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How can the shipping industry adopt a hybrid model: the case of Arista Shipping

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Abstract

Title: How can the shipping industry adopt a hybrid model: the case of Arista Shipping

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This thesis discusses a stakeholder management and engagement case for Arista Shipping and its' ambition to adopt a hybrid organisational model (Project Forward) by constructing, operating and commercialising Liquefied Natural Gas (LNG) fuelled vessels, formally called as Forward Vessels. With LNG being the most environmentally friendly option out there, Arista is committed to exceed the environmental regulation and to own the 'cleanest' fleet of vessel.

Through deeper investigation of the methods of stakeholder engagement, this case study focuses on analysing critical stakeholders and complementing with most appropriate methods of engagement, with the objective of advancing the project.

This analysis presents stakeholder management and engagement tools that allows managers to identify as well as map each individual stakeholder, thenceforth, accommodating most pertinent methods based on their interests, attributes and roles. For this specific case of Arista Shipping, the engagement methods are to be specifically analysed for: charterers, shipyards and investors/financiers.

Sumário Executivo

Esta tese aborda o processo de gestão e envolvimento dos Stakeholders da empresa Arista, bem como a sua ambição para adotar um modelo organizacional híbrido (Project Forward), através da construção, operação e comercialização de navios movidos a gás natural liquefeito (GNL), chamados de navios Forward. Sendo o GNL a opção mais ecologia no Mercado, a Arista compromete-se não só a superar as atuais regulamentações ambientais bem como a possuir a frota de navios “mais limpa” e ecológica.

Através de uma investigação minuciosa dos métodos de envolvimento dos principais stakeholders, este estudo foca na análise crítica dos mesmos e complementando-a com os métodos mais adequados para um envolvimento mais eficaz dos stakeholders no projeto.

Esta análise apresenta ferramentas de gestão e envolvimento dos stakeholder, que permitem aos gestores a identificação das características específicas de todos os stakeholders, bem como a adopção das metodologias analíticas mais apropriadas, tendo por base os seus interesses, atributos e funções. Para este caso específico da Arista Shipping, os métodos de envolvimento devem ser analisados especificamente para: afretadores, estaleiros e investidores/financiadores.

Keywords:

Hybrid organisations – Shipping – Arista Shipping – Stakeholder Management – Stakeholder Engagement

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*Thus, grew the tale of Wonderland:
Thus slowly, one by one,
Its quaint events were hammered out –
And now the tale is done,
And home we steer, a merry crew,
Beneath the setting sun.*

- Lewis Carroll, Alice's Adventure in Wonderland.

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1.0 Introduction

With a growth of \$3 trillion in assets of the market for socially responsible investments in the U.S. alone, it is natural to observe a growth in the number of organisations that seek an opportunity to become a “hybrid organisation” (Haigh et al., 2015). These organisations can be defined as enterprises that drive most of its income from trade (>50%) but with two or more clearly stated objectives such as social impact and environmental impact (Doherty, Haugh, & Lyon, 2014). Thus, these characteristics are a combination of traditional ‘for-profit’ and traditional ‘non-profit’ practices (Walker, 2015).

It can be argued that hybrid organisations have been more popular in some industries than others. One of the more popular being the retailing industry (Gibson, 2013). Due to key changes in the industry such as: the use of data and information technology, intensified cooperation between industry and trade, new concept stores, changing the roles of wholesale and retail trade as well as increasing importance of customer relationships, drove the emergence of hybrid organisations in retailing (Mitronen & Möller, 2003). As a result, successful businesses such as Kesko and Patagonia have evolved in the recent years. Other industries with successful hybrid firms include Tesla in the automotive sector and WHOLE FOODS in the grocery sector.

