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The impact of waste-to-energy sustainability projects in port on society: a case study in Copenhagen-Malmö Port (CMP)

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WORLD MARITIME UNIVERSITY
Malmö, Sweden

The Impact of Waste-to-Energy Sustainability Project in Port on Society:
A Case Study for Copenhagen-Malmö Port (CMP)

By

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A dissertation submitted to the World Maritime University in partial fulfilment of the requirements for the reward of the degree of

MASTER OF SCIENCE
In
MARITIME AFFAIRS
(MARITIME ENERGY MANAGEMENT)

2021

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Declaration

I certify that all the material in this dissertation that is not my own work has been identified, and that no material is included for which a degree has previously been conferred on me.

The contents of this dissertation reflect my own personal views, and are not necessarily endorsed by the University.

(Signature): Dumisa Kevin January

(Date): 20/09/2021

Supervised by: Professor Aykut Ölcer

World Maritime University
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Abstract

Title of Dissertation: The Impact of Waste-to-Energy Sustainability Project in a Port on Society: A Case Study for Copenhagen-Malmö Port (CMP)

Degree: Master of Science

The dissertation is a study of the impact waste-to-energy sustainability project in a port on society: a case study for Copenhagen-Malmö Port (MCP).

The study explores sustainability projects in port and how they impact the society/community that surrounds the port. A brief look is taken through ESG-indicators with a specific focus on social indicators. To merit the study, a case study for Copenhagen-Malmö Port is presented. Findings of the case study is drawn from high-level interviews with maritime experts together with orthodox literature.

Results from the high-level interviews and literature led to the understanding of the drivers of investing for impact and how this impact society. Added value of ESG-indicators alongside sustainability projects was established and a recommendation was made on KPIs to measure ESG milestones in ports and society. The concluding chapters explored the case study carried out by a researcher on CMP and the circular economy approach to facilitate the transition of the port cities into self-sustainable energy ports. The case study was used as an example to set a blue print to sustainability projects in port and how they can impact the wider community surrounding it.

KEYWORDS: Impact, Waste-to-Energy, Sustainability, Port, ESG-indicators, Society/Community
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List of abbreviations

CMP - Copenhagen-Malmö Port
ESG - Environmental Social Governance
ICS - International Chamber of Shipping
IMO - International Maritime Organisation
CSR - Corporate Social Responsibility
GIIN - Global Impact Investing Network
KPI - Key Performance Indicator
OECD - Organisation for Economic Co-operation and Development
GRI - Global Reporting Initiative
UNCTAD - United Nations Conference on Trade and Development
EFFAS - European Federation of Financial Analysts Societies
IMO SOLAS - International Convention for the Safety of Life at Sea
NGO - Non Governmental Organisation
ETF - European Transport Workers Federation
SDG - Sustainable Development Goals
CHAPTER 1 – Introduction

1.1. Background

The requirement for the maritime industry to be progressive and sustainable, it is pertinent for the industry players to be transparent and for information-sharing to be an integral part for driving change. It is high-time that the maritime industry push for a level playing field by making the industry enhance its emphasis on Environmental, Social and Governance (ESG) issues (Øystein Kalleklev, 2018).

ESG performance has now affected trends in sustainability and consequently impacted decisions of all maritime stakeholders. This new trend is with accordance with the emergence of contractual and regulatory requirements of the maritime industry. The maritime industry now needs to not only vaguely communicate ESG initiatives (“greenwashing”), but engage in pragmatic and effective strategies towards sustainable shipping. This sentiment was shared on platforms like the safety4sea initiative where linking ESG performance to the shipping industry is a hot topic for maritime leaders (executives and managers).

ESG indicators have become a developing importance together with the Sustainable Development Goals (SDGs) in investment processes and decision making. It has become crucial to understand ESG factors and how they impact investments within the Maritime sector. Understanding how investors are integrating ESG factors when making investment decisions. What framework of approaches is employed when selecting sustainable energy investment projects. Evaluating impact investments within the Maritime Energy Management is fundamental as research within this landscape is new and moderately understood.

According to the ICS (2014), 90% of world trade is constituted by global shipping transport, this is as a result of the global nature of shipping, its competitiveness and its multi-dynamic characteristics. “Severe environmental impact have detrimental consequences which is as a result of the shipping industry, these acts result in air pollution, sewage, oil and chemical discharges and invasive species in ballast water”
(Andersson et al. 2016, as cited by Parviainen et al., 2017). The maritime industry is very slow when it comes to the adoption and implementation of ESG factors, the industry has a tendency of abusing maritime policies and regulations due to vaguely defined industry regulations. This has subsequently lead to the reduction of environmental issues, on board working conditions, safety and social conditions (Kuronen and Tapaninen 2009; Roe 2008; Sampson and Bloor 2012, as cited by Parviainen et al., 2017). This predicament is a cause for concern for an industry to be relaxed about ESG issues that could be a stumbling block in the progressiveness in its corporate social responsibility, consequently the International Maritime Organisation (IMO) “regulatory framework has been consistently been criticized for its ineffectiveness of addressing environmental impact and the social problems of shipping, remaining static, with top-down policies (governance), and being too slow to react to change in the industry” (Roe 2013; Kuronen and Tapaninen 2009, as cited by Parviainen et al., 2017). As regulations are slow and weak (toothless), ratification process stalling and burocratic lack of enforcement power of adopted regulations (Det Norske Veritas 2014, as cited by Parviainen et al., 2017).

1.2. Problem Statement

As a result of major ESG short comings within the maritime industry, there has been suggestions proposing the development of a new governance system that will be a paradigm shift towards multi-level/polycentric governance (Roe, 2008, 2013 as cited by Parviainen et al., 2017). Self-regulation and Corporate Social Responsibility (CSR) has been discussed by several authors within the maritime industry, proposing that CSR initiatives could be voluntary to provide the industries and companies with ways to account for environmental and social issues (Aguilera et al. 2007; Aguinis and Glavas 2012; Dahlsrud 2008; McWilliams et al. 2006, as cited by Parviainen et al., 2017). This realisation has given premise to the problem we explore in this study, that “compared to land-based industries, the role of CSR practices has remained limited in the shipping industry”( Det Norske Veritas 2014; Lister et al. 2015; Yliskylä-Peuralahti and Gritsenko 2014, as cited by Parviainen et al., 2017).
Energy projects are fundamental investments that better shape energy companies that in turn strengthen the economy of countries. However, the way we consume energy needs to be more sustainable, by creating a new energy system it is fundamental for a future energy concept to hinge on: the rational use and conservation of resources, the limitation of consumption (Andreev & Kulakov, 2020). Energy of the future requires the understanding of people to be synonymous with responsible resource consumption and this requires sustainability to be a fundamental corner stone and requires participation both on a national and international level (Andreev and Kulakov., 2020).

Energy companies are already taking the heed by incorporating fundamental environmental, social and governance aspects into consideration. Energy management has become even more important with elements like energy conservation and efficiency being incorporated in the sustainability concept. Following the ESG-indicators trend, companies can meet the high requirements in the fields of ecology, social development and corporate standards, despite a number of differences in emission assessment methodologies (Andreev and Kulakov., 2020).

Corporations are continuously striving to meet their sustainable development targets which are often defined by ESG factors. ESG is becoming key in decision making when consideration is being made with regards to energy projects, this has become the case as a result of stringent regulations and disclosure standards GSIA (Global Sustainable Investment Alliance, 2018).

“The Global Impact Investing Network ([GIIN], 2019) estimates that the sector has grown from $4.3 billion in 2011 to $502 billion and, at the upper end of the market, impact investing is estimated to reach as much as $1 trillion in value by 2020” (Bowes, as cited by De Amicis, 2020). In light of this new trend, a growing body of research emerged to define the theory and practice of social finance.

Colla (et al., 2020) suggests that when choosing among potential energy projects, the decision makers need to consider KPIs (Key Performance Indicators) and also incorporate ESG factors. It is however a research segment that still needs more exploring where KPIs need to be assessed and how they affect the decision making process.
It is therefore important to make KPIs mandatory in energy projects as this will better scope the progression of a project along ESG lines and along sustainability framework. While there remains limited research and literature on ESG initiatives within the shipping industry, there is a great opportunity on exploring the initiation and adoption of such practices. The only predominant framework used in the shipping industry in the CSR index which is slightly related to ESG.

1.3. Research Aims and Objectives

The role of industry alliances within the maritime industry has been studied and examined, and the role of stakeholders especially from the local community and their role in influencing and pressuring change has been lacking in research (Lai et al. 2011; Poulsen et al., 2016, as cited by Parviainen et al., 2017). Tight collaboration and working in unsent within the shipping industry is of paramount importance in influencing maritime governance (Roe 2013; UNCTAD 2015; Yliskylä-Feuralahti and Gritsenko 2014, as cited by Parviainen et al., 2017).

The aim of the study is to explore sustainability projects’ (waste-to-energy) impact on society through ESG-indicators with a focus on social-indicators. To emphasise more the merits of the study, a case study in Copenhagen-Malmö Port (CMP) is used as an example.

