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How Green Are Shipping Companies?

Roy Brammall



Abstract

This paper evaluates the degree of environmental awareness of shipping companies by examining the environmental statements presented on their websites. Companies are divided into three categories: firstly those which are just compliant with international maritime legislation; secondly those who react positively to initiatives in the marketplace to improve the environment and are compliant with legislation and thirdly those companies which through their own activities take a lead in setting standards for their environmental performance independent of international maritime law and so go beyond compliance. The researcher found considerable variation among larger shipping companies in their interpretation of current environmental legislation. Most companies fell within the range of the second category defined above in that they were more than compliant with current legislation or showed evidence of working towards full compliance in some of the more complex areas such as ballast water exchange. While the majority of companies act well within international law, a few were only marginally compliant and may on closer inspection in fact not be compliant at all. A small number of companies demonstrated an exemplary approach and fell within the third category defined above.

Keywords: Corporate Social Responsibility, Sustainability, Shipping, Marine environmental mitigation.

How Green Are Shipping Companies?

Introduction.

The commercial activities of shipping companies can have major environmental impacts. If shipping companies show a lack of awareness of relevant environmental issues, particularly in the marine environment, they are unlikely to have strategies in place to mitigate adverse impacts on the environment of their activities. Hence the degree of environmental awareness of shipping companies is an important issue. The higher the degree of environmental awareness the greater the likelihood is that the company would have an advanced scheme of mitigation in place for the adverse environmental impacts of its activities. This paper evaluates the degree of environmental awareness of shipping companies by examining the environmental statements presented on their websites.

In this paper the researcher develops a set of environmental criteria to act as benchmarks for the assessment of the degree of environmental awareness of shipping companies. Ten shipping companies are assessed for their degree of environmental awareness.

The paper is divided into the following sections:

1. A discussion of relevant environmental and conceptual issues
2. An outline of the specific maritime environmental context
3. A prototype model is proposed whereby the degree of environmental awareness of shipping companies may be assessed
4. The nature of the selected sample of shipping companies is appraised
5. The use of content research in the methodology is justified
6. Observations and results of the research on each shipping company is presented
7. Conclusions of the research are presented.

In the conclusions the researcher finds considerable variation among larger shipping companies in their interpretation of current environmental legislation and while the majority act well within international law, some seem to have a superficial regard for it.

A Discussion Of Relevant Environmental And Conceptual Issues.

There is no precise definition of what is meant by the environment. Curry (2011: p.8) states that the term environment is widely understood in its literal meaning of that which surrounds. In common parlance it has come to mean having a respect for what is natural and unaffected by human activity in the area surrounding human beings. The environment can be defined as 'Surroundings in which an organization operates, including air, water, land, natural resources, flora, fauna, humans, and their interrelations' (Global Development Research Centre, 2012). Lorraine Elliott (2012) defines environmentalism as,

'a political and ethical movement that seeks to improve and protect the quality of the natural environment through changes to environmentally harmful human activities; through the adoption of forms of political, economic, and social organization that are thought to be necessary for, or at least conducive to, the benign treatment of the environment by humans; and through a reassessment of humanity's relationship with nature. In various ways, environmentalism claims that living things other than humans, and the natural environment as a whole, are deserving of consideration in reasoning about the morality of political, economic, and social policies.'

Awareness of the environment and its importance stretches back to the beginning of human history. There are environmental elements in the ethical teachings of most human cultures. Curry (2011: p.34) explains the stewardship thesis of environmentalism, based on Genesis 1:24 and 2:15, a text common to Judaeo-Christian religions and Islam,

‘And God made the beast of the earth after his kind....And God took the man and put him in the garden of Eden to dress it and keep it.’

An ancient secular source is Heraclitus (535-475 BC) who speaks of (Riordan 1997: p.5),

‘the harmony of the cosmos, in which nature operates according to immutable laws. The natural world is in eternal flux; human beings are a mere part of the order of things, subject to a fate ordained by nature.’

In the nineteenth and early twentieth centuries the focus within environmentalism in most western countries was on the conservation of land, forests and endangered species, often in response to shock at the wanton exploitation of the landscape through industrialization. Jefferies (1997: p.42) describes the formation in Germany in 1904 of the Bund Heimatschutz (League for the Protection of the Homeland); the first mass protest against civil engineering works with the 1903-4 campaign to prevent development of the Laufenburg rapids in Baden for hydro-electric power, and the introduction in many German states of legislation to protect the German landscape. In the USA forest conservation began with the Organic Act of 1897 which outlined the management, protection, and responsibilities for caring for the national forests (Schroth, 2011: p.226). Environmentally related academic disciplines such as ecology emerge in the nineteenth century. The term ‘ecology’ was first used by Professor Ernst Haeckel in 1866 (Riordan, 1997: p.11).