On the other hand, industries such as the pharmaceuticals, cannot and will not transition to hybrid organisations, at least not in the current setting. Pharmaceuticals thrive for patents or intellectual property rights that give them exclusive protection for innovating a new drug. However, once the patent reaches its expiration, it encourages production of generics, creating price wars, and therefore resulting in cheaper prices. None of this with the intention to create better value to consumers, but with the intention to outsell its competitors. Having said, this industry still to this day operates completely in a traditional for-profit manner.

As one of the oldest industries in the world, shipping plays a vital role in our modern society, and is accountable for 90% of the world’s trade, taking ferry passengers to their destinations and carrying millions of tourists on cruises. “Today, over 55 000 cargo ships are active in international trade. The fleet is represented in over 150 countries, crewed with over 1.5 million sailors working around the world. The different types of cargo being transported are goods for consumers, food, raw material, cars and fuel, just to name a few” (Baibhav Mishra, 2019, p.1). Having said, shipping has a clear environmental impact, including greenhouse gas emission, acoustic and water pollution. It was estimated that carbon emission from shipping in 2012 represented 2.2% of the world’s emissions, and if no changes were made, emissions would rise 50-250% by 2050 (Exxon Mobil Corporation, 2001). Thus, these are fair justifications for the

industry to change to a more environmentally and economically sustainable model, such as the hybrid organisation model.

However, regulations have been put in place, including the sulphur emission control areas (SECAs) which have rigorous control to minimize airborne emissions from ships (IMO, n.d.). There are currently four SECAs: Baltic sea, North Sea, North America (includes most of the US and Canada coast) and US Caribbean (includes Puerto Rico and US Virgin Islands). Since SECA, these areas have minimised their sulphur limits from 1.5% to 0.1% (Report, 2013).

Unfortunately, shipping companies already face challenges that prevent them from evolving into more environmentally friendly companies. Current challenges include:

1. New environmental regulations depend on new technologies which governments may require companies to implement. Some of the new tech are often not reliable nor universally approved, therefore companies may lose a lot of money with tech that may not work.
2. Additionally, some of these new tech. could make ships more susceptible to cyberattacks including maritime piracy and armed robberies. “NATO-accredited think tank said, “Increasingly, the maritime domain and energy sector has turned to technology to improve production, cost and reduce delivery schedules. These technological changes have opened the door to emerging threats and vulnerabilities as equipment has become more accessible to outside entities” (Wagstaff, 2014, p. 1-4).
3. Companies have spent lots of money on implementing changes and updating vessels to operate more efficiently sustainable, but a lot of the times these vessels cannot operate with such features due to lack of infrastructure of port, fuelling stations, etc. This is the case of liquid nitro gas (LNG), which is one of the best alternatives of fuel to diesel. Since 2014, United Arab Shipping Company have invested over \$2.3 billion in LNG-capable ships. However, there’s a dearth of LNG fuelling stations and infrastructure (Mohammed Aly Sergie and Claudia Carpenter, 2016).

Shippers (clients), are also demanding more efficient solutions. BMW, Belk, Electrolux, Heineken, Hewlett-Packard, Ikea, Kohl’s, Monsanto, Nike and Ralph Lauren, among others are part of what is called Clean Cargo Group (Mongelluzzo, 2015). This is an organization formed by shippers and carriers dedicated to reducing the environmental impacts of global goods transportation and promoting responsible shipping. Hence, in order to work with such massive brands and companies, shipping companies have to comply with their demands. Future

trend research has also shown that to succeed in the shipping industry, companies will have to go above and beyond (Appendix 1) (BSR, 2010).

This teaching case study focuses on the case of Arista Shipping, a shipping company with the ambition of becoming a hybrid organisation. Arista takes pride in its mission of operating as 'green' as possible and has worked tirelessly to develop its 'Forward Ships Project'. This project is about the development, construction and commercialisation of ships that run on liquefied natural gas and would hold the latest tested technology. This would allow Arista to surpass regulation and to contribute towards a greater good for the environment.