For the study to achieve its aim, the following objectives have to be realised;

- Understanding the drivers of investing for impact and therefore, analyse how sustainability investments in energy projects shape society, environment and governance. Determining how ESG-indicators can be applied and how they impact (negative and positive) the social dimension of the community surrounding the port. (aided by a case study)

- How ESG-indicators add value to projects (waste-to-energy) at port side. (aided by a case study)
• Identify the barriers that prevent the application of ESG-indicators and recommend how to overcome these barriers. Explore how KPIs can be applied within the ESG-indicator framework.

1.4. Research Questions

This study aims to answer the following research questions;

1. The study will strive to analyse/understand/determine the three ESG-indicators within sustainability projects (waste-to-energy) and how they are applied and consequently impact the social dimension of community surrounding the port.

2. How ESG-indicators add value to sustainability projects.

3. Barriers that hinder the application of ESG-indicators and how can they be overcome when investing in sustainability project.

1.5. Significance and Motivation of the Study

The study has the following significance;

• The study is significant as it will explore what ESG-indicators actually are and it will reveal how ESG-indicators are applied and subsequently how they impact the vast social dimension of communities that surround the port.

• The study will look into sustainability projects (waste-to-energy) and determine how they affect ESG-indicators and how this in turn add value.

• The significance of the study is to also identify what barriers exist in the application of ESG-indicators and how these barriers can be overcome.

• The study becomes even more significant as it seeks to unravel the underlying hinges which prevent the implementation of ESG-indicators and the repercussion this has. This becomes an even more plausible motivation as the findings can advise the maritime industry on how to successfully address the confusion surrounding ESG-indicator implementation within the industry.
1.6. Research Methodology

The nature of this research is qualitative. There will be a fundamental directive drawn from case study to ascertain the overarching discourse surrounding ESG-indicators within the maritime industry. We seek to draw from literature and case study a snapshot view of ESG impacts, application, added value, barriers and implementation within the maritime industry. With a specific focus on sustainable energy projects (waste-to-energy) at port side, the study will use a case study methodology to particularly narrow down the focus on social implications on communities and stakeholders surrounding the port. With the methodology employed, the findings of the case study will be compared with the objectives of the research to try and paint a holistic picture of ESG indicator application and impact etc. on the vast social dimension of the community surrounding the port.

From the study carried out by Karimpour et al., 2019, where the study explored “Circular economy modelling to accelerate the transition of ports into self-sustainable ports: a case study in Copenhagen-Malmö Port (CMP).” An example of the study is used so as to better understand how waste-to-energy sustainability projects impact the ESG-indicators with a specific focus on social-indicators. The study by Karimpour et al., 2019 and the methodology employed through case study, was a blueprint in determining, how the community that surrounds the port is impacted through these sustainability projects at port.

Research Strategy: Case Study

A case study research method is used so as to examine the phenomenon within its context. This is achieved by selecting a case and studying it in its own context and/or comparing its relationship with the context or other cases under the same context.

Step 1: Making sure that the case study methodology/strategy fits the research questions. Case study can be used within the exploratory research to give the initial insides of the phenomenon that is needed within the exploratory research. It can also be used in the descriptive research nature, because a multiple case study can be selected and examine the relationships between the variables and finally, the case study
works very well with the explanatory research because it allows to explains why the phenomenon is happening, allowing to go deep with a single holistic single case study. Step 2: Selecting a Case

- Single Case Study – Niche market and its characteristics and companies which are within this market. With a single case study, only one of these companies would be selected as a case.
- Multiple Case Study – Looks at multiple companies which will examine the niche markets and their characteristics.

Selecting which company to use as a case is always complicated to justify as this is within a sample. Findings from the sample need to be generalizable to the whole phenomena, selecting a specific case need to have merit as to why it was selected from all others that could have been selected as a representative. Therefore findings in a single case study need to be relatable to other companies within the industry or context of the research that is being carried out.

In multiple case study for example it is even more tricky to select which companies to choose, when comparing which companies are successful within the field and what would make them not successful. It is complex to justify how and why a selected particular case study was selected over another.

Step 3: Selecting a Depth

In depth depends on either a holistic (studying the case as a whole entity) case study or an embedded (some parts) case study. Therefore, this study looks at a single case study with an embedded (waste-to-energy) depth focus on social indicators.

1.7. Limitations

The primary limitations of the study were as follow:

- There is not extensive literature on the subject. The ESG subject is broadly covered under CSR in but lacks extensive concise coverage within the maritime industry.
- Lack of data that could be interpreted/measure as ESG dimensions cannot numerically be measured, hence a case study approach was opted for.
CHAPTER 2 - Literature Review

2.1. Introduction

ESG indicators as a fundamental framework within the shipping industry is poorly understood and the literature to back it lacks comprehensive analysis. The narrative that rather substitutes or is interchangeably used within the shipping industry for ESG indicators are CSR practices. Understanding ESG indicators whether it be in the form of CSR practices is important, so as to understand which role players are crucial in the application and implementation of these social responsible practices. It is an ever occurring mention that alliances formation (Lai et al. 2011; Poulsen et al. 2016) is fundamental in shipping industry and other stakeholders that might be outside the industry are also of paramount importance. This paper thus seeks to explore the fundamental dimensions of ESG-indicators and their application and implementation within the shipping industry. Furthermore, exploring the impact ESG-indicators have on the social dimension of the community that surrounds the port. What is the value-add ESG-indicators bring to the shipping industry and if any, which barriers exist that hinder ESG-indicator application and implementation. The study delves at CSR practices and how they help drive the paradigm shift of ESG-indicators within the shipping industry. With the aid of a case study, the paper explores how sustainability projects (waste-to-energy) at port impact the vast society that surrounds the port through ESG-indicators with a specific focus on social indicators. Specific focus will be made on the Copenhagen-Malmö Port.

2.2. Corporate Social Responsibility

While land based industries continue embracing and implementing corporate social responsible initiatives (Aguilera et al. 2007; Aguinis and Glavas 2012; Dahlsrud 2008; McWilliams et al. 2006, as cited by Parviainen et al., 2017). The shipping industry have come under severe fire for lacking in addressing socially responsible practices. This is due to vague understanding of CSR practices held, there seem to exist no clear-
cut discourse of the application and implementation of CSR practices (McWilliams et al. 2006). The perspective surrounding CSR seem to be forever changing and dependent on the industry the practices are being applied and implemented in. When attempting to put a definition to CSR, the premise of the definition is “situations where corporations engage in voluntary actions going “beyond compliance” or regulations by actively incorporating social and environmental concerns in their business operations” (McWilliams et al. 2006). CSR practices have garnered incorporation of drivers that look at social issues, environmental issues and governance association formation and collaboration (Ranängen & Zobel 2014). When taking land-based industries as a benchmark for CSR practices, there is a realisation that these industries unlike the shipping industry has an extensive environmental and social impact, like the clothing and retail industries, extractive industries (mining etc.) (Parviainen et al., 2017). Huge corporations in land-based industries have taken strides in adopting legislations and codes that address social, environmental and governance issues, which have been predominantly witnessed in the oil and gas industry (Dauvergne and Lister 2013).

2.3. Corporate Social Responsibility in the Shipping Industry

With 70% of earth covered by the ocean and 99% of all living life habited within it, it is with no doubt that the ocean industry is a driving force in the world’s economy and shipping industry. CSR practices and its adoption and implementation is garnering great interest for adoption within the shipping industry, with the anticipation of securing practices which are environmentally friendly and also are safer within the industry (Acciaro 2012; Kunnaala et al. 2013; Poulsen et al. 2016; Yliskylä-Peralahti et al. 2015). With the rise of hefty regulations and compliance, it has become an ever rising trend that norms within the industry targeting the environment and societal issues take a trajectory that motivates role players to take a stance of playing by the book. The motivation for role players within the industry has set a premise for shipping companies to strive and attain effectiveness aimed by environmental, social and governance approaches as a key for viable “sustainable initiatives” (Acciaro 2012).
When dealing with issues of CSR in the shipping industry it is important to note that, “a socially responsible shipping company refers to a company that actively incorporates social and environmental concerns in its business operations and that, in addition to the financial stakeholders, such as ship owners, shareholders, ports, customers, financers, insurers, and classification societies, also pays attention to the interests of the non-financial stakeholders, such as different environmental and societal stakeholder demands"(Parviainen et al., 2017).

When addressing issues of sustainability within the industry, it is paramount to look at a holistic point of view going along the industry’s value chain. The study takes a deep dive into critical ESG issues from a global perspective within the shipping industry and port.

