers to states which maintain a completely free registry for any ship-owner regardless of the owners nationality (Tan, 2006).

conduct thorough inspections on visiting ships due to the expenses and delays involved (Tan, 2006). Banks, mortgagees and ship financiers neglect to press for higher operational standards. Marine insurers compete intensely for shipowners' business, often forgoing higher premia and deductibles for riskier ships (Tan, 2006).

Furthermore, cargo-owners do not stimulate pollution control measures either, because these increase transportation costs, driving up freight and consumer prices. So far, cargo-owners have managed to escape regulatory costs for pollution control measures targeting transport.

5.6 Procurement Process

Cargo-owners can be corporations trading raw materials and manufactures, or traders who buy and sell physical commodities. Large companies shipping substantial quantities of bulk materials sometimes run their own shipping fleets to handle a proportion of their transport requirements⁴². Most cargo-owners however depend on shipping companies to transport their cargo.

At the start of the sea freight procurement process, cargo-owners issue a Request For Quotation (RFQ, or tender), which invites suppliers into a bidding process. Shipping companies have to provide information on freight rate, service quality, etc. in a quotation for evaluation. The main criteria used by cargo-owners during the procurement process are capacity (whether sufficient volume is available), price (freight rates), and service quality (how suppliers perform, e.g transit/lead time). The procurement process also involves tough negotiations about the bid. Of course, each type of company has a slightly different way of procuring, particularly oil companies, which is described in box 3.

Oil companies have their own type of procurement process, because of the risks involved with the transportation of oil. A whole chain of doors has to be passed, before a vessel is approved. A number of oil companies (e.g. Preem, Conoco Philips and Statoil) form a network and share a database (SIS3) containing data on safety performance of tanker companies. Each oil company has a vetting department, which screens all vessels on safety characteristics. The vetting manager evaluates data from the database, but also obtains information from port inspections, classification societies and other oil majors. The vetting department thus has an important role in the procurement process, no vessel is contracted without its permission. Nowadays, oil spills hardly occur anymore because the Swedish tanker fleet is new, modern and frequently inspected. This increases freight rates, because it requires high quality vessels.

BOX 3: Sea freight procurement by oil companies (Source: interview Preem, 2010)

Once evaluation and negotiations are finalised, there are four types of contracts possible, each of which distributes costs and risks⁴³ differently depending on the quantity, timing, and physical characteristics of the cargo. The most common type is the *voyage charter* (also referred to as freight contract or contract of affreightment), whereby the shipping company is contracted to carry a specific cargo in a specific ship for a negotiated price per ton which covers all the costs (Stopford, 2009). The shipping company is responsible both for managing the ship and for the planning and execution of the voyage, so he takes both the operational and shipping market risks.

Secondly, under a *time charter* the cargo-owner hires a ship from its owner complete with crew, for a set fee over a certain period of time. The shipping company continues to manage the ship, but the

⁴² Some companies place charters for 10 or 15 years to provide a base load of shipping capacity to cover long-term material supply contracts (particularly in the iron ore trade) (Stopford, 2009).

⁴³ The main risks associated with the freight market are shipping market risk (availability of cargo and freight rate paid) and operational risks (arising from the ability of the ship to perform the transport) (Stopford, 2009).

cargo-owner instructs where to go and what cargo to load and discharge. In this case, the shipping company carries the operational risk and pays the capital costs and operating expenses (i.e. crew, maintenance, repairs), whilst the cargo-owner is responsible for the market risk and pays the voyage costs (i.e. bunkers, port charges, cargo dues) (Stopford, 2009). Usually, cargo-owners prefer short voyage charters (obtained on the so-called 'spot market') instead of long-term, fixed-price time charters, because this enables them to switch to cheaper suppliers (interview Preem/VL, 2010).

A third option are *bare boat contracts*, when an investor purchases a vessel and hands it over to a cargo-owner for a specified period (usually for 10-20 years). The owner pays the capital costs, while the cargo-owner manages the vessel and pays all operating and voyage costs (takes both the operational and shipping market risk) (Stopford, 2009).

Environmental considerations

Logistics managers responsible for transport procurement not only negotiate about the price, they also evaluate service quality aspects. Normally they do not consider environmental aspects, but according to Lammgard (2009), there is an increasing demand for more sustainable freight transport among companies, in Sweden but also in other European countries. Her study indicated that concern about environmental issues is greater for larger companies as well as for wholesale (and to lesser extent manufacturing) companies. Environmental management systems are more common in larger companies, because they have dedicated environmental departments and more resources. Wholesale companies experience more pressure from consumers than the manufacturing companies.

An example of a transport-buying company (formally Volvo Logistics is not a cargo-owner) that actively invests in clean shipping is provided in box 4.

Volvo Logistics clearly defined the main environmental impacts associated with their corporate activities such as sale, procurement and operations. They offer environmentally-adapted logistics solutions to their customers (Volvo Cars is their main client), for instance by calculating emissions of big transfer affairs. They actively try to reduce emissions of all four transport modes (sea, road, rail and air) through tough requirements on their suppliers. Over 70% of their major suppliers are ISO14001 certified, which are mostly based in the EU. Those who are not certified are given some time to establish environmental policies, before the issue is addressed on a higher management level. Suppliers are also required to report environmental data on a yearly basis, which is used to evaluate their performance over a number of years. They observe an annual CO2 emission reduction of 3% (trend broken in 2009). From next year onwards, suppliers only have to report to the CSI and do not have to fill out the whole supplier survey questionnaire of Volvo Logistics.

BOX 4: Volvo Logistics and sea freight procurement (Source: interview VL, 2010)

Another example is that of Stora Enso, which charters three environmentally-adapted roll-on-roll-off vessels that were built custom-made for the company (interview SEL, 2010). The vessels are operated by Wagenborg and transport major flows from production units between Finland and Goteborg. Stora Enso decided to order specially designed ships, because at the time they were developing a fully sustainable production system and environmentally-friendly transport was considered an integral part. The designers were convinced that it was right to make a system for the future (interview SEL, 2010).

Unfortunately, examples of environmentally-adapted sea freight procurement like the two described above are not very common in the shipping industry.

5.7 Private Environmental Initiatives

Besides voluntary measures taken by individual firms, there are also private initiatives that involve many actors and aim to make the entire industry more sustainable. These often operate outside the established spheres of authority. This section gives a short overview of some examples. (Though ISO14001 is a generic management tool which not only applies to the shipping industry it is also a way to achieve clean shipping and is therefore described as well.) Firstly, the concept of 'clean shipping' is described, which has become an important reference point for sustainable development in the shipping industry.

5.7.1 The 'Clean Ship' Concept

The environmental NGO Seas At Risk coined the phrase 'clean ship' and launched it at the fifth North Sea Conference in 2002, Bergen. They define it as "a ship designed and operated in an integrated manner to eliminate harmful operational discharges and emissions; it is a ship that is constructed and can ultimately be recycled in an environmentally acceptable way, and one that is energy and resource efficient in its daily operation" (SAR, 2009)⁴⁴.

The concept was picked up by policymakers and was incorporated in the Bergen Declaration (§48): *"The Ministers acknowledge that new approaches and mechanisms are needed to minimize the impact of shipping on the environment, and agree: i) to explore and develop the (...) the 'Clean Ship' approach."* At the 2006 North Sea Conference, the Clean Ship approach was again acknowledged in the Gothenburg Declaration in which the ministers of the North Sea states promised to develop and implement the clean ship approach in their maritime and environmental policies and pursue clean shipping through common initiatives within IMO (SAR, 2005). They also expressed the intention to establish technical criteria for the international environmental indexing of ships for use in international and regional incentive schemes. The Clean Shipping Approach was also included in the European Commission's Communication on an integrated maritime policy for the European Union (SAR, 2005).

This year, Seas At Risk formed the Clean Shipping Coalition, the only global international environmental organisation focusing exclusively on shipping issues, which gained consultative status at the International Maritime Organisation (IMO) in June 2010 (CSC, 2010).

5.7.2 Clean Cargo Working Group

The Clean Cargo Working Group (in short the CCWG) is a business- to-business collaboration dedicated to integrating environmentally and socially responsible business principles into transportation management⁴⁵. Participants include more than 25 leading multinational manufacturers, retailers, and shipping companies (referred to as carriers), which collectively move nearly 60 percent of global container cargo (CCWG, 2010a). The CCWG enables direct dialogue between cargo-owners and shipping companies and has developed the following tools for measuring and reducing the environmental impact of sea freight transportation:

⁴⁴ Despite its name, the Clean Shipping Project is not related to Seas at Risk. They simply make use of the concept because of its holistic view. In line with the clean ship approach, they identified environmental techniques and/or measures that characterise a clean ship: NOx emission abatement techniques; low sulphur fuels; energy saving (i.e. CO2 reductions measures); active bilge water cleaning equipment; shore-side electricity at berth; ballast water treatment; sewage treatment; environmentally adapted lubricants/cleaning agents/antifouling coatings/boiler- and cooling water treatment (CSP, 2010c).

⁴⁵ The CCWG is an initiative of BSR (Business for Social Responsibility), which is a global network of more than 250 member companies to develop sustainable business strategies and solutions through consulting, research, and cross-sector collaboration (BSR, 2010).

1. Environmental Performance Metrics and Survey: annual assessment to measure environmental management and performance of shipping companies; widely-accepted industry standards are used (WRI GHG Protocol, Global Reporting Initiative, World Economic Forum, International Maritime Organisation, World Shipping Council, U.S. EPA SmartWay)⁴⁶ (CCWG, 2010b);
2. Intermodal CO2 Calculator: custom tool for calculating and comparing the carbon footprint of multiple modes of transportation.

5.7.3 Green Award

The objective of the Green Award Foundation⁴⁷ is to stimulate safe and environmentally friendly behaviour of ship, crew and management. This is achieved through development and promotion of the Green Award certification scheme, which observes (inter)national conventions, legislation and developments (Green Award, 2010). Ships that comply with stringent requirements related to quality, safety, environment and management⁴⁸ can receive a Green Award certification and reap various financial and non-financial benefits.

The Green Award has a group of ‘supporters’ consisting of key (industrial) organisations such as BIMCO, Intertanko and ProSea⁴⁹. Currently, 234 ships and 42 offices have been Green Award certified and further growth is expected (Green Award, 2010).

The main steps towards successful certification is as follows: application, document review, office audit, ship survey, verification, certification, publication (Green Award, 2010). The Certificate stays valid for three years, during which period annual checks will be carried out. The Green Award procedure is carried out by the Bureau Green Award, the executive body of the Green Award Foundation. Amongst many others, the assessment focuses on crew, operational, environmental and managerial elements. The Green Award certification scheme is open to oil tankers and dry bulk carriers from 20.000 DWT and upwards. Preparations are made to include container ships and LNG ships.

The Green Award collaborates with a group of so-called Incentive Providers, who encourage ship owners to apply for and obtain the Green Award by providing financial incentives including: discount on port dues (vary from 3 to 10% discount); lower insurance premiums; acceptance by vetting inspections, etc. (Green Award, 2010). Incentive Providers include ports, banks, training institutes and marine service providers (e.g. pilots, tug company, maritime authority etc.). Fortis Bank (Nederland) NV for instance reimburses 25% of the annual Green Award fees for the vessels that it finances, and 25% of the Green Award office audit fees for the (shipping) companies that are clients of Fortis Bank Nederland (Green Award, 2010).

5.7.4 Environmental Ship Index

In 2010, the World Ports Climate Initiative⁵⁰ introduced the Environmental Ship Index (ESI), which is a voluntary instrument, a web-based tool that can be used by ports (but also cargo-owners and

⁴⁶ Key areas of performance assessment: CO2 emissions, SOx emissions, NOx emissions, waste management, water effluents, chemical use, environmental management systems, vessel recycling, transparency (CCWG, 2010a).

⁴⁷ The Green Award Foundation is a neutral, independent foundation, established 1994 on the initiative of the Rotterdam Municipal Port Management and the Dutch Ministry of Transport (Green Award, 2010). Since 1 January 2000 Green Award is completely independent.

⁴⁸ Examples of requirements related to safety: navigation, cargo-operations, bunkering, maintenance, condition assessment program, training of the crew, mooring wire maintenance, gas monitoring double hull, quality management (Green Award, 2010). Examples of requirements related to environment: exhaust emissions, water ballast, anti-fouling, ship breaking, navigation in ‘sensitive areas’, waste management.

⁴⁹ BIMCO: Baltic and International Maritime Council; Intertanko: International Association of Independent Tanker Owners; ProSea: an independent, non-profit, non-governmental educational organisation for sea-faring professionals.

shipping companies) to distinguish ships based on their air emissions (WPCI, 2010). The ESI also works with Incentive Providers who offer certain benefits (e.g. reduction on port tariff or service charge) to shipping companies based on their ESI score. Figure 3 illustrates the advantages for all potential users.

The ESI awards points to all possible types of ships by comparing their performance to current international legislation (mainly IMO regulations). Only engine NOx emission and the sulphur content of bunker fuels used are directly taken into account (CO2 and PM10 are not directly incorporated into the ESI because there is no reliable certified data available) (WPCI, 2010). Energy efficiency measures are scored based on documentation and management measures, for instance the use of the Energy Efficiency Operational Indicator and/or Ship Energy Efficiency Management Plan.

The ESI bureau that is part of International Association of Ports and Harbors verifies 'self declarations' of ships regarding their ESI index (checking formulas, data and issuance of index points) (WPCI, 2010). Next they publish the results on the user's non-public section of the ESI website (and selected information on the public section).

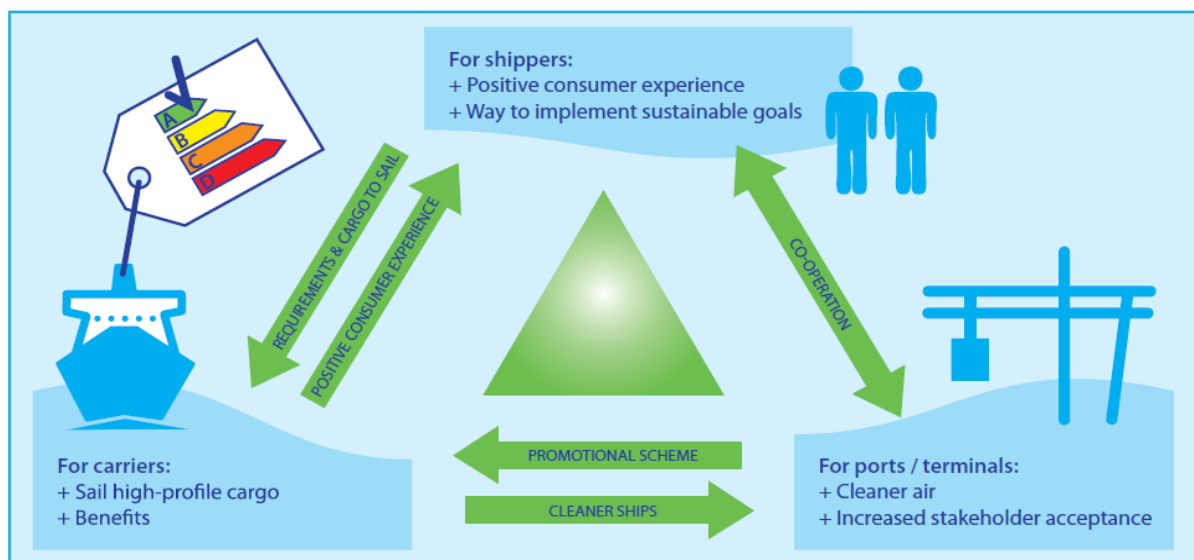


Figure 3: Benefits of the use of the ESI (Source: WPCI, 2010)

5.7.5 ISO 14000

ISO 14001:2004 outlines requirements for an environmental management system for organisations that wish to operate in an environmentally responsible manner. Basically, it is a generic management tool enabling an organisation of any size or type to:

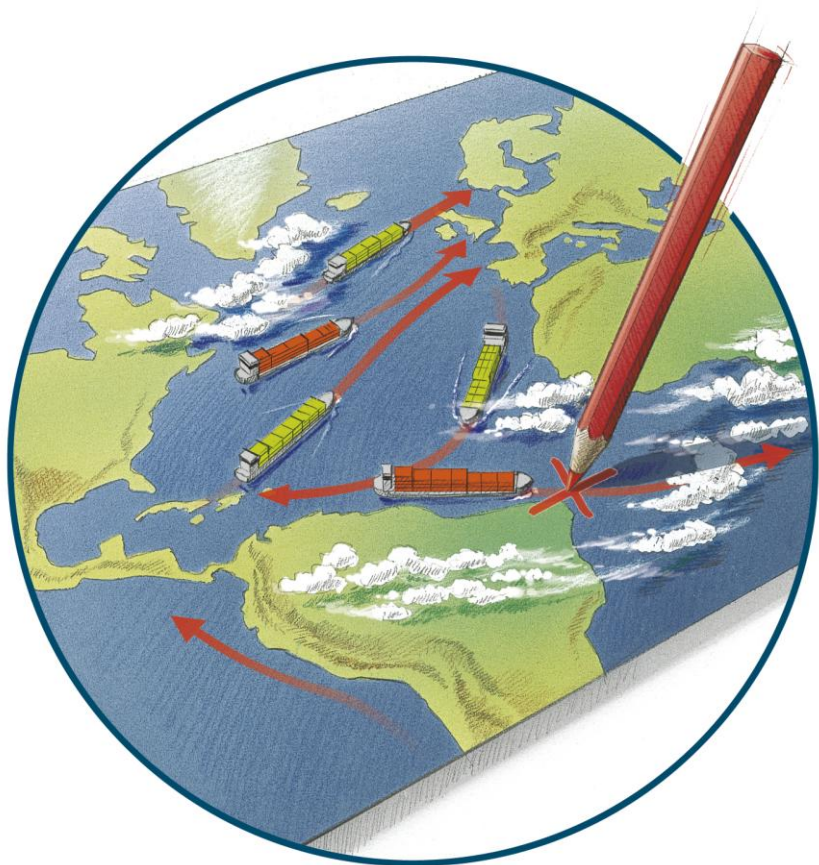
1. Identify and control the environmental impact of its activities, products or services;
2. Improve its environmental performance continually;
3. Implement a systematic approach to setting and achieving environmental objectives and targets (ISO, 2010).

The other standards and guidelines in the family address specific environmental management aspects, including: labeling, performance evaluation, life cycle analysis, communication and auditing (ISO, 2010). ISO 14004:2004 outlines general guidelines on the elements of an EMS and its implementation. There is also an ISO standard (ISO 30003:2009) for bodies that audit and certify ship recycling management systems. This increases the safety of workers and environmental protection by facilitating independent recognition of good practice (ISO, 2010).

⁵⁰ Within the World Port Climate Initiative, fifty-five of the world's key ports aim to reduce their greenhouse gas emissions (GHG) and improve air quality (WPCI, 2010).

The organisations that are ISO certified have to provide objective evidence to demonstrate that their EMS is operating effectively in conformity to the standard.

In addition to the above-mentioned initiatives, some key organisations and associations have formulated policies and guidelines that may contribute to more sustainable practices in the shipping industry. These include (amongst others): the Environmental Protection Notation of Lloyd's Register; the Environmental Code of Practice of the International Chamber of Shipping; and the Tanker Management Self-assessment Program of the Oil Companies' International Marine Forum. There are also initiatives that specifically address scrapping, such as the 2004 guidelines on ship disposal and recycling of the International Labour Organisation; the industry code of practice on ship recycling by Marisec; BIMCO developed a standard contract for the sale of vessels that takes into account demolition and recycling. All these initiatives illustrate the growing attention for sustainability issues in the shipping industry.



Chapter 6 THE CLEAN SHIPPING PROJECT

This chapter explains in detail the objective and organisation of the CSP as well as the set-up and use of the Clean Shipping Index. Most of the information is obtained from the CSP Guidance Document (CSP, 2010a), unless stated otherwise.

6.1 Objective

The CSP started in 2007 as a regional initiative involving actors in West-Sweden. The Clean Shipping Index was officially introduced in June 2008, after which the Clean Shipping Index database was created to collect all the information presented by shipping companies.

The CSP tries to make use of the “power of market demands from purchasers of sea transport” (CSP, 2010a, p. 3). As was explained in the previous chapter, during the procurement process cargo-owners evaluate shipping companies and make a selection based on a set of criteria. Basically, the CSI provides information on the environmental performance of shipping companies, which can be used by cargo-owners as one of the procurement criteria. If cargo-owners set very high sustainability demands and select high-ranking shipping companies based on the index, these companies gain a competitive advantage over sub-standard companies. The index can thus be used by environmentally-responsible shipping companies as a marketing tool to get positive publicity, increase market share opportunities, and get good contracts. This should create an incentive for other companies to improve their ranking by also investing in pollution control measures. To set this process in motion, the CSP has the ambition to expand internationally, which is why in 2010 international cargo-owners were invited to join the project.

The CSP also aims to raise the bar for policymakers and speed up legislative processes. By adopting standards that go beyond IMO regulations, the CSP promotes the spread of best available environmental techniques and practices. This urges and enables policymakers to adopt higher standards.

The CSP organisation tried to develop a quality tool that fulfils several conditions. Firstly, the index should be generic and comprehensive, so that it can be applied to different ship types while addressing all relevant environmental impacts. Secondly, they tried to make the index fair and realistic, taking into account technical and environmental conditions. To facilitate use, the questionnaire should be easy to fill out for shipping companies, while the index suits the needs of cargo-owners. Lastly, the index is also intended to be compatible with existing regulations as well as other initiatives. To be able to develop such a quality tool, the CSP organisation consulted various actors: shipping companies, cargo-owners, maritime subcontractors, classification societies, maritime authorities, NGOs and the scientific community.

The CSP has a budget until the end of 2011, after which it will probably transform into a more long-term administrative body. It is still uncertain exactly how it will be managed and in what form, several possibilities are under discussion at the moment (interview CSP, 2010). It might continue on a commercial basis under the coordination of a private company.

6.2 Set-up of the Clean Shipping Index

The CSI focuses on vessels’ operational impact on the environment and points can be obtained in five different areas: SOx and PM emissions, NOx emissions, CO2 emissions, Chemicals, water and

waste control (each with a maximum score of 30 points)⁵¹. Shipping companies have to fill out a questionnaire consisting of 20 questions separately for each vessel, this data is aggregated for a total carrier score, which is used for the overall ranking. The final index score is the total average score multiplied with the percentage reported ships of total owned or managed fleet. There is also a group ranking based on total average score for the same type of carriers, and again multiplied with the percentage reported ships of the total fleet.