A project of this scope and ambition is rare in the shipping industry, mainly due to the nature of being 'old-fashioned' and slow to change. The industry is nonetheless very complex with many entities being part of it. Having said, the biggest challenge Arista is currently facing is engaging with their critical stakeholders. This is, unfortunately, prohibiting them to going forth with Project Forward.

Hence, the problem this thesis strives to understand is how a shipping company, Arista, can successfully manage and engage critical stakeholders that will in turn aid the progression to adopting a hybrid model. With this in mind, the following research questions are addressed:

1. Who are the critical stakeholders of Arista Forward Project?
2. How to engage with critical stakeholders in order to develop and maintain healthy relationships with critical stakeholders?

To develop the case study, close communication with the operations manager of Arista Portugal office was established. This made possible to gather Arista's perspective on the situation which is ideal for setting the scene. Moreover, a charterer's expert opinion allowed for an overview of the 'big picture'. Both industry experts gave deeper insights into the industry itself.

An in-depth review of literature that had already been published ensured the thorough understanding of identifying and analysing stakeholders, as well as engaging with critical stakeholders. All in all, this contributes to ratiocinating potential solutions.

Teaching notes allow students to take clear and rational steps to answering the previously addressed questions. This comprehensive analysis of stakeholders will in turn point out to fundamental methods and processes Arista is yet to take on.

The conclusion summarises the two main questions presented by the case study, formulating a concise answer. It emphasises the practicality of the methodical process and how it can provide guidance for meaningful stakeholder engagement.

Data Collection Table			
Primary Data		Secondary Data	
Interviews with shipowner: Arista	4	Academic journal articles	39
Interviews with experts: charterer	2	Webpage articles	13
Professional Experience	7 months	Industry Reports	16

2.0 The Case

2.1 Importance of Shipping

“Without the shipping industry, half of the world would freeze, and the other half would starve” Efthimios Mitropoulos, *IMO Secretary-General*. International maritime shipping for many years has played a pivotal role in the globalisation of trade. A continuous and general decline in price payable for shipping services is the result of the development of intermodal supply chains and emergence of ever-growing ships (Merk, Busquet, & Aronietis, 2015). Thus, leading to globalisation of production and consumption and consequently a massive increase in demand for maritime shipping services. Nonetheless, it can be argued that due to the international nature of the industry, this significant growth in shipping has not received sufficient scrutiny of its environmental impact until fairly recently. Regulations are rather difficult to agree and enforce, and work of ships is not open to public scrutiny as it occurs far from centres of population (i.e.: at sea) (Merk et al., 2015).

2.2 Environmental Impacts of the Shipping Industry

Although shipping is the most energy-efficient method to transporting large volumes of cargo, negative environmental impacts are still observed: air pollution, greenhouse gas emissions, transfer of invasive species due to ballast waters, use of antifoulants, oil and chemical spills, dry cargo releases, garbage, underwater noise pollution, strikes on marine megafauna, risk of ship grounding/sinking as well as widespread sediment contamination of ports (T. R. Walker et al., 2019). There are strict regulations put in place in order to reduce the effects of such impacts, as well as severe consequences for those who do not comply. Here are some of the concerns that follow without regulatory interventions:

2.2.1 Exhaust Emissions

Shipping’s exhaust emissions are globally substantial as it is the mode of transport with largest annual tonnage and longest travel distances (Merk et al., 2015). Ships emit nitrogen oxides (NO_x), sulphur oxides (SO_x), carbon dioxide and particulate matter (PM) into the atmosphere. These are air pollutants that arise from diesel engines that burn high sulphur content fuel (T. R. Walker, 2016). Of the world’s shipping fleet, 95% run on diesel (bunker oil) (Saraçoğlu, Deniz, & Kılıç, 2013). Bunker oil however, is different and of lower quality than diesel used in road vehicles (Cullinane, Reviews, & 2013, 2013). It is quite literally the ‘bottom of the barrel’ waste product of the standard oil refining process, also nicknamed ‘dirty fuel’ (Cullinane et al., 2013), hence, it is much more affordable compared to regular diesel. In 2013, ships in Europe accounted for 18% of NO_x emissions, 18% of SO_x and 11% of particles less