E – (Environmental), The main concerns within the industry from an environmental stand point are emissions and energy reduction. Greenhouse gas regulations have set a premise that take into consideration the climate. Air pollution has emerged as an ever occurring environmental concern within the shipping industry which include NOx (Nitrogen Oxides), SOx (Sulphur Oxides) and PM (Particulate Matter) in ports and harbour areas. Health and safety has also emerged as a concerning matter where ship recycling in some regions of the world take place on the beach. This has seen the rise of health and safety issues of workers including the degradation of environmental protection caused by accidents which were poorly handled which could have been mitigated. Natural habitats and biodiversity degradation has become a huge environmental concern, with invasive species being destroyed through ballast water. This has saw the emergence of marine life being destroyed through anti-fouling chemicals and mismanaged on-board waste management. With these environmental concerns, climate risk has dominated concerns of fleets being prepared for harsh and unpredictable climate conditions which has led to much stringent emissions requirements.

S – (Social), With approximately six deaths per 100 million work hours on board ships (excluding fishing) every year, health and safety concerns are significantly on the rise.
This figure is according to the OECD (Organisation for Economic Co-operation and Development) ten times their average for all industries making the stats quite alarming. Diversity and equal opportunity in the shipping industry is still an issue, with males dominating leading to an ever daunting female representation and non-western crew lack of advancement to captaincy. Labour rights continue being tarnished and ever presence of third party agents to fill in temporary employment. This prevalence of short-term contracts that leads to a weak workers rights and a work force that is unable to organise. The industry has come under the spot light for cases of forced labour which was recently been news, targeting migrants. Piracy has also emerged as a social concern within the industry even-though cases has reduced, this has calls for a boost in security practices.

G – (Governance), Issues of bribery and facilitation payments is still a challenge for the shipping industry as the industry is still vulnerable to corruption, this is due to the relaxed nature of the industry on relying on agents and brokers within the industry. With many ways of evading tax, there is still a controversial issue alongside tax liabilities because of tactics that are used within the industry to hide money and tax in off shore tax havens. Legislature and administration which is a political landscape is still a loosely adjusted concept which leads to controversy over the industry’s supranational nature allowing it to often escape enforcement of national regulations and international agreements.

2.4. Application and Implementation of ESG-indicators

Investors have become ever more concerned with investing in socially responsible investments and inherently believe in the value added by environmental, social and governance issues as a criteria for investment (Global Investor, 2013). As this concept is becoming a fundamental criteria across industries, it is also gaining strides in its application and implementation within the shipping industry. Decision makers across industries and businesses have made ESG-indicators a fundamental barometer of identifying which project or investment they can trust and understand to be transparent along the investment value-chain. Transparency and disclosure of environmental,
social and governance information have become mandatory in boardrooms across industry and this has made the understanding of the application and implementation of ESG-indicators even more crucial.

When breaking ESG-indicators into their prime functions, environmental indicators deal with issues pertaining to the quality and functioning of the natural environment (Investopedia, 2017). Identifying and evaluating which environmental risks might affect the company, this helps the company manage those potential environmental risks. The social indicators are primarily targeting the relationships the business has with the vast society/community. The correlation between company ethics and values is measured by how relatable the brand is with rights, well-being and interests of people in the community (Dodge & Cox, 2017). Governance indicators deal with the application and implementation of established policies by the members of the board of the particular company. Governance is said to be an overarching framework which deals with the governance of companies and its investees, board composition, business ethics, bribery and corruption, shareholder rights, internal control and risk management etc. Governance indicators are very crucial as they are highly important for investors when dealing with transparent accounting methods so as to account during reporting for interested stakeholders and to avoid conflict of interest amongst board members (KWAP, 2017). With the governance indicators in place investors are now resting easy knowing that there are mechanisms put in place to combat illegal behaviour and that the use of political contributions to obtain favourable treatment will be combated.

The application and implementation of ESG-indicators is rather a top-bottom framework which predominantly concerns the board as leadership and foresight of an organisation. Leadership of the board should make provision for management to be cohesive in monitoring ESG performance (Struggles, 2017). This realisation is of paramount importance as ESG-indicators are becoming a competitive advantage for companies that comply with these ESG-indicator framework discourse. ESG-indicators are applied and implemented in foreseeing threats and opportunities and this serves as a strategy for the board to manage risks embedded in ESG issues. For the
proper application and implementation of ESG-indicators, board members must be competent and have expertise in aligning the interests of the organisation, management and stakeholders. The bottom line will always be the interest of the shareholders and this have to be anticipated by the board and clearly articulated to management to apply and implement.

2.5. ESG-indicators Impact and their Value Add

Businesses have moved tremendously from only realising the bottom line. The concept of ESG-indicators within the investment community have pushed investors to not only do business for profit but to do business for profit with impact. This realisation has transformed industries to integrate reporting to both sustainability and financial statements. According to Tarmuji, Maelah, & Tarmuji (2016), responsible management of ESG-indicators creates an ethos which harnesses the business spirit and builds a conducive environment for company integrity within the vast society and garners trust from key stakeholders. Firm performance is said to increase when they incorporate a sense of social responsibility, environmental footprint, and they harness their corporate governance. Operational performance, efficiency, and an organisation’s value tends to increase when ESG performance is strong (Harjoto, Laksmana, & Lee, 2015). Superior ESG disclosure affects a firm’s value because there exist hidden drivers which influence the perceived value of a firm based on its ESG disclosure, there is a positive association between ESG disclosure and a firm’s value (Li, Gong, Zhang, & Koh, 2017). With the improvement of transparency and accountability, it enhances stakeholder trust and this in turn boosts the value add of the organisation.

A study done by Garcia, Mendes-Da-Silva, & Orsato, (2017) looked at the correlation between a firm’s financial profile which associated itself with progressive ESG performance. The study looked at “sensitive” industries which predominantly damage the social and environmental fiber of the community. Findings of the study showed that corporate responsibility had legitimacy and the companies that operated in
sensitive industries which disclosed their ESG performance protected their reputation and did much more to enhance their ESG visibility as a value add for impact.

Integrating ESG disclosure for sustainable development has become an even more favourable strategy to entice investors & stakeholders, as ESG information has become benchmark for sustainability investing and this is what most investors look for before making an investment decision (Wong, 2017). Making ESG issues a cornerstone for addressing progressive and agile business strategy (Chitra, Sriyani and Kumudini, 2017).

Understanding the impact of ESG disclosure is fundamental when searching for the value add ESG-indicators have on sustainability projects/investments. ESG disclosure has accelerated businesses beyond their short-term myopic view which used to focus on profitability only and this has yielded huge positive impact, financial and non-financial (Baron, 2014). Even though ESG disclosure might have some negative impacts to it, like being expensive of an investment at the initial stages, however, the positive impacts of implementing ESG indicators outweigh the negative impacts in the long run and this can realise an organisation to have more potential investors and in this way increase the possibility of lucrative bottom line.

With the implementation of ESG disclosure, investments have a responsibility and sustainability ring to it and this comes with ethically defined parameters. Businesses started to support this initiative of preserving the environment, protecting human rights, and executive compensation etc. This realisation has led to the increase of confidence levels amongst stakeholders, investors and customers. Some businesses use environmental reporting to front their business profile so as to influence investor perception, this leads to the realisation of investors being more inclined in investing their money in organisations with better corporate governance (Buniamin & Ahmad, 2015). The impact of ESG disclosure have realised better policies which inform investors of where their investments will have a lower risk of being misled.

Internal and external stakeholders of organisations are ever more conscious of the environmental performance of organisations, this is due to the impact pollution have played in degrading our living environment. This important as key stakeholders like
local communities are affected by pollution, environmental activist groups and government regulators etc. (Jasch, 2006). Organizations have the imperative to use best management practices to aid in the decrease of air emissions such as greenhouse gasses, ozone depleting substances, carbon dioxide, lowering the amount of waste, hazardous waste, water discharges, spills and its impact on biodiversity.

2.6. ESG-indicators’ Barriers for Application and Implementation

Just like any other concept, ESG-indicators have its negative impacts and barriers to its application and implementation. ESG disclosure requires huge amounts of investment in order to realise its implementation, more especially during the early stages (Zeng S. X. et al., 2011). This realisation might be seen as a barrier because management needs to invest extra resources, including funds, technology and human resources which might affect the resource allocation within the organisation. When organisations lack the expertise it hinders with the legitimacy in implementation of ESG disclosure and its true potential.

When investing in ESG initiatives, organisations have to invest in their human capital by sending their staff to ESG disclosure training and capacity building programmes. This comes as a major cost for organisations as hiring experts in this field is expensive. Most businesses are not financially equipped to further invest in the implementation of ESG-disclosure. Amongst other reasons, this was said to be the reason why some organisations are undecided about initiating the implementation of ESG initiatives. ESG initiatives might be expensive in the beginning, however, the investment in ESG disclosure is a long-term gain and might attract even more potential investors.

ESG-indicators have some adverse risks attached to it and might affect financial returns but this is rarely incorporated into venture choice as this might reduce confidence of investing. Another barrier in ESG investing is the lack of member demand on an insurance policy against the risks attached to ESG investments, this is because there are significant impacts that might affect the financial returns due to ESG-risks (De Zwaan, Brimble, & Stewart, 2015).
The lack of objectivity, uniformity and transparency is the leading reason why ESG methods are criticised and loop wholes raising questions of accuracy about ESG assessments. With ESG factors being subjective and lacking transparency and uniformity, ESG rating has decreased due to the subjectivity element attached to the discourse.