Some changes have been made to the index since the first 2007 version, which have greatly improved its quality. Firstly, the CSI is now a web-based tool, which is a lot more user-friendly than the previous excel-sheets. Now it makes use of predetermined routes or trade lanes, which facilitates use by cargo-owners contracting liner companies. Other technical changes relate to CO₂, SO_x and PM⁵², while other parameters that became formal IMO requirements have been abandoned. Previously, the ranking of shipping companies was only based on the total average score, but now it also takes the percentage of reported ships into account. This means that shipping companies cannot obtain a high score by only reporting their best performing vessels.

The CSI is a generic tool that addresses environmental problems all ships face and should therefore fit in all trades (CSP, 2010b). It can be applied to existing ships of ten different types: tanker, bulk, container, reefer, general cargo, car carrier, RoPax, passenger, RoRo and barge. The CSP organisation is still improving the index so that all types of companies can use it. They do not plan to incorporate too many details though, companies can add specific requirements themselves.

The information in the database has to be correct and complete to enable optimal use, which requires continuous updating but also third-party verification. June 2010, the classification societies Lloyd's Register and Det Norske Veritas (DNV) announced they will offer a verification service for shipping companies (approved by the CSP) to ensure their self-assessment is indeed reliable. The verification is designed to be time and cost-efficient and requires office and on-board audits (can be combined with other on-board inspections) (Lloyd's, 2010). The verification process costs approx. EUR 2000 excluding VAT. In the future, the verification process may also be offered by other classification societies (CSP, 2010b).

6.3 Using the Clean Shipping Index

At the moment, the web-based index can be entered from three different positions:

1. The *administrator*, i.e. the CSP organisation, can see and change everything in the database;
2. The *users*, or the members of the Clean Shippers Group, can see all information in the database but cannot change or edit anything;
3. The *carriers* or the shipping companies, can enter and edit the information relating to their own fleet. They can also see a general comparison to other carriers but no detailed information.

The database is only accessible for the administrator and members of the Clean Shippers Group because of confidentiality agreements made with shipping companies (CSP, 2010b).

⁵¹ According to the CSP, a clean vessel is characterized by the following environmental techniques and/or measures: NO_x emission abatement techniques; low sulphur fuels; energy saving (i.e. CO₂ reductions measures); active bilge water cleaning equipment; shore-side electricity at berth; ballast water treatment; sewage treatment; environmentally adapted lubricants/cleaning agents/antifouling coatings/boiler- and cooling water treatment (CSP, 2010c).

⁵² The CO₂ scoring now focuses on performance rather than measures. The SO_x scoring is divided into both ECAs and global activity and there is a wider spread of scoring for the sulphur content of fuels (CSP, 2010a).

The guidance document available on the website provides instructions for shipping companies on how to fill out the questionnaire. Basically, shipping companies have to provide general information about the company and fill out a detailed web-based questionnaire. Twenty environmental parameters that cover the five different issue areas mentioned before have to be assessed for each individual vessel. The model only gives points for one answer per parameter, based on environmental significance as well as cost of implementation⁵³. An example from the section ‘chemicals’ is the parameter stern tube oil:

- | | |
|----------------------|------------|
| 1) No data | (0 points) |
| 2) Mineral oil | (0 points) |
| 3) Air seal | (3 points) |
| 4) Biodegradable oil | (5 points) |
| 5) Water Lubrication | (7 points) |
| 6) Not applicable | (7 points) |

Once the questionnaire is completed a model will calculate the individual summary values for each issue area and a total index score, which are all expressed in percentages. All shipping companies are ranked according to their total index score, with the best performing shipping companies on top of the list. This means shipping companies have two possibilities to influence their ranking: either by improving the overall environmental performance of their fleet or registering more ships.

The instructions for cargo-owners explain the various ways in which they can analyse and compare data. Firstly, they can see the general ranking of all shipping companies based on the total weighted score. Shipping companies can also be ranked within a specific issue area or according to ship type (e.g. container carriers). For instance, the user might want to prioritise CO₂ and check which shipping companies or even individual vessels perform best in this particular issue area. These individual scores however do not take into account the percentage of reported ships. There are several other options for cargo-owners to analyse the data, which maximises the practical flexibility of the tool.

Basically, the cargo-owner can decide for themselves which environmental criteria they find most important and how exactly they wish to use the index. However, the CSP does provide some guidance for selecting vessels/shipping companies through a colour coding system, which indicates the level of performance (of company or vessel), indicated in red (“low performance”), yellow (“medium performance”) and green (“good performance”). For instance, in order for a shipping company to be marked as ‘green’, it has to have a total weighted score of at least 40%, while more than 90% of all owned vessels are reported (see table 1). However, the CSP organisation emphasizes that the aggregate score gives a rough indication of the overall performance and should be judged with reason and used for more nuanced discussions.

Table 1: Environmental performance levels by carrier or vessel (Source: CSP, 2010a)

Category	Shipping Company	Vessel
<i>Red</i>	Total weighted score < 10% (or reporting < 20% of total fleet)	Total weighted score < 20%
<i>Yellow</i>	Total weighted score ≥ 10% (≥ 20% reported)	Total weighted score ≥ 20%
<i>Green</i>	Total weighted score ≥ 40% (≥ 90% reported, verified carrier)	Total weighted score ≥ 50% (≥ 35% in all issue areas, verified vessel)

⁵³ Regarding costly measures, e.g. use of low-sulphur fuels, grading will reflect logarithmic proportions. The reason for this is to keep figures and the index manageable (CSP, 2010a).

6.4 Clean Shipping Project Network

The Clean Shipping Project involves the following stakeholders:

- 1) CSP organisation;
- 2) Private companies (cargo-owners, shipping companies and forwarders);
- 3) Commissioners;
- 4) the North Sea Foundation (eNGO).

The entire collectivity of all the stakeholders that are actively involved in the project and contribute to its development is referred to as the Clean Shipping Project network. Each stakeholder has a particular role to play in the project, which will be explained below.

CSP organisation

The driving forces behind the CSP are two independent consultants who are based in Göteborg, Sweden (toxicologist Ulf Duus and environmental engineer Jan Ahlbom, also referred to as 'the developers'). They play a major role in the project, because they take care of project management and coordination; the (technical) development of the index; information dissemination and maintaining contact with stakeholders (both within and outside the network). The CSP organisation also consists of a financial administrator, an environmental specialist and an IT specialist. As an organisation, they see themselves as an impartial platform focusing on a non-profit goal (interview CSP, 2010).

Cargo-owners

The central group of actors within the network are the cargo-owners who support the initiative and use the index for procurement of shipping services. Officially they are referred to as the 'Clean Shipping Network', but in this study they are referred to as the 'Clean Shippers Group', because they are considered a sub-group within the CSP network (and to avoid confusion with the term network as used in this study).

Private companies can join the Clean Shippers Group and get access to the Clean Shipping database by signing the Letter of Intent and a confidentiality agreement and paying a small administrative fee. Currently, the Clean Shippers Group consists of twenty-four of Sweden's biggest importers and exporters (a list can be found on the CSP website).

Members of the Clean Shippers Group meet three times a year to be updated on the state of affairs and discuss general issues (interview CSP, 2010). A smaller group of seven cargo-owners is more actively involved within the shippers' steering group, which convenes three times a year to provide detailed input, make strategic decisions (e.g. bottom-line in demands) and develop future perspectives.

In 2009, members of the Clean Shippers Group (in theory all of them) sent a letter to their sea freight suppliers requesting them to submit data for the Clean Shipping database for at least 20% of their owned fleet) (interview CSP, 2010).

Forwarders

The CSP also established a Clean Shipping Forum consisting of thirteen forwarding and logistics companies, such as DB Schenker, Geodis Wilson, and Kuehne-Nagel. At the moment, because of confidentiality agreements with shipping companies, forwarders part of this forum do not have access to the database, but are only informed about developments related to the CSP through a newsletter (planned monthly from next autumn onwards) (interview CSP, 2010). So far, the participating forwarders have met two times with the CSP organisation.

Shipping companies

Shipping companies have to report information on individual vessels of their fleet to fill the CSP database. Otherwise, if the database does not contain relevant and up-to-date data on sufficient vessels, the index cannot be effectively used as a procurement tool. Currently, over half of the 70 shipping companies contacted and eleven of the 14 largest multinational container companies on the world market have submitted information on a part of their fleet (CSP, 2010b). The exact number of vessels in the database is confidential, but continuously growing (approx. 1000 at the moment) (personal communication CSP, 2010).

Shipping companies can use the CSI to benchmark and evaluate their environmental performance vis-à-vis other shipping companies (they cannot however identify the other companies). Quality shipping companies can use the index as a marketing tool to communicate sustainability aspects of their operations.

There is no special forum for shipping companies within the CSP, and besides the CSP organisation, they do not communicate with the other stakeholders involved. The CSP organisation maintains frequent contact with shipping companies, because they possess the expertise and knowledge needed to develop the questionnaire (interview CSP, 2010). Wallenius Marine for instance provided a lot of input to improve the technical quality of the CSI (interview WM, 2010).

Commissioners

The CSP is commissioned by the Region of Västra Götaland, the Västra Götaland County Administration, the Gothenburg Region Association of Local Authorities and the City of Göteborg – all regional authorities in the west of Sweden. Until Dec 2009, the Clean Shipping Project was also funded by the European Regional Development Fund of the European Union. The subsidies from the regional authorities has been extended until 2011 upon request of the cargo-owners. The commissioners are all represented in the commissioners' steering group, which meets three times a year. During steering group meetings, the CSP organisation provides information about the state of affairs and there is some exchange of views and ideas for future developments (interview CSP, 2010). The commissioners however do not provide any technical input, only some advice on strategic matters (e.g. funding). The commissioners do not have direct contact with the other stakeholders (interview VG/GR, 2010).

North Sea Foundation

The North Sea Foundation (hereinafter the NSF) is a non-profit, non-governmental organisation based in the Netherlands striving towards environmental protection and nature conservation in the North Sea. They try to promote sustainability of maritime activities in various way, e.g. lobbying for more ambitious environmental regulations, awareness-raising and through partnerships⁵⁴. The NSF actively supports the CSP by raising awareness about clean shipping and promoting the CSI among cargo-owners (interview NSF, 2010). Starting from March 2010, the project of the North Sea Foundation dealing with clean shipping (called CORE Business) receives funding from the Dutch government to work on the CSI for a total of twenty months (interview NSF, 2010).

⁵⁴ In 2008, the NSF performed a feasibility study on a European coalition of cargo-owners that sets environmental standards for clean shipping during the procurement process (interview NSF, 2010). They compiled a list of 60 companies, which are or are not interested. Companies that were interested include Unilever, HEMA, Philips and Akso Nobel. At the time, many of these companies indicated they would like to be informed once the index is fully developed (interview NSF, 2010).

Chapter 7 INTERVIEW RESULTS

In total, 15 interviews have been performed with core network members, but also important actors outside the CSP network. This chapter compiles relevant interview results grouped according to topic. This chapter concludes with future perspectives of the interviewees (both network members and non-members).

7.1 Motivations

The interviewees were explicitly asked why their organisation decided to participate in the CSP. This section discusses in detail what motivations drive the network members to cooperate.

Developers and commissioners

The developers (Ulf Duus and Jan Ahlbom) see themselves as idealistic scientists, who have a vision they want to realise (interview CSP, 2010). When discussing the environmental impacts by shipping, they express a strong discontent about current practices. Particularly the current type of bunker fuel in use has a major impact on the marine environment and should be substituted. Therefore, they hope to change this situation by creating the Clean Shipping Index. They are also encouraged by the success of the Grön Kemi Project (a previous project focusing on the chemical industry) and wish to apply the market-based approach in the shipping industry as well (interview CSP, 2010).

As regional authorities, Västra Götalandsregionen/Göteborg Region Association of Local Authorities (hereinafter VG/GR) see it as their responsibility to support promising initiatives that contribute to sustainable development (interview VG/GR, 2010). In general, VG/GR consider collaboration with industry actors an effective way to steer development (interview VG/GR, 2010). VG therefore promotes sustainable development in Västra Götaland through environmental collaboration, networks and partnerships between local authorities, industry, universities and other actors. They facilitate network by contributing ideas and financial support.

The responsibility of VG/GR is threefold: social, economic and ecological. Göteborg Region monitors air and water quality in the area and noticed that the impact of shipping is quite large. SO_x is not a problem anymore due to the SECA requirements, but vessels do contribute approx. 20% of the total CO₂ emissions and NO_x emissions also remain a problem. Water quality is quite good, but there is still a certain concentration of TBT. Therefore, since marine and air pollution continue to be a problem in the area, they are eager to find solutions. Furthermore, they hope that the CSP will create spill-over effects to linked industries, such as shipyards and suppliers. Recently, they commissioned a new project called Clean Shipping Business Development, which supports companies to develop the technology and know-how needed for clean shipping. This could stimulate the regional business environment and re-establish Göteborg as a leading ship yard (interview VG/GR, 2010).

Cargo-owners

The cargo-owners interviewed joined the CSP because it is in line with their corporate policies and because they support the idea of environmental benchmarking (interview TL/SEL/VL/Preem, 2010). All of them have established corporate-wide social and environmental policies since the 1990's. Environmental care is one of the core values of the Volvo Group, next to safety and quality, and sustainability has thus been very high on the agenda of Volvo Logistics for a long time (interview VL, 2010). Stora Enso Logistics invests in sustainability policies and measures, because it wants to be part of the future (interview SEL, 2010). Preem's company motto is to lead the transition into a

sustainable society, so environmental issues are an important focus within the company⁵⁵ (interview Preem, 2010). Tetra Laval sets targets to improve the sustainability of various aspects of the production process (interview TL, 2010).

Corporate-wide policies have to be followed and implemented by associated transport departments and logistics companies, which entails additional measures related to transport procurement. All the interviewed cargo-owners have started to invest in subcontractor management, some more rigorous than others.

Transport providers that wish to be contracted by either Tetra Laval⁵⁶ or Volvo Logistics have to fill out a detailed environmental questionnaire (interview TL/VL, 2010). Both companies already integrated the CSI in their procurement process. If their suppliers submit data for the CSI database, they do not have to fill out the entire questionnaire. When selecting suppliers, Preem avoids sub-standard shipping companies (interview Preem, 2010). They are not looking for the cheapest alternatives at all, but set high environmental standards for their time-chartered vessels, such as double hulls, catalysts and NOx installations. Preem is in the process of developing a standardized way to incorporate environmental criteria in the procurement process and are convinced the CSI could be of tremendous use (see box 5) (interview Preem, 2010). They are already planning to charter an environmentally-adapted vessel with a high index score, which could serve as a positive trademark.

The past four years or so, all oil companies are facing broader environmental demands from the general public and regulations. Together with other oil companies Preem is currently trying to develop a way to incorporate environmental criteria in the procurement process. They think the CSI could be a very useful tool for environmental evaluation and benchmarking and could fit very well in their existing databases on safety and security. In the future, it could be used to set targets, e.g. contract a certain number of vessels each year with a minimum index score. But first, the CSI has to be adjusted to suit the needs of oil companies, which requires minor changes in formulation and trade patterns. It would be worth a lot to them if oil companies can make use of the CSI, because this database has already been developed and paid for, which saves them a lot of time and money. Furthermore, it would be a major advantage if they could use the CSI to fulfil part of the reporting obligation to the Swedish government.

Box 5: Sea-freight procurement and environmental criteria by oil companies (Source: interview Preem, 2010)

Stora Enso Logistics sets minimum Health, Safety and Environmental requirements in line with regulations (interview SEL, 2010). In the beginning they were actively involved in the CSP, but this has changed lately. Even though they still support its objectives and find the index very valuable, shipping is currently not considered a priority because they have many other concerns they have to deal with (explained in more detail later on). There are many aspects of sustainable logistics, clean shipping is only one of them (interview SEL, 2010).

Besides their commitment to sustainability, the interviewed companies are also interested in the business opportunities the CSI may generate. As Preem remarked, now there is money to be made with being green as it improves your reputation (interview Preem, 2010). Stora Enso Logistics also sees environmental measures as an investment in their company name (interview SEL, 2010). They also remarked that they if they pay the membership fee, they will make sure they will utilise the CSI

⁵⁵ The company invests in various environmental measures, e.g. biofuels. of which the outcomes are reported on a monthly basis (interview Preem, 2010). Preem considers sea freight an important aspect of their operations and have started to collect emissions data since 2006.

⁵⁶ Tetra Laval asks suppliers to fill out an environmental questionnaire, which they use for all transport modes (interview TL, 2010). Suppliers are ranked and the outcome for all transport modes are evaluated according to a colour code system. Suppliers in the red category have to hand in an action plan to guide improvement.

in such a way as to get the value out of the fee (interview SEL, 2010). For Volvo Logistics, environmental requirements are getting more priority because customers are asking for it (e.g. Volvo Group, Volvo Cars) (interview VL, 2010). Previously EU/IMO regulations were good enough, now they want to go further, even if this would increase costs.

Shipping companies

Wallenius Marine has worked very closely with the developers for years and supported their ambitions all the way (interview WM, 2010). They helped Ulf Duus and Jan Ahlbom to develop the CSI and report information on their entire fleet. They fully support the CSP because it is in line with their environmental values. Wallenius Lines is privately owned by people who consciously choose to run a sustainable business. In 1998 they decided that the most stringent policies had to apply to their business and that they were willing to invest in this strategy. Their client, Wallenius Wilhelmsen Lines also has environmental ambitions (partly driven by customer demands), so it is both a bottom-up and top-down pressure. However, they do need to see clear benefits for the company in order to continue, because they already monitor parameters for their own purposes, but using different methods. They hope a high ranking will create business opportunities. In the past you would never get paid more for being green, but maybe now you can win contracts by providing an environmental profile (interview WM, 2010).

Maersk is more skeptical about several aspects of the CSP, but in principle they support its objective (interview Maersk, 2010). Maersk has already worked on fuel efficiency for years, only recently under the notion of sustainability. Maersk currently reports all owned vessels and in the future might include charters, not only because clients have requested them to report information but also out of autonomous motivation. Maersk thinks that environmental action is in fact necessary given increasing regulations. On the one hand they think environmental benchmarking is a good thing, but on the other hand they doubt that it will increase their market share (interview Maersk, 2010).

In principle, Wagenborg likes the initiative, but considers the reasoning behind it a bit idealistic (interview WB, 2010). Nevertheless, they submit data on three vessels, which are the ones chartered by Stora Enso Logistics. Now they are considering to submit more data because they have many Scandinavian clients (e.g. from the forest and paper industry, windmill manufacturers) which increasingly pay attention to environmental issues. Since Wagenborg expects to score well, they might get a good reputation and a competitive advantage. Furthermore, Wagenborg has already set environmental targets, so the CSI could be a useful tool to monitor their performance.

DHL Global Forwarding Sweden⁵⁷

In 2007, the DHL Group started an environmental management program called GoGreen⁵⁸, which focuses on carbon efficiency (interview DHL, 2010). DHL Global Forwarding Sweden (hereinafter DHL SE) however tries to look at environmental issues in a more holistic way. DHL SE already collaborates with shipping companies (e.g. ACL) to introduce fuel additives.

They invite their customers for breakfast seminars to discuss environmental problems associated with transport and increase environmental awareness. When customers ask about rates and delivery times, they provide additional information on the supplier's environmental performance, because they believe it is important. They would therefore like to include an environmental rating of ocean freight providers on the Request For Proposal.

⁵⁷ DHL is owned by Deutsche Post and consists of different divisions: express, supply chain, global forwarding, freight business (interview DHL, 2010). DHL SE has about 60 Swedish multinational clients.

⁵⁸ The aim is to improve carbon efficiency by 10% in 2012 for its own vehicles and improve carbon efficiency by 30% in 2020 including subcontractors (interview DHL, 2010). DHL therefore ranks shipping companies according to CO₂ emissions. Environmental activities include improving: sustainability of own trucks (introduction of biofuels and new technologies); energy efficiency of own offices; environmental behavior of employees; sharing of responsibility (collaborate with subcontractors to reduce footprint).

DHL SE is very eager to get access to the database, because they see the CSI as a very useful tool for subcontractor management and to track the overall environmental performance of shipping companies. Otherwise they have to create a database themselves, which would be a lot more work.

Another driving force is increasing customer awareness. Since a couple of years, environment has been creeping up the ladder of transport procurement criteria. A couple of years ago environment was hardly considered, now there is more attention for environmental issues. Furthermore, DHL SE believes shipping companies have to wake up to the fact that environmental information is no longer confidential (interview DHL, 2010).

North Sea Foundation

The NSF actively supports the CSP because it is in line with their own objective towards marine protection and nature conservation (interview NSF, 2010). They are one of the developers of the 'clean ship' concept and believe the CSP will help to make international shipping more sustainable through its market-based approach.

7.2 Stakeholder Representation

Cargo-owners can indicate what the index has to look like in order to be a useful tool for them. There are sufficient opportunities to give input and their comments are usually taken into account (interview TL/Preem/SEL/VL, 2010). For instance, Tetra Laval requested for the database to be based on trade lanes (e.g. Europe to Asia), to make it easier for them to use the results (they can now calculate the environmental impact of their bookings) (interview TL, 2010).

Maersk and Wallenius Marine give feedback on the technical aspects of the index. Wallenius Marine thinks the developers are extremely open towards shipping companies and has had constructive discussions with them (interview WM, 2010). Maersk thinks shipping companies should be more actively involved so that they can meet other stakeholders and explain their views (interview Maersk, 2010).

The developers are fully aware of their critique, but they purposely do not make them official members of the Clean Shipping Network because they want cargo-owners to maintain control over index (interview CSP, 2010). They are afraid shipping companies will undermine the credibility of the index, it would be like "putting the wolf to watch the sheep". The commissioners do not think that shipping companies should be part of the Clean Shipping Network either, because they might try to lower standards (interview VG/GR, 2010). Some other network members share this position (interview NSF/Preem, 2010), though others are neutral (interview TL/SEL, 2010). Volvo Logistics does not see the added value of involving shipping companies in the network, because this would change the whole set-up (interview VL, 2010). Decision-making power has to be exclusive for the cargo-owners. In order to achieve change, they have to set standards a bit higher than shipping companies would like to. This keeps the discussion alive and pushes for improvement (interview VL, 2010).