than 2.5 micrometres in size. Road transportation achieved: 33%, 0% and 12 %, respectively. Aviation, by contrast, accounted for only 6%, 1% and 1%, respectively, and rail just 1%, 0% and 0% (Exxon Mobil Corporation, 2001). Diesel exhaust has been classified as human carcinogens, as well as contributors to ozone layer depletion, haze, acid deposition, eutrophication and nitrification of waters (EPA, 2008).

In shipping and other modes of transport, the emission of these gases is highly correlated with the amount of fuel consumed (Olmer et al., 2017). However, calculating fuel consumption of ships is a difficult task, due to international discrepancies in auditing methods. Traditionally, analysis of sales figure – top-down approach – has been used to estimate fuel consumption in shipping. However, a more robust method of estimation is now used - bottom-up – that uses a ship movement database (Cooper & Gustafsson, 2004), has shown values twice as large as that under the ‘top-down’ approach (Corbett, 2003). It was estimated that the level of CO₂ emissions generated by international and domestic shipping equates to the same level of national CO₂ emissions produced by Germany (Faber et al., 2009). Having said, it is also estimated that shipping is accountable for 4% of all climate change emissions (John, 2009). Ships generate emissions during the entire work process: while at sea, while manoeuvring in and out of ports and while they are berthed. Thus, it can harm the environment, personnel on board as well as personnel and people in and near the ports.

2.2.2 Invasive Species from Ballast Waters

The water carried by ships in ballast tanks to improve stability (ballast waters), are often taken in the coastal waters of a region after the ship discharges waste or delivers cargo and unloaded at the next port of call. These waters often contain biological matter such as bacteria, viruses, animals etc. which are then transported along to new areas where they can become marine pests (EPA Victoria, 2001). Marine pests pose serious hazard to the environment and local economy by disrupting ecological processes, threatening fish stocks and aquaculture operations, as well as threatening both the interstate and the international trade (Australian Marine Sciences Association, 2007). Once established, marine pests are extremely difficult to eradicate and also very costly to do so. Sea lamprey invasion of the Great Lake (USA) in the 1940’s led to major collapse of fish species that made part of the economic support of the local fisheries (Great Lakes Fishery Commission, n.d.). Serious sea lamprey control programme is now put in place, however, costing around 15million (USD) every year (Australian Marine Sciences Association, 2007).

2.2.3 Anti-fouling

Biofouling – the undesirable gradual accumulation of micro-organisms, plants, algae and animals on submerged structures – present problems to ship's operations by significantly increasing drag, thus decreasing overall hydrodynamic performance of vessels and consequently increasing fuel consumption (Myan, Walker, & Paramor, 2013). Originally, anti-fouling techniques referred to paints which were used to coat the bottom of vessels to prevent sea life from attaching themselves to the hull (Liu, 2015). These paints contained biocidal such as tributyltin which is very effective at reducing biofouling. However, these toxic biocidal are also released into the marine environment and have been proven to have hormone-disrupting properties in marine organisms throughout all levels of the food chain, including humans who eat contaminated organisms (WWF, n.d.). Thus, the use of TBT has been banned since 2008, and other more environmentally friendly anti-fouling methods have been explored. However, these methods are not as efficient and clear assessments of their costs and benefits are yet to be produced (Bighiu, 2017).

2.2.4 Release/Spill of oil

Studies have shown that marine transportation is held accountable for 46% of the oil entering the oceans, either through accidents (human errors, technological failures) or deliberate discharges caused by neglect and wilful violation of international conventions (WWF, n.d.). The severity of oil spills depends on the type of oil, exposure pathway, and degree of weathering. Nonetheless, oil harms marine organisms via acute toxicity, sublethal health effects and disruption of marine communities (*Oil in the Sea III*, 2003).