How the quality of ESG reports are being assessed is a fundamental concern, with many international companies that are in this line of business being; the Global Reporting Initiative (GRI), United Nations Conference on Trade and Development (UNCTAD), The European Federation of Financial Analysts Societies (EFFAS) etc. It was found that the quality of ESG reporting in some European companies, GRI has given significant outcome to adjust ESG reporting and this has lowered the confidence levels in reporting high quality information that is relevant, comparable, complete and accessible to all relevant stakeholders (De la Cuesta & Valor, 2013).

With all the progressiveness ESG indicators add to the value of organisations, there are however several limitations to the use and effectiveness of CSR initiatives. It has been found that some CSR initiatives are a form of green-washing (Lyon and Montgomery, 2015) and there exist questions of the extent to which CSR initiatives have been effective in changing industry norms (Aguilera et al. 2007; McWilliams et al. 2006; Ranängen and Zobel 2014).

“Even though different forms of international legislation already exist in terms of, for example, increasing the safety of shipping crew, such as the IMO SOLAS (International Convention for the Safety of Life at Sea) Convention, there is a lack of clear enforcement of these practices” (Det Norske Veritas, 2014).

CHAPTER 3 – ESG’s Social Dimension

3.1. Introduction

The shipping industry consist of many stakeholders and places much emphasis on the importance of stakeholder contribution to the shipping industry. It is therefore crucial to understand one of the most important dimension of ESG practices which is the
social dimension and how shipping in particular affects the social dichotomy between port and city interface.

In order to fully have an understanding and appreciate the role stakeholders play within the shipping industry, it is paramount to understand the role stakeholders play in the different dimensions of shipping and port and how they affect the social dimension of ESG-indicators. There is little understanding on how influence and power is acquired within the shipping industry, all the vague questions and answers surrounding the approach on gaining influence in the industry is rooted on stakeholder engagement (Frooman 1999). Stakeholders address different strategies which may directly or indirectly pressure industry and organisations into implementing ESG practices. There exist two kinds of stakeholders, the one is the primary stakeholder which is addressing formal relations of an organisation like, customers, government bodies (could be both primary or secondary), shareholders, employees, suppliers etc. The secondary stakeholder is not engaged in formal relations with the organisation like, NGOs, citizens of the local community (society) and the media (Clarkson, 995). Secondary stakeholders have been neglected in the past by the industry but have now become more vocal and significant within the shipping industry in addressing and raising social issues and environmental impactful issues as well within the shipping business (Sharma and Henriques, 2005).

There exist a favouritism relationship between the shipping industry and their stakeholders, this relationship is steered by the influence stakeholders use as a strategy and this is driven by the resource relationship stakeholders have with an organisation. This rather manipulative relationship may be direct or indirect, depending on whether the stakeholders are dependent or independent of the organisation, this is also dependent on whether or not the organisation is dependent or independent of its stakeholders, this affects the social dimension of ESG practices as this scenario seems to be driven by power and influence (politics) (Frooman 1999). This realisation brings us to an understanding of how ESG indicators are being manipulated by both industry and stakeholders, for instance, the high interdependence is a strategic formation of industry alliances and international networks between industry and their competitors.
in addressing environmental issues (Buysse and Verbeke, 2003). There is a tendency for industry players not to improve industry practices until the industry makes a change collectively (Aguilera et al. 2007).

When trying to understand the social responsible practices it is important to include the social benefit in the implementation of these practices and this is aided by the involvement of different stakeholders to facilitate the transition of social practices into implementation (Dahlsrud, 2008).

There has been a call for multi-stakeholder (different key players within the industry value chain) approach into the shipping industry and the incorporation of effective data collection, sharing, and dissemination in order to enhance sustainable maritime transport (UNCTAD 2015).

NGOs continue to play an important role in conscientising the shipping industry in addressing social issues, this has been attained by NGOs through indirect withholding strategies and working in alliances with other strategic stakeholders in changing industry practices. It can therefore be attributed to that, different stakeholder pressures on the industry results in the push and implementation of the social dimension of ESG-indicators, making it a fundamental relationship between ESG and stakeholders.

NGOs have attained great reputation and legitimacy within the industry and regulation bodies, such as the IMO or the European Commission has seconded this move in the industry. For example, the Clean Ship Coalition (CSC) has organised a global coalition of NGOs that would focus on variety of environmental and societal issues in shipping, including the protection of marine and atmospheric environment, the safety of shipping operations, sustainable development, and social and economic justice, as well as human health (Parviainen et al., 2017). Marine dumping has come under fire, this is a result of active lobbying by NGOs, resulting in the European Commission’s Communication on the integration of maritime policy for the European Union.

Calls for sustainable shipping within the industry has led to campaigns steered by the World Wide Fund for Nature and this has resulted in the push for an end to flags of non-compliance (WWF, 2015). Social movements that are steered by NGO stakeholders are making an enormous stride and change within the shipping industry.
This is even more the reason why the social dimension of ESG indicators is ever so crucial in redirecting the shipping industry to take responsibility while undertaking their business.

With the ban of all sewage discharge from passenger ships, and the dawn of the Baltic Sea special area for sewage discharge under MARPOL Convention is implemented, this is a demonstration that environmental and social dimensions are taken seriously in the shipping industry. There is however a low percentage that is getting with the program, with only 30% of international cruise ships in the Baltic Sea are utilising port facilities in emptying sewage, majority are dumping their sewage directly into sea, these are the kinds of crisis that call for ESG practices within the shipping industry. With social issues and labour rights looming in the industry, NGOs and relevant stakeholders are coming together to form shipbreaking platforms to combat environmental, human rights, and labour rights in combating dangerous pollution and unsafe working conditions in shipbreaking (NGO Shipbreaking Platform 2016a).

Ship recycling licenses have been endorsed by NGOs, the motion was subsequently seconded by the European Commission Report in an initiative of promoting sustainable shipping recycling. The directive came with an intention for all EU ports to mandate the license, this is regardless of the flag state a particular ship flies. With this directive, it is clear that ports and cities that surround these ports are becoming a fundamental concern within the shipping industry and stakeholders are pushing the social dimension of the ESG discourse within the industry.

With the implementation of ship recycling licenses, it is a strategic way of enforcing the polluters pay principle (NGO Shipbreaking Platform 2016b). The social dimension of ESG indicators are becoming a huge focus point within the shipping industry, with the human element and seafarer’s rights being recognized as part of the shipping industry’s safety element. Seafarers and the labour rights within the shipping industry is becoming a focal point and maritime transport workers are being endorsed by organisations such as the European Transport Workers Federation (ETF).
The ETF has pressed for the adoption of a wider regulatory framework in which the competitiveness of the shipping industry would be based on the highest possible standards of safety in both environmental and social terms (European Transport Workers’ Federation 2015). The initiative addresses the economic, social, and environmental challenges facing the industry, and is working towards a sustainable shipping industry by 2040 and contributes to the UN Sustainable Development Goals (Forum for the Future 2017). There remains a huge gap for future research which has growing importance of voluntary stakeholder-driven measures in promoting environmental and social responsibility in the shipping industry.

Chapter 4 – Case Study

4.1. Copenhagen-Malmö Port

In this chapter, waste-to-energy is explored as a sustainability project at the Copenhagen-Malmö Port (CMP). The case study services to look into the impact sustainability project (waste-to-energy) have on the society/community where the CMP is located, through ESG-indicators with a focus on the societal-indicators.

Figure 1: Position (geopolitics) of Copenhagen-Malmö Port (Source: CMP annual report, 2020 & 2016)
CMP is a port located in the Øresund region as indicated in figure 1 and is hailed as one of Scandinavia’s largest port operators, and a full service port. CMP is therefore strategically and geopolitically located as the gateway to the Baltics and the Baltic Sea. The doorway to Denmark and Sweden. Operational activities handled at CMP are containers, general cargo, railway, import and export of new cars, liquid and dry bulk. Roll-on/roll-off traffic is also offered by CMP starting from Malmö with ferries, that via Travemünde, connect CMP’s logistic flows to the European continent. There exist a scheduled ferry service with freight and passenger services which operates daily departing from Copenhagen to Oslo. In the Øresund region, terminals in Copenhagen and Malmö act as transport hubs which are also utilised for freight flows in to the Baltic Sea. One of CMP’s big operational offerings is the cruise operations which includes three destinations – Copenhagen, which is northern Europe’s leading cruise destination, as well as Malmö and Visby. CMP also handles consumer goods like, oil products, chemicals and cereals to scrap metal, building materials, wood pellets, salt, sugar and industrial inputs. The Malmö Industrial Park has been earmarked as an opportunity to foster a hub for growth, this is one of the unique traits that Malmö have, access to large areas of undeveloped land directly adjacent to the port which is something unique for a port city. Through this opportunity there has emerged a rekindling of the work collaboration between CMP and Malmö stad with Malmö Industrial Park, the common interest is in further developing operations, creating new jobs and strengthening Malmö’s role – not only as a logistics hub, but as a city that companies are seriously looking at and consider, and then choose to expand in. CMP and Malmö stad are working in cooperation to revitalise industrial symbiosis, these efforts are to foster companies benefiting from each other’s resources and to joint use common services. This is particularly targeted at areas such as energy, logistics and waste management.