7.3 External Rule Systems

An important interview topic was interviewees' perceptions on external rule systems: formal environmental regulations governing the shipping industry, but also other private governance initiatives.

7.3.1 State-based Regulations

Developers and commissioners

Both the developers and VG/GR think that current environmental regulations are inadequate to establish a more sustainable shipping industry (interview CSP/VG/GR, 2010). By creating the CSI, the developers aim to speed up legislative processes (interview CSP, 2010). If the industry adopts the standards set by the CSP, political will and regulations have to follow.

However, the CSP organisation is not trying to create new standards, because they doubt that the CSI will have as much influence as regulations (interview CSP, 2010). They therefore take into account regulatory developments, but try to go beyond yet in the same direction. Once an issue is adequately regulated, they exclude it from the index. In general, the CSP tries to align with standard calculating methods, for instance: biodegradable oils (OECD methods); ballast water treatment (IMO); NO_x (Norwegian tax system); CO₂ emissions per trade lane (CCWG, EEOI) (personal communication CSP, 2010).

Referring to the success of the Gron Kemi Project, VG/GR believe that through collaboration with industry results can be reached more rapidly than with legislation. VG acts, through its membership of the North Sea Commission as observer at the North Sea conferences where they witness that international policy-making processes are very slow, while standards are not very high and solutions are fragmented. They think the CSI can achieve better results than regulations in a shorter time frame, by setting higher standards and adopting a more holistic view. Maybe the CSI can also contribute to achieving the targets set by the Marine Strategy Directive (interview VG/GR, 2010).

Cargo-owners and DHL SE

Most interviewed cargo-owners and DHL SE consider the CSP a useful complement to regulations, because they do not expect that stringent regulations will apply world-wide any time soon (interview SEL/VL/Preem/DHL, 2010). Stora Enso Logistics remarks that regulations for the shipping industry is by far not as tough as for land-based industries (interview SEL, 2010). DHL SE thinks that a market-based tool such as the CSI could be more effective than regulations (interview DHL, 2010).

Furthermore, since 2010 all Swedish companies are legally obliged to report data on the environmental impacts of their transportation practices (interview SEL/Preem, 2010). The CSI fits in well with this new law because it provides companies with the necessary information that is difficult to obtain otherwise.

Shipping companies

Wallenius Marine is in favour of more stringent regulations, because this would create more fair market conditions. However, they do not expect high standards covering all relevant impact areas will be adopted globally in the near future. Another reason to endorse the CSP is because they prefer positive incentives over punishment, because it is more constructive. In their view it could be an even stronger driving force than regulations, if cargo-owners set strict environmental demands (interview WM, 2010).

According to Maersk, shipping is already heavily regulated and sometimes it can be difficult to comply with certain standards (interview Maersk, 2010). Some future regulations will pose significant challenges to shipping companies (e.g. in relation to SO_x, NO_x and ballast water). Wagenborg does not think it is very difficult to comply with environmental rules at the moment, unless countries unilaterally devise additional standards (interview WB, 2010). Both Maersk and Wagenborg do not oppose more stringent environmental rules as long as these are implemented globally (interview Maersk/WB, 2010).

An interesting observation is that many shipping companies are reluctant to invest in environmental techniques, because current regulations are not very stable (interview WB, 2010). Companies are afraid that technical requirements set by regulations will change in the future, which

could render their investments useless. Preem confirmed this and says shipping companies are confused and scared about what the future may bring (interview Preem, 2010). It is difficult to anticipate regulations, they recently panicked about the required 0.1% sulphur content of fuels in ports and called for more time to adjust their operations. However, in some cases regulations do stimulate environmental investments. For small ship-owners sailing in the Baltic Sea it is more profitable to invest in sulphur-reducing installations or gasoil engines (interview WB, 2010).

North Sea Foundation

The NSF considers the way the IMO is organised and functions completely ineffective (interview NSF, 2010). Particularly the phenomenon of flags of convenience undermines environmental protection. Furthermore, IMO regime formation is often only a struggle of national interests, which makes it impossible to create adequate rules. That is why they believe it is easier to achieve fundamental change in the industry through market mechanisms than through regulations (interview NSF, 2010).

Some interviewees think it would be a major advantage if the IMO would express its support for the CSP (interview VG/GR/WM, 2010). The NSF also thinks it is important to inform policymakers about private initiatives like the CSP (interview NSF, 2010). So far few efforts have been made to influence the legislative context. Friends of the Earth International submitted a paper to the IMO MEPC to inform them about the Clean Shipping Project (May 2009) as a signal that the market is taking steps beyond regulations, which should increase pressure to take measures (interview NSF, 2010). The NSF also mentioned the possibility for the EU or national governments to provide subsidies to shipping companies for environmental technologies and training to help them achieve CSI standards (interview NSF, 2010). Maersk thinks that governments can support the CSP on standardisation and transparency but will not play a major role in the project as such (personal communication Maersk, 2010).

7.3.2 Other Private Governance Initiatives

The developers are aware that various other private governance initiatives are being developed at the moment to make the shipping industry more sustainable. They do not consider the CSI the single best solution and do not wish to 'monopolise' the market, but want to create synergy with other initiatives (interview CSP, 2010).

The commissioners agreed that it is possible to align with similar initiatives, but warn for differences of opinion, cooperation should not weaken CSI standards (interview VG/GR, 2010). They prefer a well-functioning, strict index that some major stakeholders accept instead of a low standard that is accepted by everybody (interview VG/GR, 2010). Wallenius Marine also prefers one ambitious index as a guideline in the shipping industry (interview WM, 2010). Maersk thinks there should be one comprehensive index which everybody agrees to and that uses standardized methods to calculate parameters (interview Maersk, 2010).

The sections below discuss the CSP in relation to the Clean Cargo Working Group and ISO14001.

Clean Cargo Working Group

The developers try to align with the CCWG by equalising the scoring impact, using the same trade lanes and cooperating on verification (interview CSP, 2010). The CCWG in turn incorporated some CSI parameters (e.g. chemicals, bilge water parameters).

Not all the interviewees were familiar with the CCWG. Those who were were not very positive about it (interview SE/CSP/NSF, 2010). They stated that the CCWG is not very ambitious and does not achieve a lot. According to the developers, this is because they do not formulate any standards but only focus on developing ways to measure environmental impacts, largely due to the dominance of

shipping companies in the network (interview CSP, 2010). Practical obstacles for companies to join the CCWG are its base in the U.S., relatively high member fee⁵⁹ and focus on container shipping (interview VL/SE/Preem, 2010).

Maersk however appreciates the fact that shipping companies play a very prominent role in the CCWG (interview Maersk, 2010). Another strength according to Maersk, is the weighting of environmental parameters, which reflects what cargo-owners and shipping companies find important. The CSI however has a more extensive database (interview Maersk, 2010).

ISO 14001

ISO 14001 is a generic environmental management system, which does not address specific environmental issues. It is a minimum, either you have a certificate or you don't, there are no possibilities for differentiation (interview Maersk, 2010). All vessels and the office of Wallenius Marine are ISO 14001 certified, which supports their objective to continuously improve environmental care in a structured way (personal communication WM, 2010).

Vessels have to be individually ISO 14001 certified, but since it costs a lot of money and there is hardly a demand, few shipping companies voluntarily choose to do so (interview WB, 2010). Within the fleet of Wagenborg there are six vessels that are certified, because it was a requirement by Stora Enso Logistics. Maersk confirmed that very few cargo-owners ask for ISO 14001 certification (interview Maersk, 2010). DHL SE however witnesses a second wave of ISO 14001 certification, which was quite popular late 1990's among larger companies and now also among small and medium enterprises (interview DHL, 2010).

Volvo Logistics became ISO 14001 certified in 1998 (interview VL, 2010). According to them, the advantage of ISO 14001 is that it is very process-oriented and requires frequent monitoring of all the environmental aspects of a company's operations (e.g. sale, procurement, operations, personal transport). Now they try to make the entire supply chain (including transport providers) more sustainable through subcontractor management. DHL SE, which is also ISO14001 certified, also looks at environmental issues in a holistic way, while global environmental managers at DHL focus only on CO2 (interview DHL, 2010). Their experience is that subcontractor management is the hardest part of ISO 14001, because they have to collect information from different sources without the guarantee that it is verified.

7.4 Accountability Mechanisms

The developers find it very important that cargo-owners adhere to the index and do not procure sub-standard vessels, otherwise this would "destroy the whole thing" (interview CSP, 2010a). That is why participating cargo-owners have to sign the Letter of Intent. Even though cargo-owners are in full control of the CSI, there should be a bottom-line in demands, which they have to set themselves. For instance, cargo-owners requested shipping companies to report >20% of their fleet. The goal is a reporting rate of 100%, but at least a target, a bottom-line is set at the moment, companies can decide for themselves if they want to go further (TL, 2010). Preem however did not send the letter to their suppliers, because there are simply too many and because the index still has to be adjusted (interview Preem, 2010).

The developers expect companies to join the CSP and act tough by themselves (interview CSP, 2010). They realize however there are no guarantees that cargo-owners are committed enough and will refrain from contracting sub-standard vessels. Volvo Logistics also stresses the need for dedicated cargo-owners setting strict demands on their suppliers to operate according to the standards set by the index (interview VL, 2010). Cargo-owners will have to decide on a common

⁵⁹ Flat fee to participate for the calendar year: BSR members: \$5,000, all other companies: \$7,500 (CCWG, 2010).

strategy to enforce this. VG/GR think it is already a major achievement that cargo-owners ask questions about the sustainability aspects of shipping and thus raise awareness (interview VG/GR, 2010). However, at some point they have to do more than just ask questions, but actually use the index.

Maersk thinks it is crucial that cargo-owners 'walk the talk' and really use the index effectively in a transparent way (interview Maersk, 2010). If cargo-owners do as they promised this will provide an extra incentive for shipping companies to do their best. At the moment however, there are no guarantees on anything. This position was shared by Wallenius Marine, shipping companies invest time in reporting information so it is very frustrating if cargo-owners still choose sub-standard companies who do not report at all (interview WM, 2010). The index has been available for quite some time now, cargo-owners should set clear targets and follow these consistently. If they don't, the index does not offer any benefits and shipping companies will no longer report data. The CSI will then become simply another form of green-washing and not achieve anything (interview NSF, 2010).

At the time the interviews were performed, the cargo-owners did not yet use the index to benchmark and select suppliers based on their overall environmental performance. Tetra Laval and Volvo Logistics try to actively work with the CSI and consider it an integral part of the procurement process, but they only evaluate if a shipping company actively reports to the CSI database (interview TL/VL, 2010). Tetra Laval even made its own ranking based on how much information had been submitted by shipping companies. They demand their suppliers to report at least 20% of their fleet, but they are not sure what action will be taken if they do not meet this demand (interview TL, 2010). Of all their suppliers, about 23 (out of 30 companies) have submitted information. Those who did not are mostly small shipping companies, some of which do not own vessels themselves. Volvo Logistics requested a 100% reporting rate, which half of their suppliers has fulfilled (they contract 40 sea-freight suppliers in total), mostly strategic suppliers. Stora Enso Logistics does not use the index at all at the moment (interview SEL, 2010). All the cargo-owners interviewed stated the intent to make better use of the index in the near future.

The CSP say that they only created a tool and cannot determine how cargo-owners will use the index (interview CSP, 2010). They cannot set demands on cargo-owners or shipping companies, because they do not have the power to do so. Cargo-owners have to decide for themselves how hard they press on ship-owners. Other interviewees also doubt if it is possible to set sanctions on cargo-owners if they do not use the index properly (interview VL/VG/GR, 2010). Stora Enso Logistics and Preem are certainly not in favour of strict oversight and requirements on cargo-owners (interview SE/Preem, 2010). They think every company is sufficiently motivated to use the index, so it should work by itself (interview Preem, 2010).

The NSF plans to monitor activities of cargo-owners and shipping companies, because they see it as their obligation to act as the 'conscience of society' (interview NSF, 2010). They expect cargo-owners to provide information about their activities relating to sea-freight procurement in their environmental reports. NSF could then evaluate their performance and identify those who have not properly implemented the CSI. However, it will be difficult for them to keep track of the activities of all participating companies, so there should be another independent organisation to monitor progress.

Once the CSI database is public, they are able to analyse and publicise the results, e.g. which shipping companies perform well and which are sub-standard. Through public 'naming and shaming' they can hold those companies accountable for their actions as well. They do not plan to verify the data submitted by shipping companies, but could check if independent audits have been performed (interview NSF, 2010).

7.5 Communication

The developers try to take a neutral position in-between the environmental movement and the industry (interview CSP, 2010). They emphasize that they are not against shipping, but try to understand the perspective of shipping companies as well. This way they can gain trust of all stakeholders and maintain good relations with companies.

All the interviewees find the developers quite accessible and open. Besides the formal meetings, they are often available for telephone/mail contact, which most interviewees make use of on a monthly (or 2-monthly) basis (interview TL/VL/Maersk/DHL, 2010). According to Wagenborg, the developers responded rapidly and not in a bureaucratic fashion when they contacted them (interview WB, 2010). Now that the CORE Business Project of NSF has started, they will intensify contact (interview NSF, 2010).

Most interviewees are also quite satisfied with the information provision and think processes are fairly transparent (interview VG/GR/TL/VL/WM, 2010). DHL SE however thinks information provision towards forwarders is insufficient and would like to receive quarterly newsletters (interview DHL, 2010). The NSF would also appreciate more detailed information provision about new developments.

According to Maersk, there is a lack of information towards shipping companies (interview Maersk, 2010). They have the right to know what happens with the information they report, but there is no transparency at all how cargo-owners use this information to select suppliers. They find the CCWG more transparent in this regard, because shipping companies directly interact with cargo-owners (interview Maersk, 2010).

There are three meetings per year for the entire Clean Shippers Group and an additional three meetings per year for members of the shippers' steering group (interview CSP, 2010). Volvo Logistics thinks it is a good network to meet other transport buyers who share the same problems and concerns (interview VL, 2010). There is a lot of interaction within the steering group, cargo-owners can ask one another questions and exchange ideas and experiences (interview TL, 2010). Preem however doesn't find the general meetings very productive, because the group is too big and the discussions are too general to really develop anything (interview Preem, 2010). Furthermore, Preem is the only oil company so they do not always share the same problems with other companies. This is easier for similar companies in the same line of business (e.g. H&M and Kappahl, Volvo and Skandia). Because they want to contribute to developing the index further, Preem is considering becoming part of the shippers' steering group.

7.6 Network Composition

DHL SE regret they do not have direct access to the CSP database. According to them, it is more effective if there is pressure on shipping companies from different angles, both cargo-owners and forwarders (interview DHL, 2010). They want to help to get more shipping companies in the database, they already sent letters to their subcontractors and could convince some to submit information. Furthermore, through their contact with cargo-owners, they can effectively influence procurement processes so that shipping companies in the red category are avoided (interview DHL, 2010).

All the interviewees underline the need for the network to expand with other international companies so that it can exert more pressure. It is important that the members are global players as shipping is a global industry (personal communication Maersk, 2010). At the moment only Swedish companies are involved, which is not good enough. Stora Enso Logistics thinks current participating

cargo-owners are too small with too little purchasing power to be able to exert enough pressure on shipping companies (interview SEL, 2010).

Outside the network, the CSP organisation tries to cooperate with like-minded organisations that have the same goal as they do (interview CSP, 2010). They try to connect with the right individuals to create an informal network of dedicated people. For each economic trade they try to find a special opening, someone to introduce them to other companies in the business. NGO's like the NSF already have a network, so they can open doors for them (interview CSP, 2010). Furthermore, NGO's can generate considerable media attention through for instance news articles or press conferences, which can generate either positive or negative publicity for companies (interview NSF, 2010).

The NSF emphasizes the need to involve ports, because they provide important environmental services to ships (interview NSF, 2010).

7.7 Management

Interviewees were asked about their opinion on the way the project was managed. This question was posed in a very open way so the interviewee could highlight any aspect he/she wanted. However, everybody had difficulties answering this question, so it yielded only limited information. Most interviewees commended the visionary ideas and enthusiasm of the developers (interview DHL/NSF/VG/GR/WM, 2010). Furthermore, they seem convinced of the technical expertise of the developers (interview TL/NSF/VG/GR/DHL, 2010). Some quotes to exemplify this: "they are clever guys who know exactly what to do" (interview VG/GR, 2010); "Ulf and Jan have huge competence within the area, no doubt about that" (interview DHL, 2010).

An important management task is promotion, which helps to enlarge the Clean Shippers Group. Some interviewees stress the need for the CSI to be promoted more professionally and that more time should be invested in public relations (interview NSF/DHL, 2010). The developers are however scientists with mainly technical skills, which means they have less experience with promotion and marketing (interview CSP/DHL, 2010). Until spring 2010, the developers did not try to get new cargo-owners on board, because they wanted to focus on technical development first (interview CSP, 2010).

However, not only the CSP organisation carries this management task, other network members also try to promote the CSI among companies. For instance Tetra Laval has talked about the CSP with other companies and there seems to be some interest (interview TL, 2010). Preem invited the developers to present the CSI to their suppliers and other oil companies of the SIS3 network⁶⁰ (interview Preem, 2010).

DHL SE is very active in promoting the CSI because both the sea-freight director and responsible environmental manager are very enthusiastic (interview DHL, 2010). Each customer meeting when subcontractor management is addressed they mention the CSI as a useful tool. Most customers have not heard of it so they urge them to become a member (e.g. Sandvik). Ulf Duus and Jan Ahlbom were invited to present the new database to the corporate environmental manager of DHL Global Forwarding, to convince her to implement the index worldwide (interview DHL, 2010).

The NSF tries to facilitate the success of the CSI in different ways. Firstly, it promotes the CSI among cargo-owners and supports them in using the index (interview NSF, 2010). Focus is currently on the Dutch Shippers' Council, which consists of 23 of the biggest importers and exporters of the Netherlands. June 2010, they organised a meeting about the CSI for cargo-owners and they are

⁶⁰ Preem already proposed the CSI to the other members of the SIS3 group in 2006 (interview Preem, 2010). At the time they were not interested at all because of the time-consuming spreadsheets. Preem thinks the oil companies would be a lot more positive now.

planning a seminar in October. At end of this year, they hope to have ten companies sign the Letter of Intent (interview NSF, 2010).

7.8 Resources

The CSP receives funding until 2011, the exact budget allocation has not been examined for this research. What is clear though is that the CSP organisation does not have enough manpower to fully develop the project to its utmost potential (interview CSP, 2010). This overly burdens current employees and deters processes, because they are not able to invest time in all the necessary activities.

The project also requires time and effort from network members. Cargo-owners have to send a letters to all of their suppliers and process the replies after which they have to request a login from the developers and forward the information to their suppliers (interview VL, 2010). Furthermore, participating cargo-owners have to keep track of new developments and information (interview TL, 2010). A lot of time is invested in communicating issues to customers, but also internally (interview VL, 2010). Cargo-owners that are more actively involved in the development process spend even more time on the CSP. Also, cargo-owners have to be willing to pay more for clean shipping. Yet according to Preem it is possible to do a lot with the index, which does not necessarily cost a lot of money but does show you are concerned (interview Preem, 2010).

It might happen, like in the case of Stora Enso Logistics, that a member lacks the resources to continue using the index. Stora Enso Logistics finds itself in a tough situation, which makes it difficult to take steps forward (interview SEL, 2010). They intend to take the next step when they have the resources and time to do so.

All three shipping companies already collect data on environmental parameters and issue annual environmental reports, so submitting data for the CSP is not very difficult (interview WB/Maersk/WM, 2010).

7.9 Instrument Quality

Apart from certain aspects, all the interviewees are satisfied with the quality of the index and think the new web-based questionnaire is a major improvement. The CSI is now a user-friendly tool which enables quick assessment and comparison (interview Preem, 2010). According to DHL SE, the CSI provides a world of information (interview DHL, 2010). Stora Enso Logistics also sees the CSI as a useful tool to obtain data, which is very difficult to obtain otherwise (interview SEL, 2010). The developers did not receive many questions from shipping companies, so they assume that the new questionnaire is clear and understandable (interview CSP, 2010).

One of the main strengths of the CSI, according to all interviewees, is the fact that it is comprehensive and addresses all environmental aspects of shipping. Only scrapping is not included, so the NSF is considering to add it as an annex (interview NSF, 2010). Another advantage is that it is very flexible in use (interview WM, 2010). Both cargo-owners and shipping companies can set their own level of ambition and priorities.

The developers tried to make a mainstream questionnaire and index that fits in various trades (interview CSP, 2010). Yet they plan to develop different approaches for specific types of companies (e.g. oil companies) by adding specific requirements. The disadvantage of a generic index (and indices in general) is that it is rather black/white and cannot be too detailed (interview WM, 2010). The CSI

should therefore be used to stimulate discussions between shipping companies and cargo-owners (interview WM, 2010).

The shipping companies interviewed did not check specific details of the index. There are often different ways to measure environmental parameters, each with both advantages and disadvantages (interview Maersk, 2010). Wagenborg and Maersk emphasize that the techniques proposed by the CSI have to be feasible, cost-effective and should not undermine safety aspects (interview WB/Maersk, 2010). The developers say that by focusing on feasible measures, rather than radical, they hope to be able to achieve more (interview CSP, 2010). However, according to Maersk, not all standards set by the index are realistic (interview Maersk, 2010). They think it is still too premature to use the index because of the technical deficiencies. Wallenius Marine however think the CSI is a good and practical tool that is ready for use, they do not object to the high standards the CSI sets (interview WM, 2010).

The developers awarded all issue areas 30 points because they consider them equally important (interview CSP, 2010). This also makes it possible to grab 'low-hanging fruit' first (issues which generate a lot of points and are relatively easy to solve). Maersk however thinks that chemical pollution has too many points while air pollution should get much more emphasis (interview Maersk, 2010). Based on their analysis the most important impact is air pollution (SO_x, NO_x and CO₂). Their vessels use different kinds of chemicals but only in small amounts so very little discharge occurs. They argued that if the index does not set priorities, companies may focus on the wrong issues. Another shortcoming they observed is that costs are not reflected in the weighting, which does not stimulate large investments. For instance, it costs a lot of money to install NO_x catalysts, but this does not generate more points than garbage handling (interview Maersk, 2010).