In the maritime world conservation of fish stock started in nineteenth century America with the founding of the Fish Commission in 1871 (<http://training.fws.gov/History/Articles/FisheriesHistory.html>). The first law preventing the killing of whales was made in 1904, in Norway and was followed by increasing international concern about stocks, which led to the 1935 regulations to cut the size of catches, the 1937 International Whaling Agreement and the formation in 1946 of the International Whaling Commission (Burton, 1973: p.145).

Modern environmentalism has diverse roots with strong environmentalist traditions in states such as Germany and the USA. The National Socialists in Germany in the 1930s had a well-developed environmental philosophy. Riordan (1997: p.23) states that,

‘..there is enough evidence that prominent conservationists eagerly embraced ideas which were popularized by the National Socialists during the 1920s.’

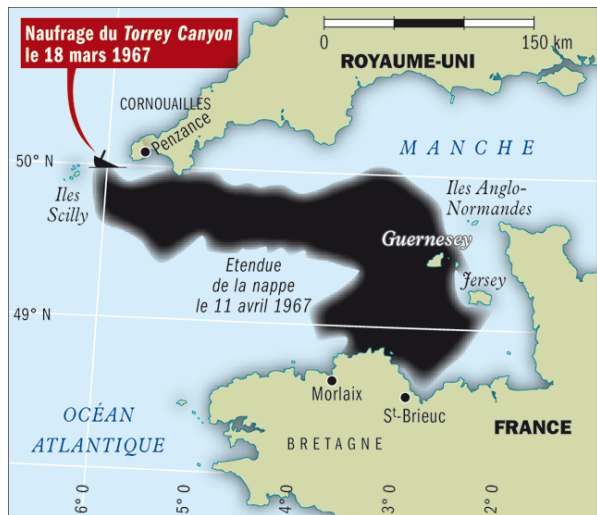
The Reichsnaturschutzgesetz [Reich Nature Protection Law], 1935, gave national powers of coordination to protect any aspect of the natural environment and provided the basis for current Federal German Lander laws for conservation (Riordan, 1997: p.26).

In the USA the US Department of Agriculture was established and a series of Federal conservation acts were passed in the late nineteenth century: the Wilderness Act (1864); Desert Land Act (1877); the Forest Reserve Act (1891), (Collins, 2011: p.80). The Yellowstone National Park was established in 1872 and the Yosemite National Park in 1890 (Collins, 2011: p.80).

However several events combined in the 1960s to make the environment into a policy issue that influenced both left and right wing mainstream politics.

Carson (1962) highlighted the harmful impact of the pesticide DDT on wildlife. The rapid growth in the use of photography in the media increased awareness of the impact on the environment of human activity.

In the UK the Torrey Canyon oil tanker environmental disaster was well publicized in the Media (BBC 2008).



(Courrier International 2012). Chart showing the extent of the oil slick in the English Channel after the Torrey Canyon disaster in March 1967.



(Harvard Physics 2012). The Torrey Canyon tanker showing the growing oil slick.

The public concern for the environment in the USA became significant in the late 1960s and early 1970s (Boslaugh, 2011: p.210) and led to the creation of the United States Environmental Protection Agency (EPA) in 1970, (Schroth et al., 2011: p.193). At the Stockholm Conference in 1972, attended by representatives from 113 countries, the Declaration on the Human Environment (Stockholm Declaration) was issued. This emphasized

the importance of protecting both species and habitat (Tomozeiu, 2011: p.131). In the 1960s various environmental pressure groups including the Friends of the Earth were established (Gunn, 2011: p.365). Subsequently environmental research has proliferated as well as the issues covered by environmentalism. In the 1980s the issues of global warming and ozone depletion came to the fore and led to the publication of the Brundtland Report, which is credited with introducing the concept of sustainability to the language (Jarvie, 2011: p.41). In 1992 the United Nations Conference on Environment and Development in Rio de Janeiro (United Nations, 1992) set the environmental policy agenda for signatories, which has continued into the contemporary era.

It is noticeable that the prominent environmental issues are time dependent and often influenced by media input. Today not only parties but governments and international organisations such as UNEP take green or environmental politics seriously. After the Japanese tsunami of 2011 nuclear environmental issues came to the fore after a long period of languishment. However sustainability issues and global warming have remained prominent over the last decade due to the legacy of the Rio de Janeiro United Nations Conference on the Environment and Development (United Nations 1992) and subsequent related agreements. Shipping has impacts in both of these areas.

The changing agenda of green issues and the fact that its focus changes with media attention creates considerable difficulty for business investment in environmental areas (Bengston & Xu, 1995: p.2). Addressing many environmental issues requires long term research and development with investment from retained earnings, as businesses are required by environmental regulatory statutes to internalize the costs associated with compliance. Although subsidies and incentives may be provided, often smaller businesses lack the resources to respond adequately in the short and medium term. Hence smaller shipping companies may have difficulty in responding to the various environmental issues that affect shipping

especially where substantial investment in new technology is required. Complying with IMO guidelines for Ballast Water Management 2008 is a topical example of maritime environmental regulation that may be prohibitively expensive for a small company (IMO, 2008). This study concentrates on larger companies that handle the bulk of sea transported goods, which are overall better placed to respond to environmental policy pressures.