2.2.5 Sound Pollution and Other Physical Damages

The noise from ships can travel long distances, causing noise pollution and it can have very disruptive effects in marine life (Simpson, Meekan, Larsen, McCauley, & Jeffs, 2010). For example, it has been recently found that it disturbs whale's interspecies communication, this has had an impact in their behaviour, pushing them to swim to close to shore instead of deep waters, hence dramatically reducing their survivability (Melcón et al., 2012).

2.3 Recent Progress to Reducing Exhaust Emissions

2.3.1 Regulations/ MARPOL

The International Maritime Organisation (IMO), which regulates international shipping, is slowly engaging and addressing environmental issues caused by shipping. In 1980, the International Convention for the Prevention of Pollution from Ships (MARPOL) restricted the

intentional discharge of oils, noxious liquids, harmful substances, sewage and garbage have been restricted since 1980's (IMO, n.d.). In 1997, MARPOL convention was updated to include air pollution limits (IMO, 2008), but it wasn't until 2005 that they came into force. The regulations seek to minimise emissions of ozone depleting substances and air pollutants (SO_x, NO_x, ODS, VOC) from shipboard incineration.

In 2008, the Marine Environment Protection Committee (MEPC) was revised and new regulations came into force in 2010. These revisions include new fuel quality requirements and NO_x emission standards for new engines and pre-2000 engines.

Table 1 - Latest revised MARPOL global SO_x Regulations:

Outside an SECA established to limit SO _x and particulate matter emissions	Inside an SECA established to limit SO _x and particulate matter emissions
4.50% m/m <u>prior</u> to 1 January 2012	1.50% m/m <u>prior</u> to 1 July 2010
3.50% m/m <u>on and after</u> 1 January 2012	1.00% m/m <u>on and after</u> 1 July 2010
0.50% m/m <u>on and after</u> 1 January 2020	0.10% m/m <u>on and after</u> 1 January 2015

(IMO, 2018b)

Table 2 - Latest revised MARPOL global NO_x regulation split in tiers:

Tier	Ship construction date on or after	Total weighted cycle emission limit (g/kWh)		
		n < 130	n = 130 - 1999	n ≥ 2000
I	01/01/2000	17	$45 \cdot n^{(-0.2)}$	9.8
			e.g., 720 rpm – 12.1	
II	01/01/2011	14.4	$44 \cdot n^{(-0.23)}$	7.7
			e.g., 720 rpm – 9.7	
III	01/01/2016	3.4	$9 \cdot n^{(-0.2)}$	2
			e.g., 720 rpm – 2.4	

(IMO, 2018a)

Tier III apply only to the specified ships operating in NO_x Emission Control Areas (North America and the U.S. Caribbean Area), with the exception of certain small ships.

On April 2018, MEPC adopted resolutions to reduce greenhouse gases at least 50% by 2050, as well as reduce CO₂ at least 40% by 2030 (Logistics & Facilitation, 2018). Furthermore, IMO's Energy Efficiency Design Index (EEOI) was designed to allow efficiency comparison between similar ships on similar routes, thus inciting the operator to introduce efficiency measures (Levy Tacher, Román Doñabeytia, & Aronson, 2013). IMO also suggests that EEOI is used in conjunction with Ship Energy Efficiency Management Plan (SEEMP), which provides the crew and operators with practical advice on how to make their ships more efficient.

2.4 Complying with Regulation

2.4.1 Technology Strategies

Technological strategies and advancements have led to lower emissions of NO_x and SO_x. Reductions in NO_x can now be achieved by engine upgrades emission control technologies such as Water in Fuel emulsion (WIF) and Humid Air Motor (HAM)/Scavenge Air Moistening (SAM) in the cylinder; (b) Exhaust Gas Recirculation (EGR) and/or (c) Selective Catalytic Reduction (SCR) (MAN B&W Diesel A/S, 2005). Moreover, scrubber systems have been developed to remove SO_x and NO_x from exhaust emissions, acting out as gas "cleaners". The main advantage of scrubbers is that it allows the usage of cheaper bunker fuel.