None of the other network members has objections against the current weighting. Wallenius Marine and the NSF only have some comments regarding the specific point distribution (interview WM/NSF, 2010). Wallenius Marine does not find CO₂ necessarily a pressing concern, because shipping contributes only marginally to total emissions world-wide (interview WM, 2010). Besides, the economic incentive behind energy-efficiency will drive investments anyway (depending on the oil price). Shipping however does contribute significantly to NO_x/SO_x emissions, so they think it is extremely important to reduce these. Anti-fouling also remains an important issue (interview WM, 2010).

All network members underline the importance of data verification. Wallenius Marine thinks the index is good enough now, but it absolutely needs third party verification, otherwise it has no value (interview WM, 2010). The developers think that third party verification should be a demand by cargo-owners (interview CSP, 2010).

7.10 Market Characteristics and Conditions

This section encompasses interviewees' perceptions and experiences (of both network members and non-members) regarding different aspects of the sea freight market.

Environmental investments

Shipping is a very conservative industry (interview Maersk, 2010). Pollution control investments are primarily driven by regulations, costs and customer demand.

Particularly costs is a limiting factor for shipping companies. Going beyond compliance is very difficult for shipping companies, also in the general cargo segment (interview WB, 2010). Additional installations and techniques simply add too many costs (due to purchase, but also in operation),

which raises freight rates and undermines a company's competitiveness. Maersk also remarked it often costs a lot of money to modify vessels in an environmentally-friendly way, which makes it difficult to stay competitive (interview Maersk, 2010). Maersk therefore does not use low-sulphur fuel voluntarily, because this increases costs considerably "and may drive the company bankrupt" (interview Maersk, 2010). In the end, it all comes down to money, port fee differentiation is often not enough to compensate extra costs (interview WB, 2010).

Environmental measures and techniques should therefore preferably lead to cost reduction during operation (e.g. fuel efficiency) or payback on the long run (interview Maersk, 2010). It is essential that measures benefit both the environment and the company at the same time, because one always has to look at the costs. For Maersk, reducing environmental impacts is a way to reduce costs at present but also to avoid regulatory costs in the future (interview Maersk, 2010).

Customer power and demands

If shipping companies cannot be compelled by cost-reduction or regulations another driving force could be the client. If cargo owners set strict demands, shipping companies have to make sure they can meet these demands (interview WB, 2010). Preem acknowledged that they can have a lot of influence on shipping companies. If they ask them for something, they will usually do it (interview Preem, 2010). EVO however thinks that cargo-owners do not have a lot of power over shipping companies, they might influence some of their decisions, but only to limited extent (interview EVO, 2010). It is particularly difficult to set strict demands on strategic suppliers who ship big volumes and cannot be substituted (interview VL, 2010). Stora Enso Logistics remarked that sometimes a client is not very powerful, because they have only a limited share of the total volume shipped, and may be even smaller in size than the supplier (interview SEL, 2010). Furthermore, cargo-owners are usually not able to influence the design of new vessels, which are ordered by investors. It is quite uncommon for cargo-owners to order a custom-made ship, this is only possible if the company is able to optimally utilise the vessel (i.e. large companies with significant volumes) (interview SEL, 2010). EVO confirmed that cargo-owners do not directly influence the design or operation of vessels, because they do not have full control over them (interview EVO, 2010).

Cargo-owners rarely set strict environmental demands (interview WB/SEL, 2010). All the cargo-owners interviewed admit that during procurement they mainly look at capacity, price and service quality. Once in a while a client asks if they have an environmental management system and sometimes they forward questionnaires, but they do not employ specific environmental criteria (interview SH, 2010). Stora Enso Logistics notices 'environment' is not something companies are willing to pay extra for (interview SEL, 2010). This is confirmed by DHL SE, who pointed out that "everything the customer has to pay for they are less inclined to do" (interview DHL, 2010). Particularly in the bulk segment cost margins are very small and during times of crisis companies are not willing to choose more expensive options (interview WB, 2010). The tanker industry is also extremely competitive and there is a high time pressure, which makes it difficult to implement the CSI (interview Preem, 2010).

However, EVO is convinced the majority of Dutch cargo-owners care about the environment and sustainability is an integral part of their procurement criteria (interview EVO, 2010). Yet this conflicts with another observation, that environmental criteria are always last in line and do not receive a lot of attention (interview EVO, 2010).

Issue salience

Firstly, DHL SE observes that transport is not a major priority for environmental managers of cargo-owners (interview DHL, 2010). When companies do consider sustainable transport, they often focus on road freight, because it is more accessible than sea-freight (interview EVO, 2010). The NSF sometimes checks sustainability reports of cargo-owners, and notices that they might include

CO₂/SO_x/NO_x emissions from land-based transport, but never for shipping (interview NSF, 2010). If companies do pay attention to environmental aspects related to shipping, this is mostly limited to air pollution (CO₂, PM and SO_x) (interview EVO, 2010). The experience of Wagenborg is that cargo-owners may occasionally ask them for an environmental policy or emission report, but not specific details (interview WB, 2010). Cargo-owners are generally not interested in marine pollution, because these impacts do not attract a lot of media attention and are not very controversial (interview EVO, 2010). Furthermore, combating marine pollution does not reduce costs. EVO therefore does not expect that companies will look at the issue areas separately, but only at the aggregate ranking.

Field cohesion

Another characteristic of the sea-freight market is that cargo-owners prefer short voyage charters (1-3 years) and tend to switch suppliers depending on freight rates (interview WB/TL/VL, 2010). The list of suppliers thus changes every few years, except for the strategic suppliers who ship large volumes, and some specialized suppliers. Preem noted that the tanker business is very competitive as cargo-owners frequently switch vessels based on freight rates (interview Preem, 2010).

As a result, the field cohesion within the shipping industry is rather weak. It will therefore be difficult for cargo-owners to reach all of their suppliers, particularly those on the spot market with whom they have little interaction (interview Preem, 2010). Tetra Laval contracts 30 suppliers in total, Volvo Logistics about 40, with whom do not always have direct contact (only strategic suppliers) (interview TL/VL, 2010).

Unlike most cargo-owners, Preem has very close contact with shipping companies (though not all of their suppliers), which visit their office every two weeks to present their vessels (interview Preem, 2010). They are very interested in what shipping companies think about the CSI, whether they think it is usable, feasible, and realistic. Nevertheless, it is not possible for them to urge each of their suppliers to submit data for the CSP database. Preem makes approx. 2,500 shipments with 150 different shipping companies with a large number of vessels. It would be too much work to contact each of them separately (interview Preem, 2010).

Furthermore, Preem and Wagenborg observed that there are a lot of other companies involved in each shipment, not only cargo- and ship-owners, but also brokers, subcontractors etc. (interview Preem/WB, 2010). This makes it very difficult to coordinate the use of the CSI on an everyday basis (interview Preem, 2010).

Market conditions

The developers realize that the market has to be prosperous in order for the CSI to succeed (interview CSP, 2010). An industry 'that is on its knees' cannot make the necessary investments to become more sustainable. Cargo-owners indicated that current market conditions are unfavourable to select shipping companies based on environmental criteria. During times of crises, companies are also most likely to cut costs on services that are not part of their core-business, which is often transport (interview EVO, 2010). Furthermore, shipping companies are currently performing below standard, they cannot deliver in time and there is not enough capacity (interview TL/VL, 2010). These are pressing concerns, because their factories must have supply at all times and products have to reach the customer (interview TL, 2010).

Due to the financial situation and market condition, the index is not on top of the agenda of Stora Enso Logistics at the moment (interview SEL, 2010). Their main concern is simply to secure transport, they just need paper and board that serves their purposes. They consider it sufficient that they already have six environmentally-adapted vessels and their suppliers fulfill minimum requirements (i.e. proper HSE management) (interview SEL, 2010).

7.11 Non-members

7.11.1 Ministry of Transport, Public Works and Water Management

The Dutch Ministry of Traffic, Public Works and Water Management (hereinafter the Dutch Ministry) is positive about the CSP, because companies voluntarily assume environmental responsibility (interview V&W, 2010). The Ministry also values the holistic scope of the index.

In general, the Ministry supports private governance initiatives, because these can create market incentives that strengthen the legislative framework. However, private governance instruments should be exclusively managed by market forces without intervention by the government. Companies should decide for themselves whether or not to join an initiative. That is why the Dutch Ministry cannot make the CSI an obligation for companies. Furthermore, they are restricted by existing policy guidelines on shipping. At the moment however the Dutch Ministry is developing a voluntary letter of intent on energy efficiency in the shipping industry. It involves various stakeholders (e.g. ship-owners, cargo-owners, shipyards, dredgers) and some of them are considering to incorporate the CSI as a supporting tool.

Despite the benefits, the Dutch Ministry does not consider private governance the only solution to environmental risks. It is far too dependent on the willingness of companies, usually it starts with a small group of frontrunners that are prepared to go beyond legal requirements. Finally the consumer, the end user, decides to what extent a company can pay attention to environmental aspects. A company can not go beyond what the market is willing to pay, but there is always a margin for acting. In certain trades companies are more willing than others. The forestry industry for instance has a positive attitude and is trying to improve their environmental reputation, a lot of companies in this industry already transport their products with clean ships. In general however, consumers are not aware of the environmental impacts by shipping. International regulation is therefore necessary to set minimum standards for the industry. Nevertheless, the Ministry thinks the CSP is an important initiative, and expects it will expand and become successful. This depends on a number of factors such as financial crises, the oil price, the autonomous ambitions of companies and awareness among consumers (interview V&W, 2010).

7.11.2 Dutch Association for Transport and Logistics ⁶¹

The Dutch Association for Transport and Logistics (EVO) has an outspoken opinion regarding new shipping regulations. They question the use of higher sulphur standards in SECA's and an Emission Trading System limited to Europe, because these measures would significantly increase the costs of sea-freight for European firms and thus disturb the level playing field (interview EVO, 2010). This may force cargo-owners to switch to other transport modes, such as rail or road transport to substitute short-sea shipping. They do not see the need for tough CO₂ regulations on bunker fuel anyway, because per tonnes/km shipping is more sustainable than trucks.

In general, companies do not like it when they are forced to become more sustainable, they would rather control processes themselves. EVO prefers measures that create positive incentives, such as reduced port fees for clean ships. Companies' activities are sufficiently regulated and the government should also leave issues for the market to solve. Companies should be stimulated to take action, not burdened with too many rules. EVO therefore supports market-based instruments that address environmental externalities, but only if it is easy in use and companies retain freedom of choice (like with a label).

⁶¹ EVO is a branch-organisation representing the interests of Dutch shippers, which together own 70% of all cargo shipped in/to/through the Netherlands (interview EVO, 2010). They lobby at various levels to ensure that rules and regulations take into account the perspective and needs of shippers.

EVO thinks the CSI is a good initiative since there is a need for such a tool (interview EVO, 2010). Within EVO, the CSI is discussed at meetings of the Shipper's Council. EVO notices there is some interest among cargo-owners to participate in the network (e.g. Mars, Abbott and Heineken). The principle behind the CSI seems feasible to them, because companies are sensitive to benchmarking, they do not want to be at the bottom of a ranking. If 'green' shipping companies make use of smart marketing strategies, they can increase their market-share. The government could also make it obligatory for shipping companies to report environmental information for the CSI database.

The CSI should be offered as an extra (free) service, it could for instance be included in tenders as one of the service quality criteria. Cargo-owners have to decide for themselves whether or not to make use of the CSI. Applying the CSI should not cost too much time or money, membership of the CSP should be free. It should be made easy on cargo-owners, they do not want to do too much effort for an external service. Some companies may be prepared to pay a bit more, but it would be better if clean shipping reduces costs for them. Eventually, clean shipping should benefit the cargo-owner somehow (interview EVO, 2010).

According to EVO, cargo-owners are only partly responsible for the way their cargo is transported (interview EVO, 2010). The main responsibility therefore lies with the shipping companies, they should take the initiative to make shipping more environmentally-friendly. Shipping companies are responsible for offering environmentally-adapted services so that cargo-owners have different options to choose from (interview EVO, 2010).

7.11.3 Spliethoff

Spliethoff is the only shipping company interviewed for this research that is not part of the CSP network. They acknowledge that the principle behind the CSI could work theoretically, but they think it is a bit idealistic and are skeptical about its perspectives (interview SH, 2010). Spliethoff does not submit data, because none of their clients asked them to. They do not plan to do so in the future, because it does not offer them any benefits. Spliethoff has many clients from all over the world, not only Sweden, which may never have heard about the CSI and may set completely different demands. It would therefore be more useful to become ISO14001 verified (which they are working on at the moment). Furthermore, they are reluctant to commit to a certain index because there are already too many certification schemes and indexes at the moment. They do not want to invest if they are not sure it will become the norm or if regulations do not require them to. Also, certain aspects of the index are already regulated, so they don't see the added value (interview SH, 2010).

Spliethoff expressed its critique on the complexity of current environmental regulations (interview SH, 2010). They find the proliferation of environmental regulations at international, regional and national level extremely burdensome. The fact that several regions have their own environmental focus and unilaterally set new rules (e.g. US BMW, EU and air pollution) creates an 'administrative monster'. Furthermore, Spliethoff experiences too much uncertainty about future regulations; what standards will be set (design or operational) and which techniques will be approved. As long as regulations are not fully crystallised, it is not attractive to invest in environmental techniques. They do not see the need for new regulations, it is important to concentrate on and improve existing instruments. Nevertheless, they don't mind new stricter rules as long as they apply globally, otherwise there is no level playing field. However, they favour an internal management system set up by shipping companies themselves, in order to avoid unnecessary, burdening IMO regulation. Such a system should have a broad scope to take into account all the demands of clients and regulations, and it should consider possible trade-offs (interview SH, 2010).

7.11.4 Swedish Shipowner Association⁶²

The Swedish Shipowner Association (SRF) participates in political arenas at various levels: global (IMO), regional (EU/Helsinki Commission), and national (interview SRF, 2010). In discussions they tend to take a proactive stance in line with their vision of a shipping industry with zero emissions and discharge. They therefore welcome more stringent environmental rules on a global level, because this will create business opportunities for Swedish shipping companies. These include several environmental forerunners that already apply environmentally-adapted techniques. However, it is difficult to convince other countries to adopt ambitious environmental regulations. It always takes a lot of time and effort to introduce and put into force new international rules (interview SRF, 2010).

The interviewee stressed the importance of close collaboration between the customers and shipping companies to develop environmentally-adapted logistics services (interview SRF, 2010). All best-practices, e.g. in the pulp/paper industry and the car industry, exemplify this. It is only possible to be ahead of regulations if customers are willing cooperate. Where customers put pressure on shipping companies, environmentally-adapted systems have developed. Preconditions are long-term relationships between customers and shipping companies and willingness to invest ("it is always a question of money") (interview SRF, 2010).

SRF supports the CSP, because they think the key to clean shipping are the customers (interview SRF, 2010). The CSI is therefore an important tool that is potentially more effective than regulations. Already good results have been booked, since many important customers have joined the network. SRF tries to promote the CSP by encouraging ship-owners to submit data. In general, their members are also positive about the CSP, but those whose customers are not part of CSP do not really see any advantages. One of the shortcomings at the moment however, is the fact that the CSP does not adopt a systems approach. This is crucial in order to be the index of the future. A systems approach entails involving ports, because they play a very important role in the logistics system (e.g. provide facilities for ballast water, garbage and sewage treatment). Together, shipping companies and ports can create closed loops. Once a successful collaboration between shipping companies, their customers and ports is established, the next step is to ask support from national governments. They can invest in infrastructure, e.g. shore-side electricity, and create financial incentives, e.g. reduce taxes (interview SRF, 2010).

7.12 Future Perspectives

All of the interviewed network members are eager to continue the project and hope that the CSI will become a standard norm in the future. Some are more optimistic than others. DHL SE thinks that the CSI certainly has the potential to stay and will have a huge impact (interview DHL, 2010). The NSF is confident that the CSI will contribute to making the whole industry more sustainable, even those companies all the way at the back (interview NSF, 2010). Yet Maersk is not sure if the index will give good-performing shipping companies a competitive advantage (interview Maersk, 2010).

The main challenge is to get enough international cargo-owners on board (with significant volume) and vessels in the database, which will take a lot of time (interview DHL, 2010). The CSI can be one of the service quality criteria used by cargo-owners, but it will take some time before it is widely accepted (interview Preem, 2010). The developers realise it might not be possible to get a big enough network with sufficient critical mass (interview CSP, 2010). Probably only a small group of cargo-owners will actually use the index in the beginning (interview WB, 2010). At first, the companies involved will be the front-runners among cargo-owners and shipping companies (interview NSF,

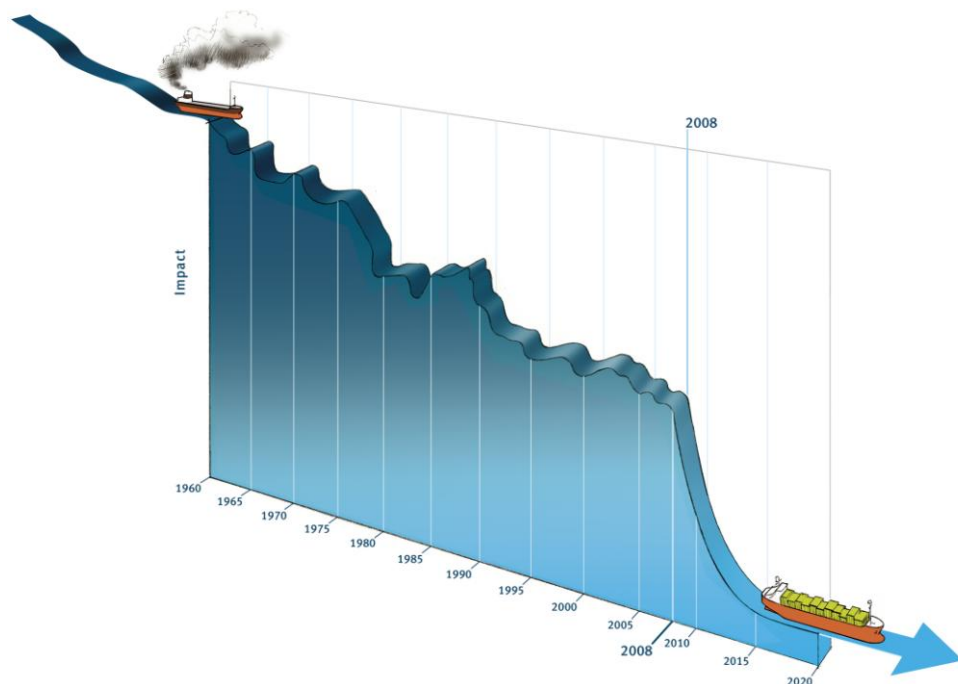
⁶² SRF is a branche-organisation which represents and promotes the interests of Swedish shipowners (interview SRF, 2010). SRF has a separate department dealing with environment and sustainability issues.

2010). That is why Preem and the developers expect Swedish shipping companies to be eager to make use of the index to compare their ranking with that of others (interview Preem/CSP, 2010).

The CSP is not simply a project but a very long and slow process (interview CSP, 2010). There are very few clean ships at the moment and it may take years before the number increases. The developers do not expect all sea freight will be sustainable in the future. Furthermore, new developments will arise, many unforeseen things may happen that can influence the outcome of the CSP. In 2020 there might not even be a need for an index anymore, because energy alternatives and new technologies have solved many problems already (interview CSP, 2010). The NSF also does not think that in two years enough will be accomplished, it will take at least 5 or 10 years of efforts (interview NSF, 2010). Since the process has only just started, many years will pass before the attitude and mind-sets of people has changed fundamentally (interview Maersk, 2010).

Many interviewees are certain that environmental performance will be an important procurement criterion in the future. Currently, mostly big companies pay attention to sustainability, but smaller companies will follow suit in the future (interview DHL, 2010). In 10 years environmental care will definitely be an important demand at the negotiation table, whether or not in the form of the CSI (NSF, 2010). In the future, it may become a matter of competition whether or not a shipping company can provide sustainable transport (interview SEL, 2010).

Maersk therefore expects environmental awareness and efforts in the shipping industry to increase in the future (interview Maersk, 2010). According to DHL SE, the shipping industry is getting aware that environmental awareness is not a fluke, but will sustain for a longer period of time (interview DHL, 2010).



Chapter 8 ANALYSIS

This chapter builds on the results of the previous chapters to thoroughly analyse the institutionalisation of the CSP as a private governance system. Firstly, the CSP is examined from a private governance and partnership perspective. The second and main part of this chapter identifies enabling and constraining factors that influence to what extent the CSP gains institutional legitimacy, robustness and trust. The next step is to analyse the significance of these institutional properties for the overall level of collaborative advantage and ultimately commitment and cohesion within the network.

PART 1 Private Governance and Partnership Perspectives

8.1 Private Governance

In a broad sense, the CSP can be regarded as a form of governance because it aims to steer a part of society (the shipping industry) in a more sustainable direction. It consists of an arrangement of interconnected actors (the CSP network), which uses the CSI as a steering mechanism to regulate the behaviour of cargo-owners and shipping companies.

In line with conventional notions on governance, the CSP is a self-organising and coordinating network that makes use of a non-regulatory instrument (in this case an environmental index), which is established and implemented by non-state actors. Most of the coordination is in hands of the CSP organisation, the independent platform that also created the index. Cargo-owners (and to lesser extent shipping companies) are however strongly involved in this process and possess a high degree of decision-making power since they are the ones who have to implement the CSI.

If positioned along Pattberg's governance continuum, the CSP would be somewhere in between hybrid public-private partnerships and fully private co-operations, because there is (limited) involvement of public actors. However, the CSP is not driven by the authority and sanctions of government, but the goodwill and commitment of companies. The commissioners only act as an interest group, they are indirect facilitator through financial support, but cannot force companies to cooperate. This illustrates the changing role of public authorities in West-Sweden. The Dutch Ministry does not see an active role for itself in the CSP, because according to them private governance instruments should be exclusively managed by market forces without intervention by the government (interview V&W, 2010).