Discussion Of The Maritime Environmental Context.

In the maritime world today many environmental issues are covered by the Third United Nations Convention of the Sea, (UNCLOS III) known as the 'Law of the Sea' (United Nations, 2012). Additionally the International Maritime Organisation (IMO) has introduced other conventions designed to limit pollution, the most important of which is the International Convention for the Prevention of Pollution From Ships or MARPOL (International Maritime Organisation, 2012) and the 2009 Hong Kong International Ship Recycling Convention (International Maritime Organisation, 2009), which is designed to ensure the 'safe and environmentally sound recycling of ships'.

Collectively these sources of international maritime law address in varying degrees the following issues in the marine environment:

- Conservation of endangered species such as whales and migratory species
- Environmental problems associated with the introduction of exotic species due to ballast water exchange
- Contribution to global warming from shipping fuel emissions
- Air pollution from fuel in the form of sulphur dioxide, nitrogen dioxide and carbon dioxide

- Coastal pollution in the form of polluted sea water and beach pollution originating from shipping
- Restrictions in ship recycling to mitigate harmful environmental effects associated with this.

Additional maritime environmental issues which are not addressed directly include:

- The environmental impacts of dredging
- The negative impacts or externalities indirectly caused by shipping due to the development of ports.

Another issue which remains a difficulty and has not yet been tackled effectively is the matter of governance: not all nations have signed the various international maritime treaties. For example UNCLOS III has not been signed by the United States and other nations (UNO, 2011). Additionally nations that have signed treaties have not necessarily observed them. For instance Japan has been accused of contravening the International Whaling Commission convention by harvesting whales ostensibly ‘for scientific purposes’ when there is some evidence that the whale meat is still being used commercially (The Guardian, 2011). At the maritime level pure international law and environmental law is still in its infancy with common structures between nations being very flexible. In their assessment of UNCLOS III Churchill and Lowe (1999) state that,

‘Its failure to secure unanimous support illuminates the hybrid nature of the Convention. In part it is exceptionally precise..... The other parts are more in the form of a framework treaty or *loi* -cadre, leaving the elaboration of precise rules to other bodies, such as national governments and international organizations. Perhaps because of the flexibility inherent in this approach, these parts did command general support.’

This flexibility in law makes the marine environment potentially still very vulnerable to exploitation by unscrupulous businesses. Furthermore cost

considerations involved with compliance compound this problem, particularly as shipping is an international activity, the investment in which is dominated by rich countries so developing countries can be reluctant to accept strict internationally set anti-pollution standards which they consider may hinder their economic development (Churchill & Lowe, 1999: p.338).

A Pilot Evaluative Model Is Proposed Whereby The Degree Of Environmental Awareness Of Shipping Companies May Be Assessed.

Various factors and approaches could be applied to assess the 'greenness' or environmental awareness of a company. Forbes (2011: p.42-43) discusses how some environmentalists have classified environmental awareness through a spectrum from light green to dark green. Light green views are the most anthropocentric where anthropocentrism is a collection of viewpoints that consider man as the most important species on earth, having the right to exploit its resources, while preserving their sustainability for the use of future generations. Businesses whose ethic is a light green one simply comply with the law and may do so retrospectively (Forbes, 2011: p.43). Dark green views are the most ecocentric where ecocentrism is the belief that man is just one species among many and, as such, has no greater rights than other species to the earth's resources. Businesses which embrace dark green views are actively searching for ways to protect the Earth's resources (Forbes, 2011: p.43).

The researcher uses a goal-based evaluative model (Regional Nonprofit Alliance, 2012) to assess the extent to which environmental awareness has been developed by shipping companies. The researcher establishes three levels of environmental awareness and then develops a set of criteria or descriptors for the attainment of each level. Content analysis of shipping company websites is undertaken to establish which levels of awareness or goals have been attained by each shipping company. The characteristics of the levels and the development of the criteria for each level is described

below and the choice of content analysis in the research is justified in our conclusions.

The levels or goals are hierarchical with the first level being lowest and level three the highest, in terms of degree of environmental awareness. All three levels are considered to be within the anthropocentric domain. To differentiate between the three levels, the three motives for business interest in the environment as described in Forbes (2011: p.46) are employed.

Level One

The first level represents the shallowest level of interest in environmental issues and the most anthropocentric.