4.2. Waste Management in Copenhagen-Malmö Port

Port operations and shipping brings a mammoth responsibility for the environment. CMP has made sustainability the core of their operational agenda and has made it an
objective to contribute to both nationally and internationally to achieve the UN’s SDG goals. CMP is striving to find the best solutions in the long term, both from a climate, environmental and a financial perspective.

According to Karimpour et al.,(2019), waste management at the CMP is regulated by international and EU directives on port reception facilities which includes waste post-treatment that is subjected to regulations of Sweden and Denmark. The port authority in Malmö does not receive organic waste, this is in accordance with the Swedish regulations with regards to organic waste organisation out of the country. Ships might leave small amounts of mixed waste as combustible Karimpour et al.,(2019). In Copenhagen on the other hand, combustible waste out of organic waste (the received organic wastes including both food waste and combustible materials) from ships is incinerated in power plants out of the port area.

Figure 2: Circular economy model(Karimpour et al.,(2019) and Circular economy system diagram (Ellen MacArthur Foundation,2013)

In a study carried out by Karimpour et al.,(2019) where they explored the “Circular economy approach to facilitate the transition of the port cities into self-sustainable energy ports – a case study in Copenhagen – Malmö Port (CMP)”. Circular economy is defined as “An industrial system that is restorative or regenerative by intention and design. It replaces the end-of-life concept with restoration, shifts towards the use of renewable energy, eliminates the use of toxic chemicals, which impair reuse, and aims
for the elimination of waste through the superior design of materials, products, systems, and, within this business models” (Ellen MacArthur Foundation, 2013,p.7 as cited in Karimpour et al.,(2019).

Karimpour et al.,(2019) proposed a circular economy model in their study, where the model (Figure 2) is illustrated. In the study it has been suggested that, if ports were to systemically incorporate the circular economy model, then they would be sustainable and there would be a boost in the competitiveness of the port while the coastal environmental protection would improve as well based on Karimpour et al.,(2019)’s model. In turn, clean electricity is then produced by the port-owned biogas plant which is generated from the ship waste and this waste-to-energy dichotomy contributes to port energy security.

4.3. How Waste is Treated in Copenhagen-Malmö Port (Positives vs Negatives)
Sewage in Malmö is said to be treated differently, ferries are connected to the sewage pipeline to the Copenhagen municipal sewage treatment plant (MSTP) (Karimpour et al.,2019).

![Figure 3: Sewage pipeline connection to Copenhagen municipality (Karimpour et al.,2019)](image)

There are two (figure 3) ways in which cruise ships discharge sewage at the port, one: through pumping to tank trucks (Langelinie) and two: pumping through pipelines (Oceankaj) then to the MSTP.
With regulations upkeep, it is the new amendment by the IMO on resolution MEPC.200(62) which put strict regulation on sewage nitrogen and phosphorus removal standard (IMO, 2017 as cited by Karimpour et al., 2019).

With an increase growth in passenger ships, the future significant demand for sewage reception will be significantly higher this is as a result of CMP’s status of being the main cruise destination in the EU. This might be a negative impact for CMP to have to manage all that waste. The process temperature helps sterilization of the fertilizer (IGU, 2015). However, standards for organic materials that are used to enrich agricultural land is regarded in the European Directive 86/278 and regularly updated. The purpose is regulating the application of waste products as fertilisers to prevent any negative effects on soil, vegetation, animal, and human health.

According to the CMP waste management plan of 2020 their preamble is as follows, “The Danish Act on the Protection of the Marine Environment Chapter 1 Section 1 (Consolidated Act no. 1033 of 4/9/2017 In force) states that: “‘the Act shall contribute to the protection of nature and the environment, so that society develops on a sustainable basis with respect for the conditions of human life and the preservation of flora and fauna”.

In accordance with the Danish Act on the Protection of the Marine Environment Chapter 6 Section 20, the discharge of sewage (drainage or other waste from toilets, hospital rooms and spaces containing live animals) may only take place in Danish territorial waters and in the Baltic Sea area on condition that:

1) The discharge is performed using an approved system for treatment of sewage and the wastewater discharged from the system produces no visible traces in the sea,
2) The wastewater is comminuted and disinfected in an approved system and the discharge takes place at a distance of more than 4 nautical miles from the nearest land or
3) Discharge takes place at a distance of more than 12 nautical miles from the nearest land. Furthermore, if the discharge is performed from a tank for the collection and storage of sewage, the ship or platform’s speed shall be at least 4 knots, and the discharge shall be done at a moderate rate. In accordance with SO no. 1396 Chapter 2
Section 7, the port operator shall ensure that reception facilities for sewage are established.

Port reception facility Mobile port reception facility, from which the Sewage is delivered to the municipal treatment plant, Renseanlæg Lynetten. For large quantities, it is possible to deploy three tankers of 30 m³ per hour, depending on the ship’s pumping capacity and the time available. Collection, transport and disposal are handled by an approved waste operator; see Section 12. At Oceankaj discharge direct to CMP’s reception facility on the quay, and delivered from here on to the municipal treatment plant.

Special provisions Before delivery to CMP’s reception facility, Annex 4 must be signed by the ship. Reception under ”no special fee” is on condition that:

• The ship delivers shipside at a pumping capacity of at least 50 m³ per hour.
• Tankers have unimpeded access to and from the offloading point without delay.
• The ship is equipped with a standard flange, as shown in the table on.

4.4. Waste-to-Energy: Biogas power plant in Copenhagen-Malmö Port

CMP have actively been the custodian of sustainability activities, based on the UN Agenda 2030. Specific sustainability issues, such as the environmental and social impact of cruise operations have been of priority to CMP. With sustainability being the centre focus in most industries, it is therefore with no surprise that renewables and recycling be a progressive avenue at port side. Numerous methods and innovations have been explored in converting waste-to-energy (Energen biogas, 2017). According to Karimpour et al.,2019, biogas can be formed through conversion by various techniques, such decomposition or gasification of food-waste, sewage slurry, manure, and by-products from forestry. One of the methods that give a high added value to the waste in the biological anaerobic digestion process (International Gas Union, 2015).

According to IGU, 2015 as cited by Karimpour et al.,2019, the processes of biogas formation is a series of biological processes where micro-organisms break down the organic biodegradable materials, this is without the presence of oxygen. With the
lowest impact on the environment, biogas is a high-energy methane gas which can be combusted to generate clean electricity (waste-to-energy).

The circular proposal (figure 4) of waste-to-energy (bio-energy) is linked to sustainable development because sustainability includes three different dimensions: environment, economy and society and port supply chain management and/or operations is no exception in encompassing these dimensions (Alamoush et al., 2021). Therefore for CMP to invest in circular economy investments like waste-to-energy is a directive that will realise competitiveness and environmental friendliness. The process of generating energy from bio-processes is a progressive way in which CMP can contribute to the vast community in which it is located, for the community can benefit immensely from this sustainable project and in turn address socio-economic factors in the CMP region.

In order to assess the viability of the CMP’s bio-gas power plant, transparent and reliable methods are used. In the study carried out by Karimpour et al., 2019, they used SWOT Analysis to gauge the viability and business case of a biogas plant in Copenhagen-Malmö Port. When contemplating investments at port, it is fundamental that management understand the cost implications of such investments and to also appreciate the opportunities within the investment landscape. According to Vasiliki,
Vasiliki, Nikolaos, & Georgios, 2012 as cited in Karimpour et al., 2019, there are drivers and barriers which fundamentally affect decision making.

Karimpour et al., 2019 found that, land is a fundamental factor when seeking to install a power plant. Followed by social indicators which are important because the power plant will be surrounded by a community that might be affected positively and/or negatively depending on whether or not the power plant is operated without glitches to probable externalities (unfavourable odours from waste management may arise). With society being a fundamental factor (figure 5) and one of the most vocal stakeholders when it comes to the shipping industry, regulations and local municipalities surrounding CMP are key building blocks for the development of a biogas power plant at port. Karimpour et al., 2019 further elaborates that, building a port-owned biogas power plant would be strongly influenced by the city’s spatial planning and since there a lot of stakeholders involved, it is paramount that policy be consulted so as to clearly understand what the port can and cannot do without the consultation of key stakeholders. In investments of this magnitude, it is wise that strategic resource allocation from port side management be explored because there would be a big financial cost implication to CMP when investing in building a port-owned biogas power plant.
In Figure 6, Karimpour et al., 2019 addresses the attributes which might strengthen the proposal of a port-owned biogas power plant and its added value for CMP.