The CSP exemplifies private governance by creating a shift in the locus and focus of rule-making beyond the conventional boundaries of politics. This has been enabled through the same political developments as identified by Pattberg (2005). Firstly, the agency of private actors to address environmental problems themselves enabled a shift in the locus of problem-solving. The CSP is an initiative by non-state actors to stimulate sustainability in the shipping industry without the use of government authority or sanctions. The sea freight market is the institutional setting within which governing authority is granted. Secondly, collaboration between public and private actors created opportunities for new approaches to sustainable development. A new type of steering mechanism is established based on financial incentives created through supply chain management which means the CSP is a form of non-state, market-driven (NSMD) governance. Furthermore, NGOs (the CSP organisation and the NSF) and a growing pressure for corporate social and environmental responsibility act as driving forces behind the CSP.

The interview results illustrate perceptions of both private and public actors on private governance, which is indeed perceived as a positive trend. VG/GR for instance believes that through collaboration

with industry results can be reached more rapidly than with legislation (interview VG/GR, 2010). Private governance is also seen as a way to generate compliance based on positive incentives rather than punishment (interview WM/DHL/EVO, 2010), which is considered more constructive and effective. Interestingly, some interviewees see private governance as a way to avoid increasing regulations (e.g. EVO, SH), while others see it as a way to push for more stringent regulations (e.g. CSP, NSF).

The CSP corresponds with Pattberg's definitions of private governance institutions since private actors (profit and non-profit) establish and maintain an issue-specific rule system. The rule system of the CSP consists of voluntary norms (and principles) which are related to sea freight transport. Basically, cargo-owners have to use the CSI as a service quality criterion in sea freight procurement processes and set strict environmental demands on their suppliers (they are also expected to sign a Letter of Intent, pay an administration fee and attend network meetings). Shipping companies have to report data and adapt their operations based on the demands of cargo-owners. However, cooperation within the CSP still has to institutionalise to create a social practice that effectively governs shipping activities, which is the main subject of attention in part II.

The CSP also has several practical functions: the Clean Shippers Group meetings act as a forum for discussion and exchange of ideas. The index itself is intended as a collective good, which facilitates targeting, evaluating, selecting and working with suppliers. It therefore reduces transaction costs and decreases uncertainty about the expectations of cargo-owners. Furthermore, the CSP produces new knowledge and disseminates information about clean shipping.

The boundaries between state, market and civil society are somewhat blurred within the CSP. Public authorities are not in a position to use their policy-making authority, whereas private actors have a lot of steering potential. However, this does not mean that the CSP questions or erodes the conventional authority of the state. The state and its command-and-control regulatory instruments continue to be important. As the Dutch Ministry noted, private governance is not a solution to environmental risks, because it is far too dependent on the willingness of companies (interview V&W, 2010). International regulation is therefore necessary to set minimum standards for the industry, which was acknowledged by the developers (interview VW/CSP, 2010). A new governance system like the CSP therefore co-exists and interacts with existing regulations.

8.2 Partnership

The CSP convenes actors of three spheres of society (state, market and civil society) in a principally non-hierarchical process. Furthermore, as has already been explained in the previous section, the CSP is basically a self-organising and coordinating network voluntarily initiated as a complement to government regulations. The CSP therefore qualifies as a partnership.

However, another important feature, which has not been discussed under private governance is the fact that the CSP is based on shared principles and norms. A basic precondition for partnerships is clarity and congruence of the general objective and principles. Collaboration within the CSP is not built on a profit-based rationale, the ultimate objective is to stimulate more sustainable practices in the shipping industry. Network members of the CSP do not seem to be primarily driven by rational calculation of direct payoff, but share a common orientation beyond profit-making. They have shared perceptions on reality (the way things are), but also principles (what is important) and norms (the way things are done), which can be derived from the Letter of Intent (CSP, 2010d):

- *"The shipping industry currently operates under the weight of major and growing environmental problems which it is time to solve";*
- *"Shipping has the potential to be a mode of transport with low environmental impact".*

- *“One way to encourage the shipping industry to become more environmentally adapted is that cargo-owners (...) place demands or requests on their shipping suppliers or carriers”.*
- *“With this document we want to show our intention to place environmental demands on our shipping suppliers and that we intend to use the Clean Shipping Index as a support in our procurement process”.*

In other words, network members acknowledge that at the present time the shipping industry is responsible for a number of adverse environmental impacts. They acknowledge the main principle underlying the CSP, which is that shipping should be sustainable, it should not cause harm to the marine environment or the people involved. Furthermore, the network members believe that environmental criteria should be part of procurement processes in order to catalyse clean shipping. Network members acknowledge their responsibility in the supply chain and try to act in line with the aforementioned norms and principles.

In chapter 2, several factors of success and failure were identified in relation to partnerships. Most of these are incorporated in the institutional model and will be discussed in part II.

The four phases of collaboration in partnerships identified by Gray (2007) are difficult to apply to the CSP, because they are not strictly separate from one another in that order, but overlap and reiterate. According to Gray, the first stage (problem-setting) is about identifying the relevant partners and getting them to commit to the partnership. However, in the early beginning of the CSP (2006/2007), the developers were more concerned with exploring the issue of clean shipping, which Gray indicates as phase two (direction setting). The developers only started to approach various actors in phase three (implementation), since then expanding the network with cargo-owners and shipping companies has been an ongoing process. In the meantime, the developers continue to improve the index and reach agreement on various practical and strategic details. The CSP is currently still in the process of implementing the index, they are trying to put agreements in place, but are experiencing problems in ensuring follow-through. Furthermore, the last phase of collaboration (institutionalisation) is not a distinct phase, but an intricate and extensive process, which will be analysed in the following part.

PART II The Institutionalisation Process

In order for a partnership to develop into a private governance institution, a standard norm that has a significant impact, it has to gain legitimacy, trust and robustness, as was explained in chapter two. During this process, rules, procedures and cooperation within the network are institutionalised and long-term compliance is generated.

This section looks at different enabling and constraining factors that influence the institutionalisation process of the CSI. At the end of each subsection the results are summarised to assess the overall outcome for an institutional property.

8.3 Legitimacy

Individual actors adjust their behaviour out of recognition of the legitimacy of a governance system. Legitimacy depends on three factors: motivations of network members to collaborate, stakeholder representation and the relation with external rule systems.

8.3.1 Motivations

The interview results indicated that actors support and join the CSP because of four different types of motivations: 1. competitiveness; 2. ecological responsibility; 3. legitimization; and 4. risks. The

extent to which each of these motivations play a role for the interviewees are assessed below. This section also discusses how issue salience and individual concern may influence actor motivations.

Competitiveness

Firstly, improved competitiveness (new business-opportunities) is an important motivation for all actors. By joining the CSP and using the index, all cargo-owners and shipping companies hope to improve their reputation and meet customer demand. Both Volvo Logistics and DHL SE mention an increase in environmental awareness and demands from clients. As Preem put it: “now there is money to be made with being green as it improves your reputation” (interview Preem, 2010). Wallenius Marine hopes to “win contracts by providing an environmental profile” (interview WM, 2010). Because Wagenborg has many Scandinavian clients and expects a high ranking, they hope to gain a “good reputation and competitive advantage” (interview WB, 2010). Even the commissioners hope the CSP will create spill-over effects and stimulate regional development (interview CSP, 2010).

In sum, nearly all interviewed network members expect that joining the CSP will lead to a sustained advantage and improved long-term profitability.

Ecological responsibility

The commitment of the developers is mainly based on environmental values and their vision of a sustainable shipping industry which has a minimal impact on the environment. The commissioners see it as their social responsibility to “support promising initiatives that contribute to sustainable development” (interview VG/GR, 2010). As for the North Sea Foundation, the CSP coincides with their objective of environmental protection and nature conservation in the North Sea and principle that maritime activities should not cause marine degradation. Wallenius Marine fully supports the CSP because it is in line with their corporate mission and environmental values to minimise impact on the marine environment.

When asked about their motivation to cooperate, all cargo-owners and DHL SE expressed a strong commitment to sustainability. Environmental care is one of the core values of the Volvo Group, Preem’s company motto is to lead the sustainability transition while Tetra Laval also its acknowledges environmental responsibilities (interviews VL/Preem/TL, 2010). DHL SE believe it is their duty to make their operations more sustainable in an integrated way and even try to increase environmental awareness among their customers.

These statements indicate that network members do not only act out of economic self-interest, but are also guided by environmental values and a sense of social obligation.

Legitimation

The need to fulfil legal obligations could also be an important motivation to join the CSP. Preem for instance wants to use the CSI to fulfil part of the reporting obligation to the Swedish government (interview Preem, 2010) while Maersk thinks environmental action is necessary given increasing regulations (interview Maersk, 2010).

Furthermore, actors also try to comply with institutional norms and values in society. Every company acknowledges the importance of corporate social responsibility because it is expected of them by society. Public legitimation is a large part of the reason why companies formulate environmental policies and strategies in the first place. Companies that observe increasing environmental awareness of the general public try to accommodate their policies and strategies to fit within that trend. For some this is more evident than others. Stora Enso Logistics says it invests in sustainability policies and measures, because it wants to be ‘part of the future’ (interview SEL, 2010). Oil companies are trying to incorporate environmental criteria in the procurement process because they are facing broader environmental demands from the general public and regulations (interview Preem, 2010). Maersk has already worked on fuel efficiency for years, but only recently under the notion of sustainability, which suits the current discourse better.

Risks

Few actors made explicit statements that indicated a risk-driven motivation. The commissioner of Göteborg Region observed CO₂, NO_x emissions and TBT contamination are becoming pressing problems in the region (interview GR, 2010). The CSP could help solve these problems and thereby prevent environmental risks. Furthermore, Preem avoids sub-standard shipping companies because they are at a higher risk of causing safety and environmental accidents. Basically, any cargo-owner or shipping company that pays explicit attention to safety and environmental protection will be subject to less risks.

Issue salience and individual concern

The motivations of network members are correlated with the issue salience (extent to which an ecological issues has meaning) and individual concern (degree to which companies value the environment) of the people involved.

The developers and people at NSF/Wallenius Marine are personally very knowledgeable about marine pollution and are very concerned about the impacts caused by shipping, which creates a sense of ecological responsibility.

The issue salience for managers of cargo-owning companies is not as pronounced because for them the issue of marine pollution does not generate as much certainty, transparency, and emotivity (partly due to limited knowledge and information). Nevertheless, they still show individual concern because of general environmental ambitions.

Issue salience and individual concern are also influenced by public attention and prevailing norms and ideas in society (tier II audience). These will be discussed later on.

8.3.2 Stakeholder Representation

There are sufficient opportunities for cargo-owners and shipping companies to give input. Wallenius Marine thinks the developers are extremely open towards shipping companies (interview WM, 2010). Since their views and needs are taken into account, cargo-owners and shipping companies should therefore positively evaluate the legitimacy of the system. (Other network members are less actively involved (commissioners and NSF), but did not mention any problems.)

Cargo-owners are in a powerful position within the network and have a large influence on the development of the index and strategic choices. This creates a power imbalance, which might cause other stakeholders to feel underrepresented and perceive the system as unjust. Among the interviewees, only Maersk is discontented about this situation and is strongly of the opinion that shipping companies should get a larger say in matters. If many other shipping companies share this view, this might jeopardise their support for the CSP. However, system bias does not necessarily have to impede progress, it might make it easier to adopt higher standards. In fact, the role division within the CSP is a very conscious decision of the developers (interview CSP, 2010).

8.3.3 External Rule Systems

The subsections below firstly discusses the regulatory context within which the CSP has to operate and then compares the CSP with other private initiatives.

8.3.3.1 State-based Regulations

To gain legitimacy, the CSP has to be compatible and have added value to regulations. There are already regulatory environmental regimes in place that govern different environmental issue areas: the Convention on the Control of Harmful Anti-fouling Systems on Ships, which bans TBT-based antifouling paint (the AFS Convention); Annex I of the MARPOL Convention governing oil pollution;

Annex IV and V of MARPOL which regulate the disposal of respectively sewage and garbage. The progressive reduction in SOx emissions from ships (aiming at 0.5% sulphur content of bunker fuels by 2020) is quite ambitious. In the near future, the International Convention on the Management of Ships' Ballast Water and Sediments (the BWM Convention) will probably be ratified (26 contracting parties at the moment).

The CSP tries to ensure compatibility with regulations by taking into account regulatory developments, using standard calculating methods and avoiding unnecessary overlap. This is a major ordeal given the multitude of regulations at different governance levels. The Conventions mentioned above are only a fraction of the entire body of rules and regulations.

Shipping regulations increasingly incorporate environmental considerations (which is largely due to the stronger voice of port states and the EU). The focus is no longer limited to safety and oil spills, but now also includes other forms of ecological impact. The AFS and the upcoming BWM convention even adopt the precautionary approach, which was unthinkable ten years ago. However, ambitious regulations are still lacking regarding greenhouse gases, particulate matter and other forms of chemical discharge (lubricants, cleaning agents, etc.), while HCFCs may be used until 2020. Furthermore, the adoption of IMO Conventions does not guarantee marine protection.

The interviewed network members see the CSP as a useful complement to regulations. Firstly, because current environmental regulations are still considered inadequate and they do not expect that high standards covering all impact areas will be adopted globally in the near future (interview CSP, VG/GR, DHL SE, WM, 2010). Many network members think that the CSP can achieve results more rapidly and effectively than regulations, because of the shortcomings of the legislative system. The NSF considers the way the IMO is organised and functions completely ineffective due to the phenomenon of flags of convenience and political struggles (interview NSF, 2010).

Firstly, decision-making within the IMO is based on the principle of state sovereignty, which has several drawbacks. Firstly, multilateral decision-making is slow and encumbered, which delays implementation of environmental protection rules and regulations. As the SRF noted, it always takes a lot of time and effort to introduce and put into force new international rules (interview SRF, 2010). It will take many years before IMO's technical/operational measures and market-based instrument regarding GHGs will be fully developed and operational. It will take even longer before they set obligatory standards and will have actual effect on the shipping industry (e.g. design index might become mandatory in 2018, at the earliest). The International Convention for the Safe and Environmentally Sound Recycling of Ships (the Hong Kong Convention) was recently adopted, does not have any contracting parties at the moment.

Secondly, regulatory standards are not very ambitious and are lagging behind current best available technologies, because economic interests of flag states lower the overall level of ambition. The commissioners stated that "international policy-making processes are very slow, while standards are not very high and solutions are fragmented" (interview VG/GR, 2010). Generally, governments develop technical standards as minimum requirements for ships. Regulatory regimes are therefore not a strong driving force in the development of best available techniques and best environmental practices.

The added value of the CSP is that it goes beyond IMO regulations, which is possible because its decision-making processes are not burdened by the principle of sovereignty. Standards set by the CSI do not require ratification by states, which enables higher levels of ambition and faster implementation. This stimulates the development of best available techniques and best environmental practices (that can be implemented straightaway on existing vessels), creating opportunities for higher environmental standards. Because multinational cargo-owners are not

restricted by boundaries, they can set demands that apply worldwide, which is important to create a level playing field.

The main problem inherent to the functioning of the IMO, is the fact that many existing international instruments which prescribe safety and pollution control measures are not effectively enforced and adhered to.

The CSP helps to increase transparency in the shipping industry, which eventually would benefit monitoring and compliance. As was explained before, the industry is rather secretive and environmental data is not readily available. This enables sub-standard shipping companies to continue operating without being identified. The CSP however increases pressure to monitor and report information. Once the CSP has institutionalised it will be considered a standard procedure to report environmental data, and not only to avoid sanctions but also to improve one's reputation. As DHL SE noted, "shipping companies have to wake up to the fact that environmental information is no longer confidential" (interview DHL, 2010).

An increasing number of regulations is meaningless if they fail to create incentives for maritime actors to comply. In the past ship-owners have ended up with most of the regulatory costs, which only induced illegal practices. Burden-sharing is crucial in a competitive industry such as shipping, because otherwise shipping companies will continue to circumvent rules and regulations.

The CSP tries to promote more equitable burden-sharing in the sea freight supply chain by increasing awareness among cargo-owners about the environmental impacts caused by shipping and their share in responsibility. Hopefully, it will create a willingness among cargo-owners to make the necessary investments to enable clean shipping.

In general, the steering mechanism behind the CSP is legitimate in the eyes of the network members as an alternative to government regulations. All interviewees positively evaluate private governance and like the idea of using positive incentives based on market mechanisms to move the industry forward. Furthermore, indexing is a common practice that is broadly accepted (also employed for aviation and road vehicles).

8.3.3.2 Other Private Initiatives

The institutionalisation of the CSP also depends on how it compares with other private initiatives. In principle, the CSI could co-exist with other initiatives, but if there are other instruments that are very similar in objective, set-up and function, they may compete for market share. Furthermore, shipping companies prefer one index as an industry standard instead of several existing at the same time, which only creates confusion. An increase in the market share of the CCWG, Green Award or ESI might therefore be at the expense of that of the CSP, which affects its chances for institutionalisation. The CSP should therefore have clear advantages as opposed to other initiatives.

Interviewees were asked about their views and experiences with other private governance systems that aim to make the shipping industry more sustainable. Only some referred to the CCWG, while none were familiar with the Green Award (except the NSF). Some of the interviewed companies were ISO14001 certified (WM, VL, DHL SE).

Clean Cargo Working Group

The set-up and steering mechanisms of the CCWG and the CSP are quite similar. They both developed tools for cargo-owners to aid them in supply chain management, which overlap in certain respects (e.g. parameters, scoring impact, trade lanes). Both the CCWG and the CSP try to align with widely accepted industry standards. However, shipping companies play a bigger role in the CCWG, which strengthens technical aspects of the Environmental Performance Metrics and Survey.

Furthermore, shipping companies can interact directly with cargo-owners, which is positive on the one hand, but according to CSP members also lowers ambitions (interview CSP/NSF/SEL, 2010). The CCWG focuses on the container industry, whereas the CSP can be applied to nearly all vessel types.

Green Award

The organisation and steering mechanisms of the CSP and Green Award are quite different. Firstly, the Green Award is a certificate which is very different in use than an index and requires another type of organisation. Shipping companies apply for Green Award certification, whereas in the CSP (and the CCWG) the cargo-owner has to take initiative. A major advantage of Green Award is that it works with Incentive Providers and has a group of renowned supporters.

Certification requires more formal processes, including reliable verification procedures. This makes the Green Award more robust, but the informal character of the CSP leaves a lot of room to maneuver, which is often a precondition for companies to commit to a partnership.

The Green Award places a larger emphasis on safety aspects and is at the moment limited to oil tankers and bulk carriers. The CSP is a more generic tool focusing on environmental aspects, that can be applied to nearly all vessels.

Environmental Ship Index

Both the CSI and the ESI rank vessels based on environmental criteria, the ESI however is restricted to air pollution and is primarily intended as a tool for ports. The advantages for users as illustrated in diagram 5 apply for both instruments (there is however no cooperation between cargo-owners and ports within the CSP). Since the ESI was introduced by the World Ports Climate Initiative it can count on the support of various ports, which might lower their interest in the CSI.

ISO 14001

The CSP and ISO 14001 can co-exist very well, because ISO 14001 outlines requirements for environmental management. ISO 14001 could facilitate use of the CSI in two ways: 1) companies that are ISO 14001 certified have to invest in subcontractor management, which stimulates use of the CSI; 2) shipping companies that are ISO 14001 certified have to monitor and control environmental impacts of its activities, which makes it easier for them to report data. It also means that the CSI is a useful tool for these shipping companies to assess and improve their environmental performance. The interviewed shipping companies however experience that very few cargo-owners ask for ISO 14001 certification.

The objectives of the private initiatives described above (except ISO 14001) overlap significantly as they all aim to stimulate clean shipping through market incentives. They all increase transparency in the industry by facilitating exchange of information between economic actors. There are however significant differences in strategy, characterized by both advantages and disadvantages. Each could therefore contribute to clean shipping in its own way. Because they are all in an early development stage it is difficult to say which of the initiatives will arise as an industry standard. More research is needed for more detailed comparison.

It is clear though that the CSP offers certain advantages: ambitious standards (and guidance through colour coding); holistic scope (although it does not include scrapping); applicability to most vessel types and an extensive database. The Green Award however has a better verification protocols. In the CSP, the steering mechanism is initiated by cargo-owners, who are a very powerful economic actor in the sea freight supply chain. On the other hand, the Green Award and ESI also involve other Incentive Providers, which creates more steering potential.

Furthermore, while the CCWG and Green Award (and ESI) have a more international scope, the CSP is still rather regional at the moment, involving mostly Swedish actors. This is a major disadvantage at

the moment. From the perspective of shipping companies, there is an urgent need for clear standards and a level-playing field to guide environmental strategies and investments. The CSI can only meet this demand if the majority of cargo-owners worldwide make use of the index in a strict and transparent way. That is the reason why it is crucial that the CSP expands its sphere of influence and does not remain a regional initiative.

8.3.4 Summary

The legitimacy of a governance system depends on three aspects: the motivations of members to cooperate, stakeholder representation and its relation with external rule systems.

Firstly, network members are driven by a combination of motivations, which collectively generate both pragmatic and moral legitimacy. Cooperation within the CSP is expected to lead to business opportunities through improved reputation and meeting customer demands. Yet actors do not only act out economic self-interest, but are also guided by a general commitment to sustainability and environmental values in line with clean shipping. For some companies, the need to fulfill legal obligations and institutional norms (regarding CSR) is also a motivation to join the CSP.

Legitimacy also stems from its relation with external rule systems. IMO regulatory regimes display several shortcomings: slow and encumbered processes; modest to low standards; inadequate enforcement and a lack of incentives for shipping companies to comply. The CSP is therefore a useful complement to regulations, because it is not burdened by the principle of state sovereignty and can therefore set higher standards. Because it acts as a monitoring tool it helps to increase transparency in the shipping industry. Furthermore, the CSP creates financial incentives for shipping companies to comply with high environmental standards, thus stimulating the spread of best available techniques and practices. Most importantly, it increases awareness among cargo-owners and enables more equitable burden-sharing. At the same time, the CSP does not conflict with IMO regulations and tries to avoid unnecessary overlap.

Overall the level of legitimacy can be considered moderate to high, because there is a clear need for a governance system like the CSP and there is sufficient involvement of stakeholders. However, network members are mostly driven by business-opportunities, which is not very durable form of legitimacy. A positive aspects is that it is combined with a certain level of moral legitimacy, which is a stronger force to bind network members to a rule system. Competition with other private initiatives may undermine its legitimacy in the future, but at the moment it does not pose a significant problem.