To reduce hoteling emissions (emitted when at dock), ships can now be plugged to on-shore electric supply, known as Cold ironing. Paired with a shore-side emission treatment, NO_x is reduced by 95% and SO_x and PM emissions by 99% (Life, 2015).

2.4.2 Technical Strategies

Over the past recent years, the most obvious method of reducing emissions is to reduce fuel consumption, which in turn reduce costs. Moreover, shipping companies may also benefit from marketing gains that prove their environmental credentials. All in all, this is known as the 'green-gold' paradigm (Cullinane et al., 2013). In seeking to reduce emissions, technical measures are put in place: greater engine efficiency, waste heat recovers, improved hull design and performance as well as more efficient propeller and rudders.

2.4.3 Operational Strategies

As mentioned before, there's a strong correlation between fuel consumption and emissions, thus, any improvement in operational efficiency should result in decreased environmental impacts. Moreover, these types of improvements also improve profitability, and therefore act as motivators to continuous operational improvements. Some of the adopted approaches

include: reduction in speed (reducing speed reduces fuel consumption), improved routing (minimise time spent at ports) and scheduling, and enhanced fleet management (ensures great productivity of fleet).

2.4.4 Alternative Sources of Energy

Increased research in the alternative energy sources field have pointed out various viable methods for ships to reduce emissions and/or enhance fuel efficiency. Including: low sulphur fuels, biofuels, nuclear power, hydrogen, wind and solar and liquid nitro gas (LNG) (Moirangthem & Baxter, 2016).

2.4.5 Market-Based Approach Strategies

In addition to regulatory measures, market-based strategies allow for shipping companies to adapt compliance actions to their own circumstances. These strategies can be implemented both locally – e.g.: impose variable fees to reward high efficiency and low emission vessels, vice-versa – and internationally, through emissions cap-and-trade system (Kipp, 2005).

2.5 Challenges Posed by Recent Progress

Despite recent efforts, the shipping industry has yet to overcome many challenges in order to significantly reduce its negative environmental impact and to ‘clean up’ its act. Although fuel efficiency has improved (*Green Ports*, 2019), the growth in volume of shipping has exceeded any fuel savings. Companies in the industry demonstrated obvious commercial consideration as a priority over its environmental consequences. Thus, compliance with current mitigation remains a meaningless act, rather than a responsible one. Moreover, SECAs and ECAs imprudently exclude the world’s largest 10 ports, commonly called ‘the dirty ten’ (Appendix 2). These ports along contribute to 20% of worldwide port emissions of NO_x and SO_x (Wan, 2016).

Many of the alternative sources of energy mentioned above unfortunately have major disadvantages which outweighed any environmental benefit they may have intentioned. Low sulphur fuels have to be utilised in tandem with abatement technology or ships and engines need to be modified accordingly, as these fuels require additional processing operations (Surendran, Rajagopal, Kandasamy, Muthusamy, & Ramanathan, 2016). Hence, these fuels bring no economic motivation with the exception of ‘green marketing’. Biofuels require primary crops to be produced, thus posing the issue of supply. Although biofuels made from agricultural waste is being developed, research is still at its infancy.

Nuclear power has a very strong negative perception to the public; thus, political and legal issues may arise from their deployment and disposal of nuclear waste. Moreover, rigorous crew training and competency would be needed which would pose a major commercial barrier.

Wind powered vessels have shown to exert aerodynamic drag and high fixed costs which cancels out some of the fuel savings (*Green Ports*, 2019). Plus, prevailing winds are unidirectional, thus making solar and wind energy good additions but not alternatives.