Figure 7 represents the proposed biogas power plant in Karimpour et al., 2019’s study.

4.5. **SDGs Representation in Copenhagen-Malmö Port**

Climate change is making headlines, daily, therefore reducing carbon dioxide emissions from the atmosphere is one of the most important efforts to reverse these
changes. ESG-indicators are therefore a strategic framework in realising the sustainability value to the environment, society and governance of CMP. Before 2020, a major effort was made to carry out CMP’s sustainability activities, this was based on UN Agenda 2030. These efforts constituted of the analyses and representation from the entire organisation. The overview of CMP’s sustainability work has confirmed that the main focus of CMP’s sustainability remains relevant and the business sector has a role to play in reaching the SDGs. CMP’s concept of “sustainability port” has seen them take responsibility for the environment, climate and the society.

Figure 8: CMP’s sustainability directive (CMP Sustainability Report – CMP Annual Report, 2020)

A fundamental strategic directive taken by CMP is to run operations in an environmentally, economically and socially sustainable manner, this preamble aligns with their investment in future generations by being a sustainable port which takes responsibility for the environment and society they are a part of. In this study, light is shed on how investing in sustainability projects like waste-to-energy impacts society through analysing social-indicators of ESG. CMP has made sustainable development goals (SDG 5 – gender equality and SDG 10 – reduced equality) as some of their main directives under the UN SDGs agenda (Figure 8).
With accordance to CMP’s priority focus areas, climate, energy and emissions are amongst those focused on by the port. In figure 9, CMP’s targets are presented with their importance.

**CHAPTER 5 – Case Study and Discussion**

In this section of the study, input from two maritime industry experts (interviewee 1 and interviewee 2) is evaluated. Their high-level feedback stems from academic tenure. The case study will serve as a gauge of social-indicators and how they are impacted by sustainability projects (waste-to-energy) at port, a previous case study (Karimpour et al.,2019) carried out on CMP is used as an example to illustrate the relationship between sustainability projects and social impact. Reference will be made throughout to CMP as a port of reference, this is because literature sourced and recommendations made in the study by Karimpour et al.,2019 served as a relevant premise for the discourse of this study. The two experts will gauge the social-indicators
and give their rating (Very Good, Good, Transitional or Bad). The social-indicators relates to direct and indirect contribution to employment; gender issues, inequality, liveability and human rights of the employees and community in the surrounding port area. The high-level input from the experts will give the case study a directive of how sustainability projects (waste-to-energy) impacts the society through ESG-indicators with a fundamental emphasis on social-indicators.

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<tr>
<th>Social-Indicators</th>
<th>Interviewee 1</th>
<th>Interviewee 2</th>
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<td>Gender Equality</td>
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<td>Job Creation</td>
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Table 1: Social-indicator barometer based on maritime experts high-level input

Table 1 represents the social-indicators where the two maritime experts are to evaluate the high-level social-indicators, the experts are to evaluate these indicators on a linguistics scale ((a) Very Good b) Good c) Transitional d) Bad).

**Gender Equality** – When addressing gender inequality in the shipping industry, the gender equality indicator addresses aspects of an equal and inclusive workplace, a workplace that does not discriminate based on gender more particularly because of the fact that the shipping industry is a male dominated industry. Gender equality should be taken seriously where the workplace must be inclusive and where everyone should feel welcome. Zero tolerance is applied to discrimination, sexual harassment and workplace bullying. There is active support and respect for international human rights and no tolerance for the offence which breaches them or any form of forced or child labour should be part of the Code of Conduct.

**Job Creation** – Job creation is a fundamental indicator when dealing with aspects of economic growth and socio-economic impacts. Since the port plays an important role
in local, regional, national and international infrastructure. Port operations establish conditions for economic growth, the creation of jobs and the development of society for the better. The CMP, though its cruise activities has indirectly generated great value for the local community. This is as more people visit the region, many jobs are created in the surrounding community, while economic growth is given a boost by the cruise passengers enjoying the region’s range of shops, restaurants, tourist attractions, theatres and hotels.

**Reduced Inequality** – Reduced inequality is an indicator that addresses issues of ensuring that employees are treated with respect and fairness and have procedure for tackling workplace bullying. This indicator ensures that, all employees should be confident enough to contact their manager or the HR department if they see or experience any workplace bullying. The right person in the right place for both the individual and the company to develop in the best possible way. Everyone should have the same opportunities for career and skills development, recruitment, promotion and salaries should solely be based on expertise and experience. When it comes to reduced inequality, CMP regularly record the salaries paid to ensure that there is no pay gap between women and men who perform identical or equivalent work.

**Liveability** – Another fundamental indicator is the Liveability indicator which gauges the impact port operation has on the marine environment, community and on the society surrounding the port. With accidental spills into the water which occur from ships in the port, in the handling of solid or liquid ship-generated waste or accidental leaks from machinery or equipment occur. A prosperous, liveable and sustainable society depends on access to good quality water and efficient sanitation systems. Liveability has some sub-indicators like, corruption and compliance, this is as a result of activities carried out at port and are part of operations can spill over into the surrounding community and therefore need to be compliant and safe guarded due to reputation as this might tarnish the whole region’s business prospects.
Liveability therefore is the aspects that look into whether the port and the surrounding society can coexist without the port operational activity impact the community negatively. Therefore, liveability is gauged against: stability, healthcare, culture and environment, education and infrastructure. These aspects are a determining factor for whether or not a community that surrounds the port is “liveable”.

**Human Rights** – Human rights indicators refer to the aspects pertaining to non-discrimination, freedom of association and collective bargaining, child labour, forced and compulsory labour, security practices and indigenous rights as sub-indicators. The compliance of human rights is pertinent within the maritime industry as human trafficking is prevalent. This is to ensure that measures are put in place to prevent or safeguard such prevalent practices. According to the ratings by experts on the social-indicators, it reflects in the findings that both experts think that there is a transitional progress within the industry and portside in addressing social-indicators. This shows that a lot still needs to be done within the industry and at portside to address these social-indicators.

### 5.1. Semi-structured interviews

When researching high-level discourse, it is important to seek directive from experienced experts within the industry to shed light on their understanding. Two experts were interviewed to better understand the social-indicators (factors which are taken into consideration for how certain projects impact the social dimension of a community). The semi-structured interviews were carried out with the aim of elaborating further on the topic, “The impact sustainability project (waste-to-energy) have on the society/community where the CMP port is located, through ESG-indicators with a focus on the societal-indicators.”

To better gauge the perspective of social-indicators, a qualitative semi-structured interview is conducted to gain an in-depth exposure into the researched topic. The inputs from the interviewed experts will guide as a directive to discuss their high-level
view and findings through their experience. The semi-structured interview method allows for both the researcher and the experts to discuss and further explore the merits of the research based on responses and ideas. This gave the experts a platform to express their views on the topic and where they saw the current discourse was headed within the industry. Literature review was also an input into the directive of the posed questions, as this gave a feel of what current researchers were thinking about sustainability research. The chosen experts are set to be a reliable and an informative premise to add validity to the case being made and serve as a comparative mechanism between views shared.

**Academia (Interviewee 1)**
Title: PhD Candidate
Expertise: Port Decarbonization

**Academia (Interviewee 2)**
Title: Academic with PhD
Expertise: Maritime Energy Management

### 5.2. Interview Findings

**Q1. What is your take on sustainability projects within the shipping industry including portside?**

The respondents were asked this first question so as to gauge their overall understanding and viewpoint on sustainability within shipping and including the port. Interviewee 1 – “The shipping industry has numerous projects that contribute to the three dimensions of sustainability, i.e. environment, economy and society. Just by taking the social perspective in shipping, an important example can be the monitoring of the welfare of seafarers in terms of leaves and pays. Other training projects to improve seafarers’ capability in energy efficiency highly contribute to the environmental sustainability. When referring to port projects here, then, there are sustainability projects that either focus on the side of operations and extends to the
surrounding society, or include the ship port interface (shipping). Just recently, many ports failed in commitment towards seafarers right for shore leave, crew exchanges, etc. On the other hand, and issue that affect safety and security of employees (this is so social). A case in appoint is port of Beirut explosion, ship catching fire in the Emirates, among others.”

Interviewee 2 – “Ports are known to be very busy and the port and port authority needs to make income and reach profit generation. The turnaround is usually based on the different fee from moving cargo service from the shipside. Sustainability is also in line with the governance because it depends on the governance of the port they can give more or less flexibility. In developed economies, sustainability has become part of the port strategy. This has become more burden for the port authority because one side needs to make profits and run the business because the port is a complex unit, this is because the port is a node between the ship and the city of the supply chain. The port have on the other side deal with port community stakeholder while on top of that, there is the sustainability concept that is quite wide (three pillar – economic, environment, society). The society pillar can also be quite wide where the NGO, different stevedores and all the other elements that come to play at port side are considered as relevant stakeholders. Therefore, in sustainability, governance is an important side and port authority is also an important aspect because this can create a challenge if they are not aligned. The willingness of the national strategy, which can state if a particular port can support sustainability and regulation can push the port into adopting and include sustainability into their framework and to also measure the progress – this is seen in developed countries. Therefore creating awareness and conscientising key stakeholders into the sustainability concept so it is taken up as regulation to push for adoption and implementation within the industry as a holistic approach.”