8.4 Trust

8.4.1 Accountability and Compliance Mechanisms

Accountability mechanisms

To establish trust within a network (but also to strengthen the steering mechanism), accountability mechanisms have to be in place, which requires monitoring and reporting of actor performance. As Pattberg (2005) noted, a private governance institution should secure independent verification of norm compliance. In this case, the CSP organisation, cargo-owners and shipping companies are the relevant stakeholders that should be held accountable for their actions.

Monitoring ensures that the performance of network members is transparent. There is some oversight concerning operations of the CSP organisation by the steering committees and through

network meetings. The CSP organisation also has to report to the commissioners, but they do not issue strategic documents that are publicly available (e.g. annual reports). Overall, there were no signs that network members question the commitment and capacity of the CSP organisation.

Participating cargo-owners are expected to set strict demands on their suppliers and use the index to select clean vessels instead of substandard (interview CSP/VL/Maersk/WM/NSF, 2010). Cargo-owners have to 'walk the talk' and really use the index effectively in a transparent way (interview Maersk, 2010). As the developers noted, the whole project depends on this. However, the procurement decisions of cargo-owners are not checked in any way, and it is unknown whether they even report about the CSI in their environmental reports. The NSF (and the CSP organisation) does not have the resources to monitor activities of all participating companies (cargo-owners and shipping companies).

Because there is no transparency, there are no guarantees that cargo-owners use the CSI to select high-ranking shipping companies and refrain from contracting sub-standard vessels. Cargo-owners in the Clean Shippers Group can completely neglect the CSI, without anybody noticing or holding them responsible. This not only undermines the trust of other network members in the system (both cargo-owners and shipping companies), but also their commitment to invest in the CSP.

If requested by their clients, shipping companies have to report (reliable) data to the CSI database. This can be tracked by either the CSP organisation or participating cargo-owners, because they can see the information submitted by shipping companies in the database. Cargo-owners should try to keep close track of the environmental performance of shipping companies (how much data they report and how well they score). However, not every company has the resources (or interest) to do this, which is why this task is shared with the CSP organization, forwarders and brokers.

Shipping companies are very protective of environmental data and consider it strictly confidential. Therefore, no one else except the CSP organisation and cargo-owners can access information in the database. As a result, there is little public transparency regarding the performance of shipping companies.

Whether shipping companies submit reliable data can be verified by a third party (classification societies), which will be dealt with under instrument quality.

Compliance mechanisms

As was explained in chapter two, some degree of compliance is necessary to qualify as private governance. This not only necessitates monitoring but also clear targets and possibly sanctions in case of non-compliance. Compliance mechanisms thus create more convincing guarantees that network members (in this case cargo-owners and shipping companies) live up to expectations, which improves trust in the system and willingness to cooperate. Cargo-owners should set clear targets and follow these consistently, otherwise shipping companies will no longer report data (interview WM, 2010). Compliance mechanisms may also contribute to the steering potential of a system. As Maersk remarked, "if cargo-owners do as they promised this will provide an extra incentive for shipping companies to do their best" (interview Maersk, 2010).

Clear targets are lacking at the moment, which creates ambiguity about how the CSI should be used. Firstly, the Letter of Intent is not a binding commitment, cargo-owners who have signed the Letter of Intent only promise to show their "*intention* to place environmental demands on shipping suppliers" and that they "*intend* to use the Clean Shipping Index" (CSP, 2010d).

In practice, cargo-owners do not yet use the index to select suppliers based on environmental performance. Cargo-owners only look at whether a shipping company actively reports to the CSI database. However, not even this criterion is followed strictly, even though cargo-owners set a bottom-line of 20% reporting rate for shipping companies. Cargo-owners have not yet worked out

routines or decided what weight environmental considerations have in the procurement process. This means there is no reference point nor any follow-up when shipping companies do not submit data to the CSI database or perform below standard.

Because there are no clear targets and cargo-owners prefer a non-binding system, there are also no sanctions on cargo-owners in the Clean Shippers Group who do not properly use the CSI. The developers only created a tool and cannot determine how cargo-owners will use the index, because they do not have the power to do so (interview CSP, 2010). The CSP therefore depends on the goodwill and commitment of its members.

There might be informal compliance mechanisms in place, such as social pressure within the steering group and naming and shaming by the NSF. This may be sufficient to create a certain level of trust and steering potential, but may not be forceful enough to ensure compliance on the long-run.

8.4.2 Communication

The network ties between involved stakeholders are illustrated in diagram 3. In this diagram, the size of the arrow roughly indicates the frequency of interaction. The box size of forwarders (the commissioners, and North Sea Foundation) are intentionally made smaller, because at the moment they are not as influential as the CSP organisation and the cargo-owners. Though shipping companies give a lot of technical input for the development of the CSI, they are not actively involved in strategic decision-making. The diagram only includes communication links between members of the CSP network. For instance, the NSF does have contact with cargo-owners and shipping companies, but not within the CSP.

The developers have built good relations with network members, which is possible because they take a neutral position, trying to understand various perspectives (interview CSP, 2010). This is necessary, because they act as the spider in the web, which has to gain the trust of different types of stakeholders. Furthermore, the developers maintain regular contact with all stakeholders, through both formal and informal communication channels (respectively meetings and email/telephone), to keep them updated about developments. Most interviewees are quite satisfied with the information provision (though DHL SE and the NSF would appreciate more detailed information).

There is also mutual interaction among cargo-owners within the steering committee and the Clean Shippers Group, which functions as a forum to exchange ideas and experiences.

In the current set-up of the Clean Shipping Project network, the CSP organisation is the central actor who maintains contact with all other network members. Therefore they are the only one who can ensure cohesion within the network. This is not a particularly durable situation, because without their continuous commitment the whole network could fall apart.

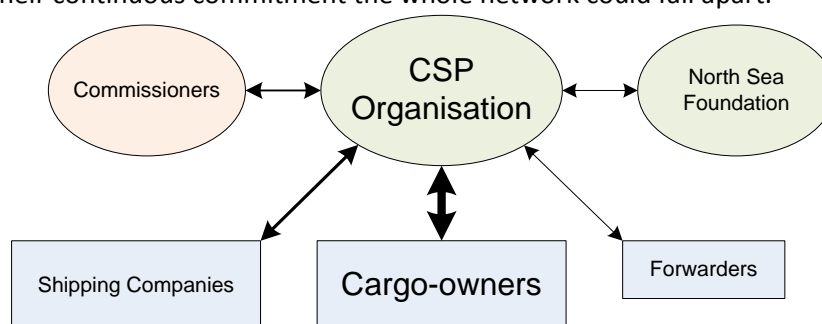


Diagram 3: The Clean Shipping Project network

8.4.3 Summary

Overall, the level of trust in the partnership can be considered moderate. There is some oversight regarding the operations of the CSP organisation, but procurement decisions by cargo-owners are not transparent or checked. And because there are no clear minimum targets, it is very difficult to hold cargo-owners accountable for the way they use the CSI. There is no guarantee that cargo-owners comply with shared principles and contribute to the common objective, which may seriously undermine trust and commitment of both cargo-owners and shipping companies. A positive factor that contributes to personal trust is that developers seem to have built good relations with network members and information provision is generally positively evaluated by interviewees. The CSP is a good forum for exchange of ideas and experiences between cargo-owners. However, there is little interaction between other network members, which results in weak network ties.

Abstract trust in the system is also influenced by its robustness, which is discussed below.

8.5 Robustness

Institutional robustness refers to operational and practical dimensions of the partnership, which enable it to be self-organising and coordinating. Another dimension of institutional robustness is steering potential, whether the system is adequately set-up to enforce compliance. The robustness of a partnership and its steering mechanism is determined by a set of factors, which are assessed below.

8.5.1 Network Composition

The steering potential of a governance system depends on which stakeholders are involved in the network (i.e. network composition and size).

Firstly, a private governance system that builds on market incentives, should involve both supply-side and demand-side economic interests. In the case of the CSP, these are shipping companies and cargo-owners respectively. However, there are also other influential economic actors in the sea freight market (see diagram 2), who are currently not actively involved in the CSP network. Chapter 5 described the functions of ports, classification societies, forwarders and brokers, while also acknowledging the role of shipyards, investors and insurers in the legal framework. Their active involvement could strengthen system robustness, through knowledge and expertise on the one hand, but also by reinforcing the steering mechanism. Each of these parties may put additional pressure on shipping companies and thus create extra incentives to comply with the rule system of the CSP.

Secondly, the size and composition of the Clean Shippers Group also determines the steering potential of the CSP. The market share of all the companies that are involved should be large enough to put significant pressure on shipping companies. How much exactly is difficult to say, but it is clear that at the moment the market share is still negligible, simply because too few companies are involved and those that are involved do not have a lot of transport volume. Current participating cargo-owners are too small with too little purchasing power to be able to exert enough pressure on shipping companies (interview SEL, 2010). Most of the CSP network members are (semi)manufacturing companies, while companies with a high volume share are to be found in the energy, metal and agricultural trades.

At the moment only Swedish companies are involved, which is not good enough (interview Maersk, 2010). These companies are part of large multinationals, but ambitions and actions at central level seem to be lagging behind decentral initiatives.

8.5.2 Management

The way a partnership is managed determine how effective and efficient processes (problem setting, direction setting and implementation) take place, and therefore overall robustness of the system.

The CSP is a self-organising and coordinating network, mainly due to management activities by the CSP organisation. Unfortunately, the interviews provided very little insight on the quality of internal management processes and leadership intervention, so no definite statements can be made about this factor. Their enthusiasm, visionary ideas and technical expertise however undoubtedly contributed to effective problem- and direction setting. Currently, they are caught up in the process of implementation which poses significant management challenges and requires a problem-solving attitude and organisational learning. One of these challenges is marketing and promotion, which might be one of the developers weak points, as they indicated themselves. Several other network members (e.g. DHL, Preem, NSF) also try to get more companies involved, but efforts are not coordinated. More could be done to professionalise marketing and promotion of the Clean Shipping Index, which could help expand the network internationally and therefore contribute to overall robustness.

8.5.3 Resources

At the moment, the CSP organisation has too little funds and manpower to deal with all the tasks at hand effectively, while there are no perspectives on future subsidies. This sets restrictions on the way the CSP operates and what it can achieve.

Participating in the network also requires time, effort and financial investments from participating companies (e.g. using the CSI and contracting quality operators). Most of the interviewed cargo-owners are willing to invest resources in the CSP (Tetra Laval, Volvo Logistic, Preem). It is not known whether other network members do this as well to the same extent. As EVO remarked, the CSP should not cost too much time or money for cargo-owners (membership of the CSP should be free) (interview EVO, 2010). When resources are limited, this could decrease their investment in the CSP (see Stora Enso) and overall robustness of the CSP.

Shipping companies are also forced to invest time and effort in collecting data for the CSI database. For some companies this is more troublesome than for others, depending on whether the data is readily available. All three reporting shipping companies already collect data on environmental parameters and issue annual environmental reports. Shipping companies that do not collect data on environmental parameters (probably small shipping companies with less professional management systems) will have more difficulties submitting data. This might become a problem because the CSI database has to contain as much data on vessels as possible. Continuous effort is made to fill the database, already eleven of the 14 largest multinational container companies on the world market have submitted information on a part of their fleet (CSP, 2010b). More data is still needed to enable effective use.

8.5.4 Instrument Quality

The CSP chose an index as the market-based steering instrument to guide actor behaviour. The Clean Shipping Index is based on both scientific and professional knowledge, which makes it both credible and realistic.

Apart from certain aspects, nearly all the interviewed network members are satisfied with the quality of the index and consider it a useful, user-friendly tool. The CSI provides relevant information for supplier evaluation by cargo-owners (to select quality suppliers) and monitoring/benchmarking by shipping companies (to improve their environmental performance). Other strong points that

contribute to instrument quality (and therefore system robustness) are ambitious standards, comprehensive scope and flexibility in use. Flexibility is not only beneficial for cargo-owners, but also shipping companies. As explained in chapter 5, each shipping company has different characteristics and capabilities. The CSI gives them sufficient room to maneuver to decide for themselves which environmental techniques and/or measures they want to implement in order to improve their ranking.

Only Maersk thinks it is still too premature to use the index because of the technical deficiencies (interview Maersk, 2010). More detailed assessment of technical aspects of the CSI (calculation methods, but also cost-effectiveness and feasibility of standards) is needed to validate this statement and identify areas for improvement. The disadvantage of indices in general is that they tend to simplify matters, which is why it is important that the CSI is used as a tool for discussion. Because it is designed as a generic index the CSI can be applied to most types of vessels, but specialized vessels still require minor adjustments. In order for the CSI to effectively steer sustainable development, it might be necessary to reconsider weighting. Weighting will however always be controversial, because it is somewhat subjective.

The main shortcoming of the CSI is the lack of verification of the data reported by shipping companies. It is possible for data to be verified, but shipping companies have to arrange this themselves in cooperation with classification societies upon demand from cargo-owners. Since this is not yet a strict demand by cargo-owners and verification requires additional investment, it is doubtful whether each shipping company is prepared to verify data on all their vessels. If they don't, there is no guarantee that the database contains reliable information that is correct, complete and up-to-date.

8.5.5 Summary

The robustness and steering potential of the CSP is constrained by a number of factors. Firstly, the steering mechanism is only based on the economic power of cargo-owners, even though there are several other key stakeholders in the shipping industry that could create incentives for compliance. The Clean Shippers Group is still very small and regional, partly due to insufficient marketing and promotion, which means it does not yet exert significant pressure on shipping companies.

No definite conclusions can be drawn regarding the quality of internal management processes, though the CSP organisation seems to be competent enough to do its job. At the moment however they have too little funds and manpower to deal with all the tasks effectively, which could seriously impede further progress.

In principle, the CSI is a good tool that provides relevant information and has a number of advantages: scientific and professional basis, user-friendly, ambitious standards, comprehensive scope and flexibility in use. However, it does have some shortcomings: simplification (needs to be adjusted for specific vessel types) and lack of data verification (and weighting).

Inadequate monitoring and compliance mechanisms described earlier, further undermine the steering mechanism of the CSP and thereby robustness of the system.

8.6 Market Characteristics and Conditions

Chapter five and the interview results describing market characteristics and conditions explain why shipping companies have difficulties incorporating environmental considerations in their management and operations. It also sheds light on possible enabling and constraining factors that determine whether the CSP can be effective and generate collaborative advantage.

Customer power and demands

In theory, the CSP should have a lot of steering potential since cash is the 'stick and carrot' in the shipping industry and customers have a lot of power (Stopford, 2009). This was confirmed by the shipping companies interviewed, for instance Wagenborg said "in the end it all comes down to money" (interview WB, 2010). Some interviewees also acknowledged that customer demand can be very powerful, "if they ask them for something, they will usually do it" (interview Preem, 2010). Furthermore, according to EVO, companies are sensitive to benchmarking, they do not want to be at the bottom of a ranking (interview EVO, 2010). Market incentives through the CSI should therefore be able to enforce compliance from shipping companies. However, the competitive nature of the shipping industry and the continuing emphasis on low costs (characteristics identified through different sources) pose major obstacles to the institutionalisation of the CSP.

In order to create a competitive advantage for environmentally-responsible shipping companies, cargo-owners have to consider environmental aspects and be willing to pay extra for clean shipping. EVO is convinced sustainability is already an integral part of the procurement criteria of cargo-owners, but this does not seem very likely. Both literature and all other interviewees stated that cargo-owners rarely set strict environmental demands for sea freight transport, they only look at price, capacity, and on-time performance. Environmental criteria are always last in line, EVO acknowledge themselves (interview EVO, 2010), and companies are not willing to pay extra for environmental care (interview SEL/DHL, 2010).

Economic situation

The overall economic situation and market conditions may create barriers for further institutionalisation of the CSP. During economic crisis cargo-owners are not inclined to prioritise environmental considerations, instead they may lower their standards and force down freight rates. Companies are most likely to cut costs on services that are not part of their core-business, like transport (interview EVO, 2010). Furthermore, cargo-owners indicated that due to insufficient capacity and low service quality, current market conditions are unfavourable to actively use the CSI (interview TL/SEL/VL, 2010). As a result, the commitment to clean shipping may slowly fade away.

Another complicating factor is that at the moment there are very few ships that can be regarded as 'green', which limits procurement choices for cargo-owners.

Company types

The shipping market is divided into bulk, specialized and liner shipping, each segment having particular characteristics which influence institutionalisation of the CSI. It will probably be more difficult to implement the CSI in the bulk segment because cargo is very price-sensitive and there is intense competition. The specialized and general cargo segment do offer opportunities to introduce the CSI. In the specialized shipping segment, service is more important and there is closer contact between the cargo-owner and shipping company, which creates more opportunities for collaboration (illustrated by the cases Stora Enso/Wagenborg, Volvo Logistics/Wallenius Wilhelmsen). Liner shipping usually deals with high-value commodities, which means transport costs are a smaller component of the shelf price. Companies trading in consumer goods also have more public profile.

Another factor that could be decisive is company characteristics of the cargo-owner. Companies that do pay attention to environmental impacts are often companies part of an industry that is under public pressure to become more sustainable, e.g. paper/packaging companies, car companies and oil companies. Furthermore, concern about environmental issues is greater among larger (manufacturing) firms. These companies may therefore be more interested to incorporate environmental criteria during sea freight procurement than others.

Field cohesion

Field cohesion (strong network ties between actors within an industry) is linked to the motivation of cargo-owners to invest in the CSP and is needed to maintain oversight over shipping companies. The SRF also noted that a precondition for effective client/supplier collaboration is a long-term relationship (interview SRF, 2010). In general the field cohesion in the shipping industry is rather weak, which might become a constraining factor.

In principle, the CSI can be used for every type of procurement, whether for voyage charters, time charters or bare boat contracts. However, cargo-owners and shipping companies interact in different ways under each type of contract, which influences the steering potential of the CSI. In a few cases cargo-owners and shipping companies have built a strong and long-standing relation, especially with long-term, strategic time charters. Cargo-owners then tend to set higher demands regarding service quality including environmental performance. In general though, cargo-owners prefer short voyage charters obtained on the spot market and there is very limited contact between the two parties. This makes it hard for cargo-owners to urge shipping companies (particularly small, foreign niche carriers on the spot market) to report data and ensure follow-up.

The fact that there are many parties involved in the sea freight supply chain (brokers, forwarders, operators, managing companies) obstructs field cohesion and complicates the steering mechanism of the CSI. Since cargo-owners and shipping companies do not interact directly, this makes it more difficult to track their performance, create incentives and push for improvement. Environmental criteria set by the cargo-owner have to be communicated clearly to the broker/forwarder, which then has to link up with the right operator. To achieve improvement, environmental demands also have to reach the ship manager, which may be quite far removed from the cargo-owner. Each shipping company will deal with these demands differently, depending on corporate management, opportunities and constraints.

Issue salience

The low issue salience and concern about the environmental aspects of sea freight among managers outside the network indicates a low level of legitimacy, which can make it difficult to create and expand a sphere of authority.

Sustainable procurement requires good inter-departmental coordination within companies. However, environmental ambitions and strategies of different departments (procurement, logistics and environment) are not always sufficiently aligned, because responsibilities are often very fragmented. Usually, the environmental manager of a company does not deal with transport and the logistics manager does not consider environmental issues. As DHL mentioned, transport is not the biggest concern for environmental managers (interview DHL, 2010) and vice versa. Transport is just one of the many services necessary for production and does not constitute the core-business of cargo owners. Since transport is not considered part of the primary production process, companies are less likely to invest extra resources in making it more sustainable.

If environmental managers do pay attention to transport, they tend to focus on road freight, because it is more accessible than sea-freight (interview EVO, 2010). In general, companies are not very knowledgeable about environmental impacts by shipping. Environmental managers might be interested in air emissions by shipping (mainly CO₂), but generally there is little awareness about marine pollution, probably because they do not receive any information about it and/or are never confronted with it. This is strongly linked to perceptions among wider audiences.

According to Cashore (2002), to achieve legitimacy, external audiences have to accept the rule system established by a partnership. Not only potential network members (tier I audiences), but also audiences within civil society that have a less direct but equally important role in granting legitimacy (tier II audiences).

Shipping activities are less subject to public opinion because it takes place out at sea and is not very visible to the wider public. Individual consumers are not really aware of environmental impacts

caused by shipping (interview V&W, 2010), so there is little public pressure towards companies to address this problem. Air pollution (particularly global warming) in contrast receives a lot more attention in the media and by the general public, which explains why it is prioritized by cargo-owners (and some shipping companies). Issues like ballast water and anti-fouling are not well-known and therefore considered less important.

However, the growing awareness about sustainability in general (among both tier I and tier II audiences) could nevertheless promote institutionalisation of the CSP. All interviewees are convinced that in the near future sustainability will become more important for the corporate strategies of companies. Indeed, corporate environmentalism seems to be on the rise as an increasing number of companies adopt sustainability policies (though a part of which is only lip-service).

Corporate-wide sustainability policies can have spill-over effects to specific management areas. Once environmental management is seen as a vital part of the corporate mission it will be integrated in all aspects of business operations, not only the primary production process but supply chains as well. This stimulates companies to invest in subcontractor management, which also includes transport suppliers. At the companies interviewed, efforts were initially geared towards making the primary production processes more sustainable. Transport was not immediately considered because it is not the core-business of these companies. After some years however, individual departments are required to accommodate their policies and practices to match corporate-wide sustainability policies. This way environmental concerns are eventually integrated in sea freight procurement as well.

Large companies will probably lead this development, but small and middle-sized companies will hopefully follow in their wake.

8.7 Non-members

To expand its sphere of authority, the CSP also has to gain legitimacy outside the group of network members. An important indication of 'external' legitimacy are the views of key actors such as governments and industry organisations. The SRF, EVO and the Dutch Ministry, who are at least influential in Sweden and the Netherlands, positively evaluate the CSP, which might help to garner support from other actors as well. Another reason why interviews with non-members are an important part of this research is because they enable verification of statements made by actors within the network and a comparison of perspectives. For instance, the description of market characteristics and conditions overlap with those of network members. Both the Dutch government and SRF also witnesses high competitiveness in the shipping industry, while EVO wishes to keep sea freight costs low.