This level may be achieved by using environmental credentials to improve the business's public relations. In this case the strategy adopted by the firm may be no more than 'greenwashing'. This somewhat derogatory term describes public relations activity designed to improve the environmental image of a business. A well-documented example of this was the advertising agency Ogilvy and Mather's development of the Helios symbol for BP in 2001, along with the slogan 'Beyond Petroleum', heralding the company's renewed concern for and commitment to the environment. In fact BP paid more for the development of the logo by the advertising agency than it did in the promised investment in the use of non-fossil fuels, thus earning itself the 'Emerald Paintbrush' award from Greenpeace for its greenwashing activity (Greenpeace, 2008).

Companies that have attained the first level may or may not be compliant with international maritime environmental law. It may be that when challenged their policies do not stand up to closer scrutiny.

Level Two

The second business environmental approach and what may be regarded as being at a slightly higher level on the anthropocentric-biocentric scale, is according to Forbes (2011: p.46), reacting to market transformation.

A transformation or development in the market place could be the introduction of a new environmental law, or a large scale public opinion shift on an issue that affects the activities of the firm. A response to new regulation to ensure that the business is compliant with environmental laws would be an example of reaction to market transformation. The development of the sale of conflict free diamonds in the 1990s exemplifies this motive. Awareness grew in the media in the 1990s of 'blood diamonds' being traded to finance war in Africa. The USA passed the Clean Diamond Trade Act in 2003 designed to stop trade in blood diamonds (US Government Printing Office, 2003). As the USA is the world's largest market for diamonds, its participation in schemes designed to stop the selling of blood diamonds has led to an increase in the sale of conflict free diamonds (Forbes, 2011: p.46).

Firms that have attained this level will be compliant with legislation and are likely to be driven in their environmental policies by legislation.

Level Three

The third level shows the deepest level of commitment to environmental awareness and the business's policies may include ecocentric elements, where the environment is supposed to have an existence of value independent of human involvement (Curry, 2011: p.57).

To access this level the business must demonstrate that the business itself is initiating activities which transform the nature of the market by intrinsically improving the environment or reducing the impact the business and others

have on the environment without any prompt from government or non-governmental organization (NGO). An example of a business engaging at this level may be Dupont's announcement in 1988 to stop production of chlorofluorocarbons (CFCs) ahead of initiatives from the US government to ban their use (Forbes, 2011: p. 46). In order to achieve this level businesses have to include environmental factors in their long term research and planning. Thus a business is unlikely to meet the criteria for this third and highest level unless it has a long term commitment to the environment spanning several decades and incorporates the 'cradle to grave' product design concept as used in industrial ecology (Forbes, 2011: p.47). Commitment to sustainability in terms of research and development and investment is a key value at this level.

The researcher uses the typology of business behaviour above to describe the three levels of the evaluative model. In brief to recap the first level shows some awareness and activity may be no more than greenwashing; the second level shows businesses which are responsive to changes in the market place and the third level is where the business itself changes its activities in a way that sets the agenda for other companies in the market, or establishes 'best practice' ahead of direction from third parties such as government or NGOs. Descriptors for the criteria used at each level have been introduced by the researcher, which draw on two sets of information. The first is Forbes' discussion of factors that could help assess the 'greenness' or environmental awareness of companies in general (Forbes, 2011: p.47). The second is the researcher's appraisal of the degree to which shipping companies have responded to the set of maritime environmental issues described above.

Returning to the discussion by Forbes, he mentions that The International Organisation for Standardization hosts long standing voluntary guidelines for environmental standards including a new standard for corporate social responsibility (ISO 26000) and ISO 14001 which sets a standard for environmental management systems that examine risks and energy costs

throughout a firm's processes. ISO 14001 only indicates that systems are in place but does not examine their effectiveness. Evidence of companies participating in ISO standards for the environment could be indicative of a more than cursory interest in environmentalism. Motivation may reflect a desire for external validation for public relations purposes and these observations suggest that voluntary self-regulation with external validation of this kind fits well with the second level of the model described above.

Forbes sees collaboration as a key value indicative of a higher degree of involvement in environmental issues (2011: p.48). What precisely is meant by collaboration requires analysis here. The writer believes there should be evidence of collaboration in investment and research as well as the working procedures between the firms involved. Forbes' own example of collaboration which involves nine major corporations linked with four major shipping operators to form a Clean Cargo Group to reduce the transport of invasive species in ballast water does not meet the criteria set by the researcher for collaboration. The Clean Cargo Group describes itself thus, (BSR, 2012),

'Clean Cargo Working Group (CCWG) is a business-to-business collaboration dedicated to integrating environmentally and socially responsible business principles into transportation management.'

Hence its main role is discussion and the exchange of ideas for management purposes. It does not provide grants or undertake research or advise on new investment, all of which would be indicative of a much greater commitment to the environment. Moreover it describes itself today as a group of 28 companies which would mean that it has more than doubled in size since Forbes published a year ago. It would be difficult to believe that a level of collaboration of any institutional and organisational depth could develop at such a rapid pace between so many companies. If there is evidence of collaboration in research and development, commitment with investment and cooperation in the working practices of a firm the researcher believes that a major criterion for Level three has been attained.