The respondents drew a clear picture on their understanding of sustainability in both the shipping industry and at portside. Fundamentally, sustainability is entrenched within seafarers’ rights (human capital), the environment, the economy, society (of which safety is a major issue) and at port side, governance is fundamental, as the leadership directive is what will set the scene for progress and an alignment from the
national government can help speed things up with regulation and adoption of the sustainability concept. Therefore, when applying this understanding to CMP, it is crucial that ESG-indicators become part and parcel of the strategic directive of CMP and this will be led by the leadership and top management of CMP. The more ESG-indicators are taken as a fundamental directive by CMP, the more favour the port receives from the community and backing from important stakeholders. Competitiveness of the port can stem from multiple stakeholders supporting the port and fundamental incentives from government due to the fact that CMP may comply with sustainability regulations set in place by government. Therefore, more than anything, sustainability project uptake in the CMP has an added advantage to operations and the reputation of the port.

Q2. What is your view/understanding about ESG-indicators?

This question was posed with the motive to seek the experts input on the overall ESG-indicators framework, so as to set a premise of exploring these different indicators. This was also to gauge how ESG-indicators are incorporated to port operations.

Interviewee 1 – “Excellent for gauging the environmental, social and corporate governance. All the indicators are interconnected and they overlap somehow, so they cannot be pursued separately.”

Interviewee 2 – “Especially for port, there has been several studies by UNCTAD and the European Commission which try to define some micro area indicator for sustainability, economic indicator and governance indicators but these indicators still remain as being generalised. There is a need to customise these indicators depending on the region they are being applied in. From cargo flow – example, if the region is an producer/exporter, there would be a different impact in terms of environmental indicator. When addressing strategy, these indicators could support management, so as to determine if the strategy is being implemented into the right direction. The indicators can be implemented as an alarm so as to gauge the synergies. The port is however, emerged within a very complex landscape which constitutes of a lot of stakeholders that have to be taken into consideration. Policy makers are also serving as overseers of implementation, therefore, regionally, indicators change depending on
the policy climate of that particular region. This causes a lot of uncertainty when it comes to indicators and jurisdiction dichotomy, when political landscapes are forever changing which highly influence policy. Indicators do on the other hand serve as a good monitoring mechanism of environmental policy, energy policy etc. which the port has put in place.”

The high-level input from the experts gives an understanding of ESG-indicators as a barometer of measuring environmental, social and governance aspects which can be applied at portside. These indicators do serve as great yardsticks of accountability within the industry and should be looked at through one lens as these indicators overlap and are interdependent. According the respondents, leadership can use these indicators as strategy barometer to measure the progress management has set in achieving these environmental, social and governance targets. It has also been alluded to that policy dictates the environment in which these indicators are to be applied in and this might differ from region to region. Therefore, CMP has a prerogative of incorporating ESG-indicators as they serve as a strategic directive in steering the port in attaining sustainability targets. The positioning of CMP as a port is very complex and this is due to the ever changing regulatory landscape and as CMP keeps staying relevant and up to date with regulations and compliance with “green initiatives”, CMP will be way ahead of the curve and therefore stand out as a competitive port.

Q3. According to your experience within the maritime industry, do you think that ports are doing enough to address ESG-indicators?

This question was posed with the objective to establish the opportunities that might be available to establish ESG-indicators within the industry (shipping, ports, maritime/offshore etc.) and establish where the gaps might arise in fundamentally establishing the sustainability concept firm within the industry.

Interviewee 1 – “Ports are doing a fair efforts to adopt the ESG-indicators in one way or another, particularly those in developed countries. Though some ports may use other indicators to evaluate their advance in sustainability.”

Interviewee 2 – “With specific reference to port, because the whole industry gravitates to port. There is a lot of push towards the three sustainability pillars, there is an industry
trend which seems to focus on the economic part of the three sustainability pillars because of profit making motives. This can be a driver but also a barrier to collaborate. Regulations and enforcement on the other side also oblige private industry to be more in line, ship owners are more and more driven to have to comply with IMO directive and European regulation. For instance, circular economy and there are talks about how ports can stimulate and be part of circular economy and the industry has an important role to play, the industry therefore has an imperative role of supporting the whole sustainability framework/symbol. Ports are playing an ever important role, for example, for the manufacturing industry or any segment in industry depending on goods or movement of cargo – sustainability at port will forever be imperative.”

The respondents seem to have shared a similar sentiment of how ports are doing considerably well when it comes to addressing ESG issues. CMP is located in a developed country and therefore need to be in compliance with European regulation thus the implementation and push towards green initiatives and an ever so robust concept of circular economy. This is witnessed through the implementation of the waste-to-energy sustainability project at CMP. With the strong urge for ship owners to comply with regulations, it is imperative that western ports are capacitated with updated state of the art operations and infrastructure that will make it easy for industry players to resonate with ports like CMP that are progressive and current. CMP is therefore one of the ports that are doing quite a bit in addressing ESG issues.

Q4. With specific focus on the S-indicators – what do you think the industry and ports can do to make the social-indicators more robust?

This question was a directive in trying to establish how progressive the industry and ports have become in addressing social indicator. This is because, different stakeholders have become a critical point in influencing decision making at portside. The question then on a high-level looks at what imperatives need to be addressed at port side that hinges mainly on the social indicators.

Interviewee 1 – “Well, in shipping, I believe seafarers rights and welfare need some attention. During COVID-19, almost 300,000 seafarers were locked on board ships due to ports (including governments) not permitting crew exchange. On the other hand,
female seafarers need to be supported and their number increased. The same goes on ports. Therefore, there is a huge gap to be filled when it comes to issues of gender and well fair.”

Interviewee 2 – “Most of the ports are located in a strategic location which is near to residential areas and city habitat. The social-indicator has to become and has become part of the decision making process. This has led to the realisation of during policy making, key stakeholders are invited to be part of the policy formulation. The perception over time has changed when it comes to decision making and who has to be part of the round table. If the port is active then this creates benefit for the region like job creation, on the flip side this can also create a negative impact due to negative externalities on the environment. The society therefore is part of the mechanism that supports port activity due to the benefit of job creation. In order for industry to support the social-indicators and then support strategy, it is important that the involvement of different stakeholders be involved during the beginning of the process. The decision makers need to find a compromise where all if not majority of stakeholder demands are being addressed and catered to. Regulations then become even more imperative when it comes to enforcement and making social-indicator more robust. Another mechanism that can be supported is incentives which can play a fundamental role, perhaps some green activity can be incentivised or ports that decide to go green can be incentivised too. Investments in wind for instance is quite capital intensive but in the long-run can be a benefit. This is most strategic for developing countries which have power generation problems with constant “black-outs/power-cuts” more especially at portside, rather than only relying on generators which are powered by fossil fuel. Investment in alternative green renewable energy at portside should at least be prioritised and this should also be appetising for the industry, therefore push for renewable initiatives and green sustainable energy projects at portside are fundamental.”

Fundamentally, there seem to be a consensus on involvement of key stakeholders in the decision making process when addressing social-indicator both in the shipping industry and at portside. The rights of seafarers predominantly remains an essential
social-indicator that needs to be addressed and taken seriously. CMP therefore needs to position itself in taken heed when addressing social issues at port, this is because the port is the centre and at the heart of the surrounding communities. This comes with a lot of responsibility and social charge that the port needs to steer and show active involvement. With the recent pandemic, governments have come under fire and this has showed a huge gap between crisis management and active participation between industry and government. Therefore, CMP needs to position itself differently by building much tighter bonds with relevant stakeholders and government so as to better manage future “green swan” events.

Q5. Do you think that there is a correlation/relationship between sustainability projects (waste-to-energy) and social impact? If you were to advice ports, what would you advise them to do to better enhance the correlations between sustainability projects and social impact?

This question was asked to the respondents with an intention of establishing the relationship between sustainability projects at port and their impact on society whether positive or negative. If there is indeed a correlation between the two, it would be a progressive directive to understand what the respondents would advise the port to do to make this relationship much more robust and prevalent at port. With this directive, ports can gain insight into what they can do to make them more competitive.

Interviewee 1 – “Of course, I see that there is a correlation between waste-to-energy projects to social aspects. Please note that, society can be the ports employees, customers, suppliers, ships (including crews), and surrounding society. And this can be subdivided, for example suppliers and customers can be truck drivers, tugboats teams, stevedoring, notwithstanding the fishermen etc. Having the waste-to-energy projects, for example, improve the sea environment so swimming activities (tourism) continues and thrive. Fishing activities (economy of society) remain robust. The waste-to-energy project can be an opportunity for society to recycle their waste, so this not only improve the environment but health and welfare of people. I can’t ignore employment opportunity, particularly those that engage youth and gender. I believe if ports need to consider wider societal aspects (beyond the ports), for examples, the
categories I have mentioned above. It would be interesting to see that ports include in their sustainability report their impact on society (see the categories above) and provide motivational measures that can be evaluated through societal KPIs.”