Both the SRF and the Dutch Ministry try to stimulate more sustainable practices in the shipping industry, which is why they support the CSP. Like DHL SE and Wallenius Marine, the SRF thinks the CSP is potentially more effective than regulations because it creates positive incentives based on customer power (interview SRF, 2010). They also commend the holistic scope of the CSP and its ambition. The Dutch Ministry is positive about the CSP because companies assume environmental responsibility, but emphasizes that regulations remain necessary to set minimum standards (interview V&W, 2010). All three interviewees (the Dutch Ministry, EVO and the SRF) have a positive future outlook for the CSP. However, to become the index of the future, the SRF strongly emphasized the need for a systems approach (interview SRF, 2010).

Interestingly, while shipping companies do not oppose stricter regulations (as long as they apply world-wide), the EVO is more skeptical about the need for higher standards, mostly because they increase freight costs. That is one of the main reasons why they are in favour of the CSP, to avoid a further proliferation of burdensome regulations (which gives it pragmatic legitimacy). EVO does not

want to be subjected to more rules itself, but would not mind if the government makes it obligatory for shipping companies to report to the CSI database (interview EVO, 2010). However, as Tan (2006) noted, shipping companies have always been forced to bear the brunt of regulatory costs.

The interview with Spliethoff generated interesting material for comparison, because they are more skeptical about the CSP than the other interviewees. Like Maersk, Spliethoff also thinks the shipping industry is already heavily regulated ('administrative monster' due to proliferation of rules). Furthermore, Spliethoff experiences too much uncertainty about future regulations, as was also noted by Wagenborg. However, they do not see the CSP as a way to anticipate increasing regulations or to create an industry standard.

Basically, they do not explicitly share the environmental values and principles underlying the CSP, nor do they expect any regulatory or competitive advantage. As a result, they do not have clear motivations to join the CSP and think it is rather idealistic. Spliethoff does not plan to invest in the CSP as long as they are not sure it will become the norm or if regulations do not require them to (interview SH, 2010). This is probably a common position among shipping companies, which illustrates the need for the CSP to offer clear benefits and institutionalise on an international basis.

Cargo-owners and shipping companies tend to point fingers to each other when asked who has main responsibility for sustainability in the sector. Even though it is a matter of shared responsibility between both parties, since shipping companies are on the supply-side providing sea freight services, they do have main responsibility. The fact that there is no common orientation among shipping companies and they refuse to share information let alone cooperate is a major obstacle towards sustainable development.

Shipping companies expect cargo-owners to take the lead, because they have lot of power and determine how far they can go (Spliethoff will only invest in the CSP if either cargo-owners or the state ask them to), which is true to a certain extent. However, there is some disagreement about the extent of power cargo-owners actually have. An issue about which there is some difference of opinion is the power position of cargo-owners. Wagenborg and the SRF both emphasize the far-reaching influence of cargo-owners, which was acknowledged by Preem. The SRF therefore regards cargo-owners as the key to clean shipping (interview SRF, 2010). Stopford (2009) also observes that cargo-owners have a lot of economic power. Volvo Logistics however commented that it can be difficult to set strict demands on suppliers that cannot be substituted (interview VL, 2010). Stora Enso remarked that the power of cargo-owners is limited due to minor volume shares and the fact that they do not directly influence vessel design, which was confirmed by the EVO. Both positions seem plausible.

Regardless of how much power cargo-owners exactly wield, they do play an unmistakably important role in stimulating clean shipping. The EVO strongly emphasized that the CSP should not require too much effort, time and resources of cargo-owners. Eventually, clean shipping should benefit the cargo-owner (interview EVO, 2010). This makes one wonder how change can be achieved under such conditions, if there is no room for more equitable burden-sharing. Indeed, cargo-owners are only partly responsible for the way their cargo is transported. But as long as cargo-owners are not prepared to pay the price for clean shipping, many shipping companies probably have no alternative than business-as-usual.

Part III Synthesis

The sections above analysed individual factors of the partnership and their relation to institutional legitimacy, trust and robustness. The results are used to assess the current state of institutionalisation of the CSP, which is depicted in diagram 4. One has to bear in mind that this assessment is merely a snapshot in time.

Enabling factors are indicated as positive influences (+) whereas constraining are indicated as negative (–) (except management due to lack of information). An exclamation mark means that certain enabling factors require explicit attention to ensure a positive influence (recommendations provided in the following chapter). Arrow size roughly indicates the extent to which a factor or property positively contributes to the institutionalisation process.

Even though a factor may not have a net positive influence, it may still make a very small contribution to the institutionalisation process (indicated by a thin arrow), which is possible because there are many different aspects to a certain institutional factor. For instance, inadequate compliance mechanisms is a constraining factor, but the fact that there is some oversight and control (though very limited and informal) is sufficient to establish a causal link with trust and robustness.

The overall state of institutionalisation of the CSP depends on the interplay between institutional legitimacy, trust and robustness and how these affect the collaborative advantage generated and ultimately commitment and cohesion between network members. At this stage, it appears the CSP cannot yet enforce compliance because both dimensions display crucial shortcomings.

8.8 Collaborative Advantage

Some stakeholders said they need to see a direct benefit, otherwise they will not continue collaboration (e.g. Wallenius Marine). Stora Enso also stated they have to get value out of the membership fee (interview SEL, 2010). For Maersk, it is essential that environmental measures benefit both the environment and the company (interview Maersk, 2010). The CSP should therefore generate collaborative advantage for its members, most importantly cargo-owners and shipping companies, because they are the target groups who have to comply with the rule system. This is why the CSP stresses the fact that they aim to create a win-win situation for all parties:

“Cargo-owners may benefit because they can demonstrate responsibility for handling of raw materials and products even outside of the production plants, carriers with a ‘clean’ profile may benefit from more transports, long contracts and public ‘goodwill’ – and last but not least the environment itself will benefit” (CSPd, 2010).

At this moment however, a win-win situation for all parties (including ‘the environment’) has not yet been achieved for a number of reasons.

Benefits for cargo-owners and shipping companies may include:

- Service provision: the CSP fulfills certain needs (e.g. information needs);
- Better market position: through an improved environmental reputation;
- Reduced costs: e.g. through lower transaction costs, port/fairway dues, tonnage taxes, insurance premiums, favourable fiscal conditions.

The CSP indeed provides a convenient service, or rather tool, that enables environmental evaluation of suppliers by cargo-owners and environmental monitoring/benchmarking by shipping companies. It fulfills an information need and reduces transaction costs at the same time. According to DHL SE, the CSI provides a world of information (interview DHL, 2010). The CSP helps shipping companies to process demands for environmental data from cargo-owners, and helps cargo-owners to collect data. It thus saves time and money for both parties.

The fact that they are part of the Clean Shippers Group may enhance the environmental profile of cargo-owners. However, their participation has not generated a lot of publicity so far, so it probably does not result in a better market position at the moment. The positive effect on the competitiveness of high-ranking shipping companies is probably also still negligible. In the future,

when the CSI is more optimally implemented, the benefits of an improved environmental reputation might become more pronounced.

Given the early development phase, the CSI is still not yet optimally developed and implemented, which makes it difficult to catalyse clean shipping at this point. In principle, the steering mechanism behind the CSP could be very effective, because it is based on financial incentives and there are indeed opportunities for customer-supplier collaboration. However, the system is not robust enough because of insufficient resources and limited steering potential (due to inadequate accountability mechanisms and network composition).

Furthermore, unfavourable market characteristics and conditions impede implementation of the CSI and the extent to which the CSP can generate collaborative advantage. The competitive nature of the shipping industry and the continuing emphasis on low costs, in combination with weak field cohesion and low issue salience, discourage cargo-owners and shipping companies to actively participate in the CSP. The economic crisis, sub-standard performance of operators, complexity of the supply chain and limited supply of clean vessels pose additional obstacles.

8.9 Cohesion and Commitment

Because network members share environmental principles and support a common objective (clean shipping), there is a basic level of commitment and cohesion that enables cooperation to take place between different actors. However, to create opportunities for the CSP to develop into a private governance institution, commitment and cohesion has to grow stronger and more stable.

The commitment of network members to the CSP and its rule system partly depends on the collaborative advantage it generates, which is rather limited at the moment as discussed previously. This may discourage them to invest in the CSP and continue cooperation, because they are not convinced of the added value.

The constraining effect of collaborative advantage is (partly) compensated by the relatively high level of legitimacy of the CSP. Both pragmatic and moral legitimacy are created through stakeholder motivations (competitiveness and ecological responsibility) and its added value in relation to external rule systems (and representation if system bias is avoided). The CSP is a useful complement to regulations, because it sets high environmental standards and promotes transparency in the shipping industry. Most importantly, the CSP increases awareness among cargo-owners, contributes to more equitable burden-sharing and creates financial incentives for shipping companies. In the future, competition with other initiatives might become a problem though.

The lack of accountability and compliance mechanisms however undermines stakeholder commitment to the rule system, because they know they cannot be held accountable anyway.

There appears to be weak to moderate cohesion within the partnership. Besides common principles and objective, there are few network ties to bind network members together, the CSP organisation is the only actor that can ensure cooperation. Network ties within the CSP depend on personal trust building on good communication with the developers and interaction among cargo-owners. However, again the lack of accountability mechanisms undermines trust, also discouraging them to invest in long-term relations. The weak robustness inhibits abstract trust and thereby also stakeholder commitment to the system.

Weak commitment and cohesion not only has the potential to reduce the motivation to cooperate, but may also impede collaborative advantage, which in turn reduces commitment and cohesion. Such a negative feedback loop can have disastrous results. The CSP however still has sufficiently opportunities to prevent this from happening.

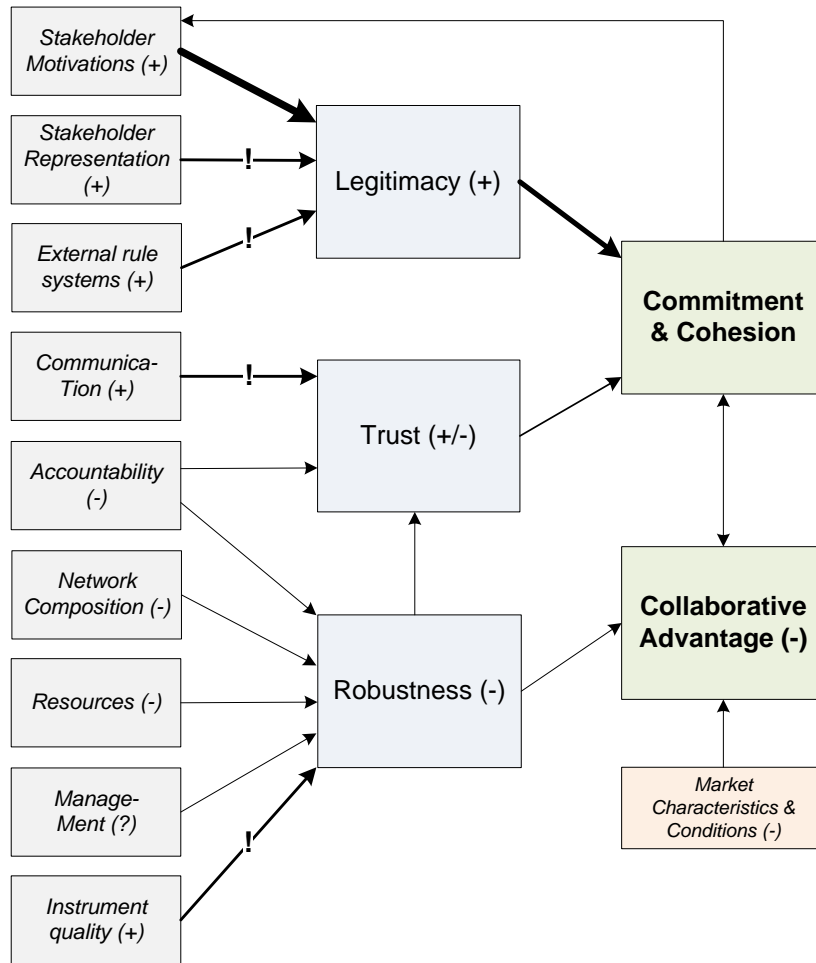


Diagram 4: Current state of the institutionalisation process of the Clean Shipping Project

8.10 Expanding the Sphere of Authority

To have significant effect on the shipping industry as a whole, the CSP has to develop into a world-wide norm instead of staying a regional initiative. To be able to expand its sphere of authority, actors outside the network also have to acknowledge the legitimacy of the CSP. The explicit support by the Dutch Ministry, the EVO and SRF may improve its chances of gaining legitimacy outside the network. A possible obstacle when trying to get more actors on board is the low issue salience and concern among tier I and tier II audiences about the environmental aspects of sea freight. Public opinion can be an important driving force, it has also been able to force oil companies to integrate safety and oil pollution control as standard procurement criteria, the same could happen for other forms of environmental pollution control as well. All interviewees foresee increasing environmental awareness in general, which might have positive spill-over effects on procurement. DHL, the NSF and SEL are therefore certain that environmental performance will become an important procurement criterion (interview DHL/NSF/SEL, 2010), which will help to gain legitimacy expand the sphere of authority of the CSP.

Chapter 9 DISCUSSION

This chapter identifies strengths and weaknesses of this research by evaluating different aspects of the theoretical framework. Furthermore, it outlines possibilities for future research as follow up on this thesis.

9.1 Reflections on Combining Private Governance and Partnership Theory

This research combines partnership and governance theory, which are linked by the notion of institutionalisation. This is possible because partnership and governance theory share certain theoretical assumptions. Basic features of partnerships and private governance systems overlap significantly: collaboration between distinct actors, self-coordination of a network, voluntarily initiated as an alternative/complement to state-based regulation. Because of this congruence, it is valid to construct a theoretical link between both theories. The idea that partnerships have to institutionalise to develop into a private governance system is consistent with both theories.

Furthermore, partnership and governance theory complement each other in a meaningful way. Governance literature tends to focus on abstract policy-making processes on a macro-level instead of the agency of private actors. Moreover, many governance studies overlook operational aspects of a private governance system, even though these are just as important to establish a sphere of authority. The added value of this research is that it zooms in on the role, perceptions and interactions between private actors and analyses the functioning of the CSP in a holistic way, including operational aspects (mostly bundled under the concept of robustness). Partnership theory helped to identify enabling and constraining factors that influence the durability of a collaborative arrangement (e.g. accountability, communication, trust and collaborative advantage).

The idea to combine private governance and partnership theory is not particularly novel. Pattberg (2005) also uses partnership theory to explain the emergence of private institutions in global governance⁶³, through somewhat differently than in this research. He mainly looks at the institutionalisation of private governance on a global scale and identifies a set of four conditions, two on a macro-level and two on a micro-level of political structures. There are some similarities between the theoretical framework of this research and that of Pattberg, but also obvious differences.

Similar to Pattberg, the institutionalisation model also takes into account available resources of the actors involved, but not the structure of the problem. This research however identifies a much wider range of factors that influence institutionalisation on a micro-level.

On a macro-level, this research also considers public regulatory power (chapter 3), the increased environmental impact of corporate players and a common point of reference (clean shipping) (chapter 4). Yet in contrast to Pattberg, this research does not explicitly discuss the emergence of civil society as a legitimate and credible actor. On the other hand, it does incorporate an analysis of market characteristics and conditions on a macro-level (chapter 5).

The main advantage of the theoretical approach of this thesis in comparison with that of Pattberg, is that it enables more detailed analysis of institutional emergence on a micro-level, generating practical insights that are also relevant for environmental professionals.

⁶³ Pattberg (2005) uses three broad theoretical approaches toward the phenomenon of private institutions in global governance – regime theory, partnership politics and studies in global political economy.

9.2 Reflections on Partnership Theory

Partnership theory can only be used as a theoretical approach based on the assumption that the CSP fits the definition of a partnership. The previous chapter argued why the CSP, which convenes actors of three spheres of society (state, market and civil society), is a good example of a partnership. However, it is possible to question the validity of this assumption because of the weak network ties within the CSP. Not all network members of the CSP interact in a truly constructive manner. Analysis showed that the CSP organisation is the only actor who maintains contact with all stakeholders and keeps the network together. The CSP does not provide a platform for mutual interaction between the other stakeholders. However, a partnership does not always have to be based on dense and strong network ties between *all* state, market and civil society actors simultaneously.

9.3 Reflections on Private Governance

As was explained in the previous chapter, the CSP matches well with definitions of (private) governance. However, this research is not an in-depth study into the contemporary phenomenon of private governance in the shipping industry. This would also require examination of other private governance initiatives vis-a-vis conventional spheres of authority. Because this research only analyses one particular case study, no conclusions can be drawn about general shifts in the locus and focus of governance. This research does contain empirical observations, which contribute to a better understanding about the actual practice of private governance (how it can be organised). Furthermore, interview results illustrate perceptions of actors on private governance, which is indeed seen as a positive trend.

One of the theoretical insights generated by this case study is the fact that what may be considered private governance, may not be entirely devoid of public intervention at all.

Private governance is seen to distinguish itself from 'conventional' governance (or government), because non-state, private actors devise and implement rule systems and steering mechanisms. In practice however, not all private governance system are solely driven by non-state, private actors. The CSP may be considered a private initiative, but in fact two of its employees are under contract by the County Administrative Board of Västra Götaland and Göteborg Region Association of Local Authorities, and the project commissioners are regional public authorities. Nevertheless it is still a private governance initiative, because the public bodies involved do not make use of policymaking authority or regulatory sanctions to enforce compliance (but could still play an important role). The dichotomy between 'government' and 'governance' is therefore too rigid, though 'government' (based on formal rules and law) is a useful theoretical reference point which easily lends for comparison with other forms of societal steering.

There are different ways to categorise actors. For this study I choose to distinguish between network members that are actively involved in the CSP (by contributing to its development) and/or intend to adhere to its rule system, and non-network members. However, the distinction between these two categories is not very clear. Some of the internal stakeholders are involved only to a very limited extent (e.g. Stora Enso, Wagenborg), which makes it questionable if they should be regarded as internal stakeholders. This raises two questions: how actively should an organisation be involved; and how should the intention to adhere to a rule system be expressed (and followed-up) to qualify as an internal stakeholder? Setting the boundaries of a network can be tricky and sometimes a practical distinction is necessary.

9.4 Reflections on the Institutionalisation Model

Institutionalisation, and particularly that of private governance systems, is a very complex and abstract process about which little is still known. This thesis helps to comprehend different aspects of the institutionalisation process, particularly enabling and constraining factors. The fact that these are analysed in a real-life context is one of the main strengths of this research. This thesis thus contributes both analytical and empirical insights, which help to resolve uncertainties surrounding institutionalisation processes. Hopefully these insights will be used for future institution-building towards sustainability.

Overall, the institutionalisation model provided sufficient guidance for the case study. However, there is some ambiguity relating to certain elements of the model, partly due to inherent (context-dependent) complexity and partly due to the lack of previous research. This section identifies important aspects that have to be taken into consideration.

Use of the institutionalisation model

Analysing institutional factors is a very context-dependent exercise that only creates a snapshot in time. A partnership is not static but continuously develops, which means that the research findings depend on the moment of analysis. This suggests that there are different development stages in the institutionalisation process of a partnership. In each stage other enabling and constraining factors may dominate, which also has implications for the institutionalisation process. Furthermore, the relative weight of institutional aspects may change in different stages. For instance, if the institutionalisation process is successful and a partnership has developed into a sphere of authority, the weight of collaborative advantage might become less important.

This research tried to capture the complexity inherent to the institutionalisation of private governance. However, the institutionalisation model remains a simplification of reality. There is still some unclarity surrounding the causal links between institutional factors, properties and dimensions. The mechanisms behind these links and their relative weight are not explicated very elaborately. There are also causal links missing, for instance the level of commitment may feed back to available resources, while accountability mechanisms directly influence the level of compliance.

It is important to bear in mind that the theoretical model is not a blueprint of the institutionalisation process. There are different forms of institutions, not only private governance institutions, but also social institutions that do not consist of a distinct network or make use of a steering instrument. The institutionalisation model cannot be applied to these types of institutions, only partnerships that intend to gain governance authority. The model is not dependent on specific actors, rule systems or steering mechanisms. The set of institutional factors is flexible and can be interpreted in different ways, depending on the context. This enables application to other types of partnerships dealing with different issue areas across policy domains.

Stakeholder motivations

Actor motivation is an important element in the institutionalisation model and has been elaborately discussed in the previous chapter. Yet a lot more can be said about this aspect, because actor motivation can be very ambiguous. In practice, actors are driven by a combination of motivations, it can be difficult to distinguish each and assess their relative importance. The boundaries between motivations based on competitiveness, ecological responsibility, legitimation and risks are rather blurred. For instance, environmental policies and ambitions may seem values-based at first sight, but are often formulated with long-term, maybe indirect business opportunities in mind. Companies may claim to act out of a sense of ecological responsibility, while they are actually following a business strategy to align their environmental profile with prevalent norms and expectations of civil society

(legitimation). Eventually, everything boils down to ensuring long-term continuity. To openly oppose the concept of sustainability also does not benefit a company's reputation and therefore market position. To uncover what really drives actors, a more elaborate study is needed taking into account contextual factors.

Commitment and cohesion

Essential dimensions of the institutionalisation model are commitment and cohesion. These concepts are derived from neither governance nor partnership theory, but nevertheless fit in well with both.

Sustained commitment and cohesion among network members (in combination with collaborative advantage) ensure the durability and effectiveness of a private governance system. They therefore help position and explain the relevancy of institutional factors within the bigger picture of institutionalisation.

However, due to the lack of theoretical underpinning, the concepts of commitment and cohesion are not very well defined. It is unclear what levels of trust, legitimacy and collaborative advantage are required in order to ensure long-term commitment and cohesion. Commitment and cohesion are combined in the institutional model because they both depend on legitimacy and trust and are strongly interrelated. This makes it difficult to disentangle causal links with institutional properties but also collaborative advantage.

Expanding the sphere of authority

This research emphasized the importance of a growing sphere of authority, because of the international nature of the shipping industry governed by the principle of a level-playing-field. It is not always necessary for a governance system to expand its sphere of authority, sometimes a small group of actors that acknowledges and complies with a rule system is already sufficient. In this case however, it is crucial that the majority of cargo-owners and shipping companies complies in order for the CSP to achieve its objective. Yet the theoretical framework did not elaborately elucidate the process of how a governance system can extend its sphere of authority; how non-members are assimilated in the network and how this influences the institutionalisation process. It only stated that legitimacy among non-members is necessary for the network to expand. Again, further research is needed to examine this process.