The levels of awareness in the model with the criteria employed by the researcher at each level are presented in Table One below.

Table One: Shipping Company Levels of Environmental Awareness in the evaluative model.

Level of Awareness One:

- Mention on website of MARPOL, IMO Conventions related to Marine Environment and Pollution
- Some Corporate Social responsibility awareness: Mention of environmental issues in public relations
- Greenwashing activity may be apparent

Level One is the minimal level that all companies would be expected to reach in the 21st Century and it is assumed that the companies would be working towards Level Two.

Level of Awareness Two:

The above level one criteria +

- Compliance with ISO 14001; Qualship; Longbeach; Independent awards issued
- Evidence of awareness of IMO Ballast Water Convention
- Evidence of environmental management and environmental impact statements
- Mention of human factors as part of the environmental dimension
- Some awareness of sustainability issues and biodiversity

Level Two suggests more than compliance and investment by the company in the environment beyond legal compliance.

Level Two is split into Level Two a) and Level Two b).

Companies achieving Level Two a) achieve the threshold for Level Two which means that they have accessed only a few of the criteria and some company statements may be 'greenwashing'. Companies achieving Level Two b) have accessed most or all of the criteria.

Level Two b) companies may make statements relevant to Level Three criteria but do not provide enough supporting evidence on their websites for this level to be achieved.

Level of Awareness Three:

Most of the above criteria from Levels One and Two +

- Evidence of environmental initiatives in the market by the business.
- Evidence of environmental principles embedded in the philosophy of the company with references which can be substantiated to long and medium term as well as short term strategies.
- Evidence of commitment to green ship research in the company investment in addition to future purchasing plans
- Evidence of advanced environmental mitigation
- Evidence of collaborative activities which have had an environmental impact such as a reduction in carbon footprint
- Evidence of compliance with IMO Ballast Water Convention
- Evidence of positive links with environmental groups such as the Marine Stewardship Council (MSC).
- Strong evidence of awareness of biodiversity and sustainability issues and evidence of the incorporation of these issues into business investment

Level Three indicates substantial investment by the company in the environment and long-term commitment in its investment to the environment as well as an awareness of biocentric environmentalism. There should be evidence of long-term business strategic commitment to the environment.

The Nature Of The Selected Sample Of Shipping Companies Is Appraised.

The researcher selected the ten largest shipping companies in the world from the LL-Bloomberg Top 50 in Lloyd's List by market capitalization on 17th February 2012. The decision to choose the ten largest companies reflected several research considerations. Firstly copious data for these companies is available from their websites which makes these companies suitable for the selected method of analysis which is described below. As several subsections of the shipping market such as the container and tanker trades are heavily concentrated, choosing the largest ten implies that majority of world shipping by value is included in the survey. On the other hand the exclusion of smaller companies which operate in more competitive sectors with smaller margins may imply that the sectors of the shipping market that are least likely to be compliant with international environmental legislation is not analyzed. For the purposes of the current research the variation in performance of the larger companies alone is considered.

For the purposes of this research shipping is defined as a commercial activity which provides the transport of people, goods and services by sea or inland waterway. This definition includes the activities of offshore oil and gas service industries worldwide and the waterborne trade of the Chinese Rivers, Danube, Great Lakes St Lawrence Seaway system, Mississippi and Rhine. The list of shipping companies proved problematic as a sample as several companies listed had most of their market capital tied up in business interests other than shipping as defined above. Hence the second largest company (Mitsubishi Heavy Industries) was excluded from the sample. While historically a huge shipping company, it currently is a conglomerate with no shipping activities. Its position was replaced in the sample population by Hapag-Lloyd AG (controlled by TUI), which is a European company with major interests in the cruise and container markets.

It was recognized by the researcher that shipping companies were likely to adhere to anthropocentric perspectives of the environment but nevertheless the researcher was interested to discover what the drivers were behind shipping interest in environmentalism and the extent to which environmental values featured in the corporate strategies of shipping companies.

Justification Of The Use Of Content Research In The Methodology.

Content analysis is first mentioned by Bengston and Xu (1995: p.2) and was used by Callicot and Mumford (2003: p.63) in their study of The Great Lakes and their Fisheries. Callicot and Mumford state that,

‘content analysis of documents provides an effective means for examining values in relation to social and ecological scales. Organizational documents cover the issues and topics that are most germane to the organization and its members. Content analysis is unobtrusive and nontendentious. Originators are not aware that their texts are being analyzed by an outside observer; hence the method of observation does not bias the expression of values in the observed texts. Content analysis enables the examination of the discourse of target groups without making them self-conscious or prompting them to affirm or deny value statements relative to a particular social scale or natural object constructed by the observer.’

Company websites are particularly suitable for analysis of this type. The information they contain is available to the public and must be approved by their corporate bodies or a representative thereof. The researcher can therefore assess the content as presented and compare it with that from other websites.