Interviewee 2 – “To re-use waste into generating power at port side can be an added benefit for lighting the port or the port can sell the power to the local city. For example, in Copenhagen, there is a lot of cruise turn-around leading to a lot of pollution and noise, therefore the application of cold-ironing could be a positive impact on society because you reduce the noise but also the air pollutant and in turn making the residential area clean. The turn-around of cruise ships therefore becomes a job creation tool for the city due to tourism and therefore impacting the economy positively. Developing countries can benchmark developed countries in the implementation of sustainability projects at port to determine how they might impact the community around the portside. For instance, if a port wants to implement photo voltaic panels at port, they can explore what the challenges and solutions are in the implementation of photo voltaic at port. Co-operation with other counties, example in Europe, the European Sea Ports Organisation (ESPO) is to be the catalyst for all these activities that will help advance ports under the sustainability framework.

After a very interactive and progressive interview session with respondents, it is clear that sustainability projects majorly have a good impact on the societal indicator, but however there are some loop holes that could be closed with improvements and involvement of different stakeholders and regulatory landscape. It was stated that, societal indicators are vast and do not only consist of the community that surrounds the port but incorporates employees, customers, suppliers etc. When using CMP as an example to benchmark port operations and how CMP in its own capacity is dealing with sustainability, CMP’s sustainability report served as a guiding blueprint into gauging how far some ports have come in addressing sustainability issues. With specific focus on ESG-indicators and social-indicators majorly, it was clarified that ports are doing quite a lot to address sustainability issues but employment opportunities specific to youth and gender disparity is still a prevalent challenge for both portside and shipping industry.
According to Purvis et al., 2019, the three pillars (economic, social and environmental) of sustainability need to be balanced out by the industry so as to adapt to the ever changing regulatory landscape. In accordance with the set GHG emissions targets of 2050, the industry need to be inclusive of sustainability initiatives and enhance the energy efficiency levels of ships by utilising alternative fuels and renewable energy, this is applicable both on board ships and at portside (Ölcer, Kitada, Dalaklis, & Ballini, 2018).

CHAPTER 6 – Conclusion
Measures for port sustainability are examined by the utilization of the 5 P’s (Peace, People, Planet, Partnership, Prosperity) dashboard. Therefore, what drives investment for impact is more than the bottom line (profits) and much more entrenched in the triple bottom line (environment, social and governance) which seeks to look at a holistic approach of how the industry can shape society through sustainability projects that at its heart takes into consideration the value of all stakeholders. Therefore, over and above profits peace, people, planet, partnership and prosperity is the new inclusive sustainability mechanism that is the driver of harnessing ESG-indicators within the industry. As much as ESG-indicators are an added benefit to the industry and at portside, its application and performance indicators need to provide quantitative and qualitative feedback which can be measured as a feedback on progress. This is to gauge whether or not certain milestone have been attained or not and to measure its impact whether it be positive or negative. With the involvement of all relevant stakeholders and the community at large, it can be determined if ESG-indicators do indeed reach their targeted audience. This needs to be implemented in companies in the industry by reflecting it through corporate strategy through indicators that are developed by the company, sustainability reports of the company and the strategic priorities of the company of which the vast community need to be taken into consideration. It was then discovered through the study that, indeed, ESG-indicators are interlinked with sustainability projects and they inherently do impact the society in a positive way majority of the time. There are some opportunities for improvement though, with specific focus on youth employment and gender issues. With the aid of the CMP case
study, it was reported that, the recommendation of including a waste-to-energy power plant at the port would have huge impact on the society – through job creation and green compliance of the port in accordance with European regulation. This has set a premise of understanding how sustainability projects indeed do add value and contribute significantly to social-indicators. However, there might be some shortcomings with ESG-indicator application, there need to be KPIs set in place to monitor and evaluate the set targets and for companies to be able to measure their ESG-indicator impact within the surrounding community at portside. With set KPIs, companies can better plan and manage environmental priorities which should be entrenched in their business strategy and reflected in the operational plan to better monitor and evaluate set milestones. Therefore, ESG-indicators are becoming an investment strategy when incorporated into the overarching business operations and long term opportunities. This can lead to better realised social impacts which fundamental stakeholders can benefit from and subsequently lead to a much robust and competitive industry and port. With compliance and sustainability incorporation, ports specifically are set to be incentivised and help advance the green landscape of ports. For future research, it would be interesting to study the interchangeable relationship between the three indicators (ESG) at the same time within the industry and at port. Exploring the interaction between ESG-indicators would also be of scholarly interest, to try and understand how these three inter dependent indicators interact without only looking at one and exploring the impact the holistic perspective would yield. It is also imperative to understand that ESG-indicators are highly entrenched on stakeholder relationships and managing the relationship between port, industry and stakeholders. Leading to better appreciate that, the industry and port can never exist in silos because of the interdependent nature of fundamental elements within the industry. There therefore certainly exist a relationship between sustainability projects at port and social impact on the surrounding community and this is why the social dimension at port is so paramount in the economic advancement of the region where the port is located.
References


International Gas Union (2015) Biogas - from refuse to energy -report (Rep.).


KWAP’s Corporate Level Environmental Social & Governance (ESG) Guidelines (2017).


Appendix A

WMU Research Ethics Committee Protocol

<table>
<thead>
<tr>
<th>Name of principal researcher:</th>
<th>Dumisa Kevin January</th>
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<tbody>
<tr>
<td>Name(s) of any co-researcher(s):</td>
<td>N/A</td>
</tr>
<tr>
<td>If applicable, for which degree is each researcher registered?</td>
<td>MSc in Maritime Affairs (Maritime Energy Management)</td>
</tr>
<tr>
<td>Name of supervisor, if any:</td>
<td>Professor Aykut Olcer</td>
</tr>
<tr>
<td>Title of project:</td>
<td>Sustainability Projects’(W-2-E) Impact on Society through ESG-indicators with a focus on Social-indicators: A Case Study in Copenhagen-Malmö Port (CMP)</td>
</tr>
<tr>
<td>Is the research funded externally?</td>
<td>Yes</td>
</tr>
<tr>
<td>If so, by which agency?</td>
<td>Transport Education Training Agency - RSA</td>
</tr>
<tr>
<td>Where will the research be carried out?</td>
<td>World Maritime University</td>
</tr>
<tr>
<td>How will the participants be recruited?</td>
<td>Individual interview in person or email</td>
</tr>
<tr>
<td>How many participants will take part?</td>
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<tr>
<td>Will they be paid?</td>
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<tr>
<td>If so, please supply details:</td>
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<tr>
<td>How will the research data be collected (by interview, by questionnaires, etc.)?</td>
<td>By questionnaire and interview</td>
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<tr>
<td>How will the research data be stored?</td>
<td>Research data will be stored in my personal laptop and hard disc with strong password</td>
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<td>Question</td>
<td>Answer</td>
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<tr>
<td>How and when will the research data be disposed of?</td>
<td>The data will be deleted from my laptop upon completion of my MSc studies, degree scheduled to be awarded on 31 October 2021</td>
</tr>
<tr>
<td>Is a risk assessment necessary? If so, please attach</td>
<td>N/A</td>
</tr>
</tbody>
</table>

Signature(s) of Researcher(s): 01/09/2021

Signature of Supervisor: 01/09/2021

Please attach:
- A copy of the research proposal
- A copy of any risk assessment
- A copy of the consent form to be given to participants
- A copy of the information sheet to be given to participants
- A copy of any item used to recruit participants
Dear Participant,

Thank you for agreeing to participate in this research survey, which is carried out in connection with a dissertation which will be written by Mr Dumisa January, in partial fulfilment of the requirements for the degree of Master of Science in Maritime at the World Maritime University in Malmo, Sweden.

The topic of the Dissertation is “Sustainability Projects’(Waste-to-Energy) Impact on Society through ESG-indicators with a focus on Social-indicators: A Case Study in Copenhagen-Malmö Port (CMP)”.

The information provided by you in this interview will be used for research purposes and the results will form part of a dissertation, which will be published online and made available to the public. Your personal information will not be published. You may withdraw from the research at any time, and your personal data will be immediately deleted.

Anonymised research data will be archived on a secure virtual drive linked to a World Maritime University email address. All the data will be deleted as soon as the degree is awarded.

Your participation in the interview is highly appreciated.

Student’s name  ………………Dumisa January ……………………………
Specialization  ………………Maritime Energy Management………
Email address  ……………… w1904735@wmu.se …………………

* * *

I consent to my personal data, as outlined above, being used for this study. I understand that all personal data relating to participants is held and processed in the strictest confidence, and will be deleted at the end of the researcher’s enrolment.

Name:  …………………………………………………………………………

Signature:  ………………………………………………………………………

Date:  …………………………………………………………………………..