9.5 Future Research

To improve the theoretical framework, it might be an option to integrate institutional theory, which also deals with acknowledged rule systems that have a long-term steering effect on the behaviour of actors. It could therefore provide useful analytical propositions to strengthen the institutionalisation model. Other interesting analytical perspectives that could be relevant for the CSP are benchmarking and organisational theory. Applying these theories would however require a completely different approach.

This study only focuses on one case study, but it would be very interesting to analyse and compare the results of the institutionalisation of different partnerships. Firstly, this would enhance the accuracy, validity and reliability of theoretical assumptions, if there are consistent findings over multiple cases. Secondly, it creates opportunities to improve the model by changing, adding, or removing institutional factors. A multiple case study also enables the researcher to identify different stages in the institutionalisation process and research process dynamics and mechanisms in more detail. In addition, valuable lessons can be drawn from other experiences that can be used to improve the CSP.

Chapter 10 CONCLUSION

The emissions of a single seafaring vessel may seem negligible, but the total impact by the world fleet is quite pervasive. It has to be noted though that there is still much unclarity about the exact scale and extent of marine impacts by shipping and more research is needed. Nevertheless, predicted trends in sea transport necessitate action to prevent further degradation of the marine environment.

The current marine protection regimes in place may not be sufficient to uncouple growth in shipping from environmental harm. Even though the focus is no longer limited to safety and oil spills, ambitious standards are still lacking and it may take many years before additional regulations (e.g. regarding greenhouse gases) are adopted and effectively implemented. Furthermore, state-based rules and regulations cannot guarantee marine protection because of the lack of enforcement and compliance.

The CSP is therefore a welcome initiative, setting higher standards in a shorter time frame and promoting the spread of best available techniques and environmental practices through financial incentives. Furthermore, the CSP increases transparency and enables more equitable burden-sharing. Eventually this should create opportunities for improved compliance and higher regulatory standards. The CSP thus contributes to global environmental governance beyond hierarchical steering and the sovereign authority of nation states.

The CSP is still in an early development phase, but it has the potential to develop into a private governance system through the establishment of an effective rule system and steering mechanism to regulate the behaviour of economic actors. The institutionalisation of the CSP has already been set in motion as rules, procedures and interaction within the network are gradually being shaped and structured.

To thoroughly examine this process a theoretical model was devised in chapter two, which captures the main aspects and mechanisms that constitute the institutionalisation process. Basically, in order for a partnership to gain authority and enforce compliance, it has to have legitimacy, trust and robustness.

The institutionalisation model was successfully applied to the case study at hand. It was used to formulate interview topics and guided the analysis in chapter eight, which identified a set of enabling and constraining factors, summarized in the following table.

Table 2: Enabling and constraining factors influencing the institutionalisation of the Clean Shipping Project

	Enabling factors	Constraining factors
<i>Legitimacy</i>	<ul style="list-style-type: none">- Value-based legitimacy: in line with environmental principles- Pragmatic legitimacy: service provision, business opportunities and reduced costs- Valuable complement to governmental regulations- No apparent conflicts with external rule systems (possible synergy with ISO14001)- Stakeholder involvement: input and feedback by cargo-owners and shipping companies	<ul style="list-style-type: none">- Low issue salience and individual concern among tier I and II audiences in general- Few direct benefits <p><i>Potential obstacles:</i></p> <ul style="list-style-type: none">- System bias favouring cargo-owners- Competition with other private governance initiatives
<i>Trust</i>	<ul style="list-style-type: none">- Good communication between developers and network members- Mutual interaction with Clean Shippers	<ul style="list-style-type: none">- Lack of accountability and compliance mechanisms

	Group	<i>Potential obstacle:</i> <ul style="list-style-type: none"> - No network ties between other network members
<i>Robustness</i>	<ul style="list-style-type: none"> - Visionary ideas, enthusiasm and technical expertise developers - Instrument quality: broad scope (includes most environmental impacts, applicable to most types of vessels), flexible in use, high standards, based on scientific and professional knowledge, extensive database 	<ul style="list-style-type: none"> - Lack of resources - Suboptimal network composition (regional Clean Shippers Group, few incentives providers) - Insufficient marketing & promotion - Lack of accountability and compliance mechanisms <i>Potential obstacles:</i> <ul style="list-style-type: none"> - Instrument quality: simplification, weighting, lack of data verification

These different factors interact and have a combined effect on the institutional properties of the CSP and thereby the collaborative advantage, commitment and cohesion among network members.

The CSI is indeed a convenient tool, that enables environmental evaluation of suppliers by cargo-owners and environmental monitoring/benchmarking by shipping companies. However, the competitive advantage for participating cargo-owners and high-ranking shipping companies is still negligible. Given the early development phase, the CSI is not yet optimally developed and implemented, which also makes it difficult to catalyse clean shipping at this point. The system is not robust enough because of insufficient resources and limited steering potential (due to inadequate accountability mechanisms and network composition). Furthermore, unfavourable market characteristics and conditions impede implementation of the CSI and the extent to which the CSP can generate collaborative advantage. Interview results confirm literature findings that the shipping industry is characterized by high competitiveness, emphasis on low costs by cargo-owners and weak field cohesion.

Network members share environmental principles and support a common objective (clean shipping), which means there is a basic level of commitment and cohesion that enables cooperation to take place between different actors.

However, the limited collaborative advantage may discourage network members to invest in the CSP and continue cooperation, because they are not convinced of the added value. This is (partly) compensated by the relatively high level of legitimacy of the CSP. The Clean Shipping Project has a clear added value to regulations, while pragmatic and moral legitimacy are created through stakeholder motivations (competitiveness and ecological responsibility). The weak robustness however inhibits abstract trust and thereby also stakeholder commitment to the system. Cohesion between network members could strengthen commitment to the system. Yet besides common principles and objective, there are few network ties to bind network members together and ensure cohesion. Network ties within the CSP depend on personal trust building on good communication with the developers and interaction among cargo-owners. The lack of accountability mechanisms not only undermines trust, but also discourages network members to comply with the rule system and invest in long-term relations.

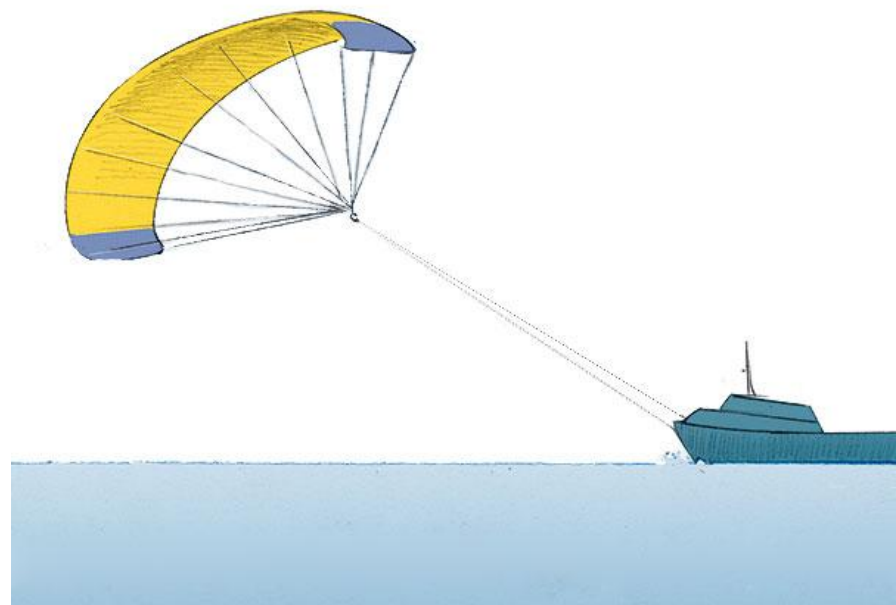
Concluding, the CSP cannot be considered a full-fledged private governance institution, because commitment and cohesion within the network are not very strong nor durable, and it does not exercise a high level of control over the behaviour of network members. This also makes it difficult to expand its sphere of authority. To develop into a durable governance system that can effectively enforce compliance, the steering potential of the CSP has to be improved through enhanced system

robustness. This is necessary to optimise collaborative advantage for its members, and consolidate commitment and cohesion within the network.

This is however an assessment of the current state of institutionalisation of the CSP, which is merely a snapshot in time. Institutionalisation is a complex and on-going process. It is only normal for progress to be slow at an early development stage, because it takes considerable time and effort to establish trust within a partnership and ensure the system is sufficiently robust. Already, a lot of efforts are made to improve different aspects of the CSP and actions are planned to address constraining factors.

The future outlook for the CSP is still promising as there are many enabling factors that create opportunities to improve commitment and cohesion. Firstly, the CSI is a good tool and its value is already widely acknowledged. In the future, when the CSI is more optimally implemented, business opportunities for shipping companies (and cargo-owners) might become more pronounced. In principle, the steering mechanism behind the CSP could be very effective, because it is based on financial incentives and there are opportunities for customer-supplier collaboration. Environmental awareness will increase in the future (among both tier I and II audiences), which may have spill-over effects on sea freight procurement.

Yet institutionalisation of the CSP as a private governance system does not necessarily mean it has visible effects right away. A lot more is needed to spread best environmental techniques and environmental practices on a world-wide scale and have a profound impact on the shipping industry as a whole. Institutionalisation of the CSP is only one step on the long road towards clean shipping. The lack of a common orientation and the focus of cargo-owners on low costs are currently major obstructions blocking the road. Results will therefore probably be very limited at first, it may take many years before the CSP has led to improved transparency, environmental awareness and burden-sharing in the shipping industry. This is not something the CSP can achieve on its own, but requires the dedication and support of a much larger group of private and public actors.



Chapter 11 RECOMMENDATIONS

Enabling and constraining factors have been identified that influence the institutionalisation of the CSP. This chapter suggests possible action to facilitate the institutionalisation process by making optimal use of enabling factors and minimising constraining factors. These are only general recommendations which will have to be elaborated in more practical detail. Most recommendations are primarily directed to the CSP organisation (who can set their own priorities), but other network members are also responsible for further improvement of the CSP.

Actively seek legitimacy through achievement strategies that conform to, influence, or inform relevant stakeholders. By fulfilling stakeholder needs (e.g. for environmental information) and matching principled ideals (e.g. environmental principles) the CSP conforms to the motivations of stakeholders to participate in the CSP. Secondly, the CSP can also try to actively influence issue salience and concern by raising awareness about the environmental impacts caused by shipping. Possible target group includes: environmental and logistics managers of both cargo-owners and shipping companies, but also the general public. This creates more willingness and public pressure to support the CSP. Environmental NGOs play a crucial role in this regard because they can raise awareness among managers and the general public.

Thirdly, the CSP should inform cargo-owners and shipping companies about the existence and benefits of the CSP, which entails more professional marketing and promotion of the CSP. Besides the CSP organisation, other network members can also contribute promotion activities. For instance, forwarders can offer information about the CSP to their customers; environmental/logistics managers of cargo-owners can spread the word within their own business segment; branche-organisations can promote the CSI among their members. All these efforts can have a large combined effect, but there has to be a clear task division, activities of network members should not unnecessarily overlap.

Ensure equitable stakeholder involvement. Stakeholder views and needs have to be adequately taken into account, including forwarders and NGOs. System bias has to be avoided to ensure stakeholders do not feel underrepresented and perceive the system as unjust. It should therefore be made acceptable for shipping companies that cargo-owners have principle decision-making power, or they should get more opportunities to be more actively involved.

Ensure compatibility and added value vis-à-vis regulations. Standards should not conflict or unnecessarily overlap with regulations established by the IMO or other important regulatory bodies (e.g. European Commission). Therefore, frequent review of standards is necessary to ensure they keep pace with developments in regulatory fora, but also the industry, and retain their added value. CSP standards should be one step ahead of regulations by explicitly referring to best available techniques and environmental practices (while remaining cost-effective and feasible).

Gain recognition and support from states. It would strengthen the legitimacy of the CSP if governments acknowledge its relevancy and express their support, for instance by using the CSP for their own sea freight procurement. They cannot make it obligatory, but could urge economic actors to use the CSI through voluntary guidelines. It is therefore important to actively inform about the existence of the CSP and create goodwill among policymakers, both at a national, European and global level. Ultimate recognition would be if governments adopt standards set by the CSP.

Ensure added value vis-à-vis other private governance initiatives. Particularly initiatives that are very similar in objective, set-up and function, and may therefore compete for market share (e.g. CCWG).

The CSI already has some major advantages in comparison with other initiatives, which should be fully exploited: broad scope (includes most environmental impacts, applicable to many vessel types), flexible in use, high standards, based on scientific and professional knowledge, extensive database. However, several shortcomings of the network and index have to be resolved (discussed below) in order not to lose but enlarge its 'market share'.

Improve communication and information provision. The CSP organisation could provide more detailed information to forwarders, the NSF and shipping companies. If the idea is positively received, the CSP could create a forum for constructive discussions between cargo-owners and shipping companies. In order for NGOs to fulfil their role as 'watchdog' they should have access to the database and be able to communicate with cargo-owners and shipping companies. (Extra network ties are also incorporated in diagram 5 below.)

Establish accountability mechanisms. Transparency of stakeholder performance has to be ensured through monitoring. Particularly cargo-owners have to make their procurement practices more transparent by reporting how many of their suppliers are in the green, yellow and red category, e.g. through self-assessment in environmental reports, which are then checked by the CSP organisation (or another independent organisation like the NSF). The results should be discussed within the Clean Shippers Group and communicated to shipping companies.

Cargo-owners in turn should try to keep close track of the environmental performance of shipping companies (how much data they report and how well they score). However, not every company has the resources (or interest) to do this, which is why this task is shared with the CSP organisation, forwarders and brokers.

As for the CSP organisation itself, they could publish their strategy and achievements in a strategic plan and annual report (which also enables process evaluation and reflective intervention).

Set clear minimum standards for cargo-owners and shipping companies. Minimum standards have to be formulated to clearly communicate the norms stakeholders are expected to meet. Most important in this regard are minimum procurement criteria for cargo-owners, e.g. contract >20% from the green category, 0% from the red category. If a minimum standard guides the procurement decisions of all cargo-owners there can be no ambiguity about the level of ambition.

A minimum report rate has been set already as shipping companies are urged to report at least 20% of their fleet (hopefully the bar will be raised in the future). It is assumed that all cargo-owners in the Clean Shippers Group communicated this minimum requirement to their suppliers. A similar bottom-line has to be set regarding data verification.

Make better use of informal compliance mechanisms. Cargo-owners should not contract shipping companies who do not comply with minimum requirements. There are however no guarantees that this principle is followed in practice. It is however not realistic that sanctions are imposed upon non-conforming cargo-owners (e.g. exclusion from the network), because cargo-owners prefer a non-binding instrument and would otherwise not join the CSP (and the Clean Shippers Group may shrink considerably in size). The only way to ensure that cargo-owners comply with minimum standards are through informal compliance mechanisms such as social pressure within the Clean Shippers Group and naming and shaming by NGOs (which is only possible if they have access to information on the performance of cargo-owners and shipping companies).

Broaden network composition. Besides cargo-owners, there are also other actors in the shipping industry that may create positive incentives for shipping companies, e.g. ports, brokers, investors, insurers and local governments (and maybe shipyards and subcontractors). These stakeholders could use the CSI for their own purposes (e.g. ports and insurers), but could also act as incentive providers,

for instance by offering lower port/fairway dues, tonnage taxes, insurance premiums, and favourable fiscal conditions.

Brokers and forwarders are currently not actively involved in the CSP, even though they could help stimulate shipping companies to report data and influence procurement processes of cargo-owners. They should therefore get full access to the database. Furthermore, the CSP could install a group of supporters (e.g. industry associations), whose endorsement gives it more credibility. They could also help promote the CSP among their members and in their network.

Because the CSP organisation has limited resources and reach, they should try to cooperate with a larger group of NGO's worldwide, who could exert extra pressure on cargo-owners to join the Clean Shippers Group and on shipping companies to submit information for the database.

The exact role of each of these stakeholders has to be explored further. Their relative positions in the network and possible links with other actors are indicated in the diagram below.

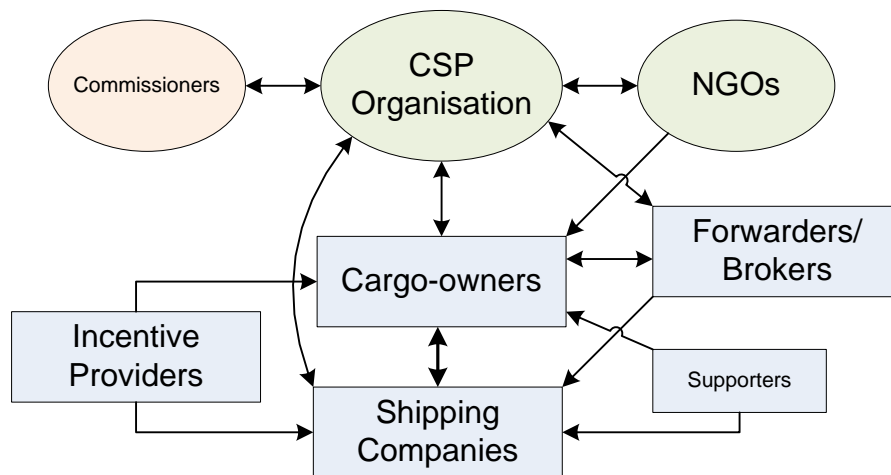


Diagram 5: Broadening the CSP Network

Enhance intra-organisational coordination (cargo-owners). Cargo-owners have to establish well-organised central/decentral and inter-departmental coordination within their companies. Ambitions and strategies at central and decentral level should be well aligned to establish effective supply chain management. Same applies to different departments (procurement, logistics and environment). This can be achieved by explicitly incorporating the CSI in environmental and procurement policies at all corporate levels, to make it an integral part of the corporate mission. This enables cross-functional integration, because decision-makers (whether dealing with environmental management or sea freight procurement) have the same objectives.

Enlarge the Clean Shippers Group on an international basis. The Clean Shippers Group should consist of a large number of multinational companies to have sufficient critical mass. If together they have a considerable market share, they can put significant pressure on shipping companies and create powerful incentives. The Clean Shippers Group should therefore involve international companies with a high volume share, also including companies in the energy, metal and agricultural trades. This requires more professional marketing and promotion.

At the start, focus should be on high-profile, multinational brands which may create a good reputation for the CSP. Smaller companies will hopefully follow suit in a later stage. It will be easier to convince companies that already have CSR policies installed and are ISO14001 certified, because they have to invest in subcontractor management anyway.

Create a permanent, independent and international organisation with a professional management structure. Such an organisation should not be profit-driven, because this may conflict with the value-based objective of clean shipping. Ideally, offices in all continents are established to maintain contact with different companies, both cargo-owners and shipping companies. The organisation could be professionalised by expanding and formalising the internal set-up: board of trustees (executive committee) assisted by a technical advisory board (consisting of technical experts) and stakeholder council (consisting of representatives from the maritime industry).

To establish an organisation as described above, there has to be a stable and independent financial basis which can be secured through enhanced fundraising efforts. The membership fee by companies is a source of income, but it is unclear whether it suffices. A high membership fee is not a good option, because this might discourage companies to join the network.

Strengthen the quality of the Clean Shipping Index. The CSI should be based on both scientific and professional knowledge and make use of acknowledged industry standards. Furthermore, the index should be ambitious, yet realistic and fair at the same time. Detailed technical evaluation is necessary to assess the feasibility and cost-effectiveness of techniques proposed in the index. It is worth considering to explore the need for point distribution and weighting to reflect priority and costs. The CSI should address all environmental impacts associated with shipping and should therefore also include scrapping.

Oil companies already indicated the CSI has to be adjusted for their trade. There may be other companies with special needs (e.g. companies trading in chemicals, metals, agricultural products). A survey might be useful to find out which companies these are and what their needs are.

Improve reporting by shipping companies to the database. The information contained in the CSI database has to be complete, correct and up-to-date. Independent control by classification societies is therefore crucial, otherwise the data of the CSI is not reliable enough for use. Lloyd's Register and Det Norske Veritas offer a verification service, but there are no guarantees all shipping companies will make use of this service, since it generates extra costs and efforts. Furthermore, shipping companies also work with other classification companies, so these have to be involved as well.

There also has to be a more efficient way to fill the database than is happening at the moment (via cargo-owners). In the future, once the CSI is a functional marketing tool, shipping companies will hopefully report voluntarily. To reduce the workload for shipping companies information could be obtained through other sources such as classification societies and inspections.

Create clear benefits for cargo-owners and shipping companies. To ensure continuing support by cargo-owners and shipping companies the CSP should improve their market position and lead to reduced costs.

To improve their market position the CSP should generate more positive publicity for cargo-owners and shipping companies (through various media) and thereby enhance their environmental reputation. Shipping companies themselves should actively use the CSI as a marketing tool.

Furthermore, the CSP could reduce costs for cargo-owners and shipping companies by involving the Incentive Providers mentioned earlier who could offer through lower transaction costs, port/fairway dues, tonnage taxes, insurance premiums, and favourable fiscal conditions.

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Annex I INTERVIEWEES

Organisation	Name	Position
Clean Shipping Project organisation	Ulf Duus Jan Ahlbom	Toxicologist Environmental Engineer
Commissioners	Per Hörberg Lennart Lagerfors	Environmental officer Västra Götaland Region Environmental officer Göteborg Region Association of Local Authorities
DHL Sweden	Linda Bergsten	Environmental Manager
EVO (Dutch Association for Transport and Logistics)	Joost van Doesburg	European Affairs Coordinator
Maersk	Mads Stensen	Environmental Manager
Ministry of Transport, Public Works and Water Management (NL)	Jaap Kolpa	Policy Advisor Shipping
North Sea Foundation	Merijn Hougee	Project Manager Shipping
Preem	Fredrik Backman	Vetting Coordinator
Spliethoff	Marco van Rijsinge	HSE Manager
SRF (Swedish Ship-owner Association)	Carl Carlsson	Head Environment & Sustainability
Stora Enso Logistics	Karin Nordell	Communications & Sustainability Manager
Tetra Laval	Per Nilsson	Global Procurement Ocean Freight Manager
Volvo Logistics	Susanna Hambeson	Environmental Manager (Strategic Planning and Core Values)
Wagenborg	Peter Dijkhuizen Piter Oosterhof	Quality Assurance (HSE) Fleetmanager
Wallenius Marine	Sara Gorton	Head of Environment and R&D