Observations And Results Of The Research On Each Shipping Company - Analysis And Results Of The Study.

Companies are analyzed in order from largest market capitalization to the smallest in the sample. A summary of the main points for each company is provided below along with their ranking and further commentary on their environmental awareness. The analysis references webpages directly as these are referred to in the text.

Moeller-Maersk (Maersk).

By market capitalization, Moller-Maersk, the Danish company with its subsidiaries, is the world's largest shipping company by a factor of more than three. Its website mentions sustainability from the outset and on its 2010 report, available in pdf on climate and the environment it shows a strong understanding of conservation, biodiversity and green issues (Maersk, 2010: p.41).

Its sustainability report for 2010 evaluates environmental targets set (Maersk, 2010: p.53) and it is clear these are related to short, medium and long term strategies. It is not clear how the targets have been set, how difficult they would be to achieve or what the time scales are.

Ballast water management is given high priority in the report but meeting IMO requirements is still only work in progress (Maersk, 2010: p.41).

Plans are underway for the introduction of Maersk 'green container ships' by 2013 and great emphasis is placed on the efficiency achieved by their capacity which is a third larger than a New Panamax, up to 450 metres in length (Maersk, 2010: p.43).



A Panamax (a ship whose berth is at the maximum capable of passing through the Panama Canal) car carrier being assisted by a tug in the Panama Canal (The Society of Naval Architects and Marine Engineers 2011).



Emma Maersk currently the world's largest Super Panamax. Capacity: 14,000 TEUs (Twenty foot equivalent, the standard unit of capacity for container ships). New ships have 18000 TEUs (Marine Insight, 2011).

The environmental implications (and so external costs) for intermodal transport of using ships that can only dock in a few ports worldwide and not pass through the new Panama Canal are not discussed.

It is clear from the website that Maersk uses a high level of certification and it substantiates this. It claims to be at the forefront of technology but provides little evidence to support this in terms of its own activities or support for scientific research. The collaborative partnerships to which it belongs, such as the Clean Cargo Working Group are primarily focused on reducing costs than promoting sustainability. There is evidence of a high level of compliance with evolving legislation and global environmental guidelines.

Level Attained: Level 2b)

The website contains Level Three elements but lacks evidence to substantiate this level.

COSCO.

Cosco is a Chinese company and the second largest integrated shipping company in the world. Under 'Society and the Environment' COSCO state,

'COSCO Group has been working closely with the China Global Compact Office under the United Nations to promote the ten principles of Global Compact since it became a member of Global Compact in January 2005. China COSCO has formulated Global Compact and Sustainable Development Plan of its own, under the guidance of the Global Compact. It has issued comprehensive Guidelines on Building a Resource-efficient Enterprise and Implementing the Global Compact to realize the establishment of a resource-efficient and harmonious enterprise,'

However there is no supporting evidence of activities undertaken by the company in the light of this statement.

There is little reference to the environment on the website apart from reference to the United Nations Global Compact.

There is evidence of some external validation of environmental procedures such as the China Classification Society certification including ISO14001 and the independent award of Green Flag from Long Beach Los Angeles, and the website states that new ships satisfy latest environmental criteria according to Lloyd's List (Cosco, 2012).

Level Attained: Level 2a

This company and its subsidiaries is compliant and working well within what is required by international law but without taking any positive initiative of its own towards the marine environment. There is also a lack of sophistication on its website when discussing the environment. There is no mention of the ballast water convention, nor of green ship design.

China Shipping Containers Limited (CSCL).

Environmental comments on the website include a reproduction of The People's Republic of China's law on solid waste pollution prevention. Compliance with IMO Conventions is indicated. Commitment to human factors and safety management is apparent but there is little environmental awareness beyond compliance here. Not all the website is available in English and there is the possibility that more environmental information is available in Chinese (China Shipping Containers Limited, 2012).

Level Attained: Level One

A compliant company' currently driven by international legislation. The environment is not mentioned in its core business values and this section of the website is not available for translation into English.

Orient Overseas (International) Limited.

The environment report mentions compliance with both IMO and US safety and environmental regulations: Long Beach Award; Qualship Award; IMO IMDG and US-CFR49. All these achievements would be necessary to access US ports and indicate of a strong level of compliance. The report also mentions the drive towards a paperless office and use of e-commerce; use of eucalyptus wood in container flooring from sustainable forests; use of low volatile organic compounds and heavy metal free paints and reefers which are CFC free. The factors regarding containers are mentioned by other container operators in the survey and are driven by market cooperation. These could be seen as 'evidence of reacting to market transformation'. As well as achieving sustainability goals reducing weight of containers using lighter construction is a key cost driver here.

There is a disclaimer on the site to the effect that some of the statements may be 'forward looking' and so not reflect the current state of affairs (Orient Overseas (International) Limited, 2012).

Level Attained: Level 2a

Hyundai Merchant Marine (HMM).

HMM makes an environmental statement on its website mentioning compliance with international conventions and adherence to ISO 14001 (Hyundai Merchant Marine, 2012, Environmental Policy). Some information has not been updated on the website. For instance plans to reduce CO2 emissions per unit load by 2010 on the basis of emissions in 2006 is already historic. Changing Reefers refrigerant to HFCs by 1998 is evidence of reaction to market transformation albeit some time ago (Hyundai Merchant Marine, 2012, Environmental Performance).

The company has a comprehensive annual Environmental Plan available to the public since 2006 which covers all marine environmental issues including ballast water management, gray water management, plans to increase the use of green ships and the use of the green award and Long Beach Award depending on schedule. This document has targets, identifiable environmental programmes and shows progress towards targets on an annual basis. It is the most comprehensive document of its kind seen by the researcher and a good model for disclosure. However the actual investment involved in each part of the plan is not divulged (Hyundai Merchant Marine, 2012, Environmental Plan).

Overall the website gives a mixed impression with considerable strengths in the degree of disclosure and comprehensive treatment of environmental issues but nevertheless the inclusion of some dated material. The company does not engage with the issues of sustainability and biodiversity.

Level Attained: Level 2b.

Royal Boskalis Westminster (RBW).

RBW's subsidiary, Smit the tug and salvage company displays evidence of initiating market transformation. In cooperation with partners it has two separate initiatives aimed at the development of a 'Green' vessel, the Hybrid, Hydrogen, Harbour Tug (H3T) (RBW 2010,Annual Report , p.48). RBW has a strong mission statement which includes the following aim: 'Society: to act with due care for the environment and the community.' (RBW 2010, CSR Report , p.28).

A Corporate Social Responsibility Report is available from the website. This has a dedicated section for nature and the environment. The issues of biodiversity and sustainability are discussed in detail. Detailed analysis of CO2 emissions associated with the business operations are given.

Implications for the business of the Environmental Ship Index and the European Union's Marine Strategy Framework Directive are discussed (RBW, 2010, CSR Report: p.62).

Boskalis has conducted a theoretical study into Exhaust Gas Cleaning (EGC) technology on trailing suction hopper dredgers (RBW, 2010, CSR Report: p.64). The company is engaged in research on various environmental matters with suppliers. There is evidence of collaborative activity here (RBW, CSR Report, 2010: p.63). Together with various industry stakeholders SMIT is reducing the impact of ballast water to comply with upcoming regulations in relation to this (RBW 2010, CSR Report: p.65),

'In conjunction with the classification agencies SMIT is looking into possibilities for providing part or all of the fleet with certification which emphasizes the green character of its ships (Clean Ship, Green Passport and Green Award certification). SMIT is involved in exchanging experience in the field of reducing environmental impact with stakeholders in the port, including the Port Authority, rowers' association KRVE and the Dutch national shipping organization (Rijksrederij)',

RBW is involved in several environmental mitigation programmes including large-scale relocation of corals in Jamaica, Building with nature innovation programme (RBW 2010, CSR Report, p.72). 'Sustainability is a key importance in the construction of the Maasvlakte 2' (RBW 2010, CSR Report, p.76).

Level Attained: Level 3.

This company is operating well above the level of compliance with international conventions and in many respects is at the technological cutting edge of environmentalism both in its contribution to research and environmental management practice. The company puts the environment as the centre of its activity as is apparent from its Corporate Social Responsibility Report 2010 (RBW, 2012, CSR Report).

Kirby.

This American company provides river transport services on the Mississippi as well as services to the maritime sector in Texas. A set of statements of compliance with USA maritime law is given on the website in the form of a webpage (Kirby Corporation, 2012). It also mentions that Kirby are involved with wildlife preservation with the Neotropical Bird Habitat on the Bolivar Peninsular in Texas. However no detail is provided and there is no mention of any contribution to reconstruction in the area after hurricane Ike devastated it completely in 2008 (New York Times 2008).

Level Attained: Level 1.

As an American company Kirby is likely to be very compliant with environmental law but provides little evidence on its website to that effect.

Mitsui OSK Lines.

Mitsui's information on environmental targets and results includes a considerable amount of discussion on research and innovation into green ship technology. However it reads like a wish list of desirable technological development in the shipping industry (Mitsui O.S.K. Lines, 2010, Environmental targets: pp.1-4). No real evidence of achievement is offered. The approach is not as analytical as HMM lines and there is far more gloss on the website. This opinion is endorsed by Masaatsu Doi who Mitsui use to externally validate their CSR policy. His comments imply that there is considerable work to be done on the implementation side. He states that 'It will likely be necessary to create an overall strategy for CSR that orients each specific issue and is clearly related to the midterm management plan' (Mitsui O.S.K. Lines, 2011, Third-party opinions). There is some evidence of collaboration with Mitsubishi, a related company and Det Norske Veritas AS (DNV), holds an annual audit and a renewal assessment every three years for

ISO14001 (Mitsui O.S.K. Lines, 2012). Mitsui's Table of Environmental Targets includes references to biodiversity but the firm's achievements with regard to biodiversity are only in a rudimentary state of evolution. Increasing awareness of staff of biodiversity is stated as an objective but contribution is restricted to e-learning and the production of relevant materials in the staff newsletter. The company is still in the process of introducing ballast water treatment plants in accordance with the new IMO convention (Mitsui O.S.K. Lines, 2011, Environmental and Social Report: p.28).

Level Attained: Level 2a.

The information given on the website is comprehensive in coverage and has areas of weakness within the Level Two criteria. The company is stronger in the fuel saving technology field than in overall conservation and green environment objectives. There is little development on biodiversity; no mention of sustainability and domestic targets to reduce environmental impact were not achieved in the 2011 target list.

Hapag-Lloyd AG.

The sustainability web page contains a statement of principles written in 2009 which form the basis of its sustainability policy. The statement says that 'The Management uses clearly defined measures to monitor, develop, and maintain our quality and environmental targets. These targets in addition to our sustainability policy are regularly documented, reviewed, and communicated.' However unlike Mitsui O.S.K. which makes similar claims it does not disclose information on the website on its targets or progress made on these (Hapag-Lloyd AG, 2009, Sustainability).

The company is involved in collaboration with several organisations over sustainability issues and discusses sustainability issues explicitly in the

context of shipping on its website (Hapag-Lloyd AG 2012, Certificates). The website addresses all the major environmental issues with regard to shipping including green shipping, environmental issues in ship recycling and ballast water management. However comments are not always convincing. For example the following paragraph 'To ensure that unwanted ecological effects are prevented, Hapag-Lloyd practises strict ballast water management' is not substantiated (Hapag-Lloyd AG, 2012, Environment on board).

While the coverage of issues is impressive, as well as the level of certification achieved the company seems to be driven by commercial interests and cost saving rather than an intrinsic interest in environmental issues.

Level Attained: Level 2b.

Neptune Orient Lines.

The website has a section on the environment but this contains little more than statements of policy. The company describes the IMO as a 'partner organisation' which hardly seems appropriate for an agency of the United Nations (Neptune Orient Lines, 2012). This company provides little evidence on its website of activities designed to protect the environment.

Level Attained: Level One

Conclusions.

A ranking for the shipping companies is provided in the table below:

Company	Level Attained
RBW	3
HMM	2b
Hapag-Lloyd	2b
Moller-Maersk	2b
Mitsui OSK	2a
COSCO	2a
OOIL	2a
CSCCL	1
Kirby	1
Neptune Orient	1

From the table above it is apparent that there is wide variation in the way in which shipping companies present their awareness of environmental issues on their websites. The majority of the companies surveyed appear well within the zone of compliance but some provide only enough information to appear compliant with maritime Conventions that in shipping are often regarded as minimal regulation. Very few have environmental issues embedded in their corporate strategies and so achieve Level Three.

The majority are clearly following the lead of legislation from the international maritime community rather than leading the field in innovation and research themselves. The study endorses the conclusion of Pike, Butt, Johnson and Walmsley (2011), mentioned above, that regulation and environmental protection remain key drivers of initiatives but the economic bottom line is still dominant and needs to be targeted in efforts to deliver any sustainable shipping standard (2011: p.35).

While the majority of the companies mention the use of the ISO 14001 standard only a few provide evidence of its use and clearly the way in which it is assessed is not standardised across companies. No companies offered standard ISO 26000 in their audits. Only one company (HMM) is explicit about its environmental management plans and makes these available historically, itemising targets achieved annually. On the basis of this small sample of firms which nevertheless represents a significant proportion of shipping traffic worldwide specific cultural factors do not explain variation in disclosure. There are examples of minimal disclosure from developed (Kirby) and developing countries (Neptune Orient). It would be interesting to conduct a cross-sectional study to determine the extent to which disclosure was culturally dependent. Overall the European companies perform best against the criteria set but this fact may reflect the specific markets of the firms concerned rather than their cultural origins. Hapag-Lloyd is currently owned by TUI, a travel company with a strong consumer interest and RBW core activities have a high environmental exposure.

The survey has revealed plenty of examples of good practice within the shipping sector particularly in the field of auditing environmental targets as part of environmental management plans. The companies would benefit from sharing good practice and considering the development of a more unified system for auditing their environmental performance to enable cross industry comparison. This consideration is especially important in an industry whose activities can have such a direct and arbitrary impact on the environment.

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Biographical Note

Roy Brammall is a doctoral research student in the Maritime Faculty at SSU, working on sustainability in shipping. He completed a Master of Science in the Martec Faculty at SSU in 2010. His dissertation evaluated the feasibility of ethical branding in shipping and was supervised by Tim Hallpike and Dr Anthony Gallagher.