Although LNG is one of the best current alternatives, there are still several difficulties yet needed to overcome. LNG onboard and ashore requires a lot of storage (space), specialised handling, and there are limited locations supplying it to ships. Furthermore, the costs to build LNG sailing ships are 20-25% higher than ships fitted with conventional engines, at least until it attains an entrenched stature (DMV, 2014).

2.6 Pressure for Change: Global Trends

It is discernible that the industry has undergone changes and that it will continue to alter in the years to come. Fuel costs are rising faster than technological advances with potential for improving efficiency and there are new global ocean governance challenges. Most importantly, global brands and commercial customers are incorporating sustainability into their core business and addressing sustainability throughout their entire supply chain. Thus, the shipping industry must operate in a dynamic environment and manage global trends that will continue to affect the industry. Below are the trends believed to have strongest implications in the industry:

2.6.1 Transparency

Transparency reflects the way stakeholders such as customers, investors, regulators, etc increasingly expect full visibility into how a business operates, how it performs, and its' impact on people, profit and the planet (Adams et al., n.d.). Businesses throughout the supply chains outside the shipping industry are already committing to social and environmental targets that respond to demands for better performance. They are also having to navigate the fast-paced, transparent, internet-enabled world of social media. Developments in information communication technology such as real-time monitoring even in the open oceans, are pushing and enabling this trend. Businesses will have opportunities to demonstrate leadership by giving customers, regulators and NGOs the opportunity to monitor their performance.

2.6.2 Socio-Economic Changes

The rise of the middle class in Asia will accelerate planetary resource constraints and will thus transform supply chains differently. Socio-economic changes will result in: (1) increase in congestion around major port cities, thus more pollution, which in turn will trigger more regulation; (2) new trade routes, creating opportunities to serve new markets; (3) new transportation models that ensures effective delivery and distribution (BSR, 2010). This trend will also have an impact on stakeholders such as ports, which will experience increasing pressure for adopting stronger local environmental regulations and schemes that benefit local socio-economic development through greater international shipping support.

2.6.3 Moving from Oil

Fossil fuels have powered the global economy for the past 200 years due to being relatively easy and cheap to obtain. However, the industry is facing increasing volatility in price of fossil fuels and new air emission limitations (e.g.: NO_x, SO_x). Subsequently, competition to supply low-sulphur distillates will upsurge. The industry leaders will most probably be those steadfast in planned transition to non-fossil fuel fleets.

2.6.4 Adapting to a changing climate

Climate change is likely to increase the frequency and severity of storms and has the potential to influence ocean currents. Ports and other coastal facilities could be threatened by sea-level rises over the next 30 years. The wider impacts of climate change on food production and flooding of major population centres could have huge implications for global trade and shipping. There is a compelling case to take action to prepare for the possible impacts of climate change, as well as to mitigate those impacts by reducing carbon emissions.

2.7 Arista Shipping

Arista Shipping is a Greek company founded in 2007 to provide shipping transportation services. It specializes in managing the worldwide ocean transportation of dry bulk cargoes including commodities such as iron ore, coal, grain, salt, alumina and other minor bulk cargoes. Arista owns and operates fleets in the handysize and supramax size, of which meet the full range of international regulations on environmental protection contained under MARPOL 73/78 Regulation of the International Maritime Organisation (IMO).

The company places particular attention to environmental issues and aim to protect and improve the environment through diligent management and adoption of best-known practices.

It does so by annual evaluations of its environmental compliance such as air emissions, discharges into the sea, waste disposal, land pollution and use of raw materials and resources.

In addition to complying with environmental regulations, Arista exceed its efforts by aspiring to the following objectives:

1. Continuous investment in new technologies and implementation of environment-friendly methods;
2. Minimization of any adverse effects of machinery operation by ensuring unimpeded operation through proper and timely maintenance;
3. Encouragement of staff (office and maritime personnel) to adopt environment-friendly practices and develop environmental awareness through proper information and training;
4. Active participation in organisations that promote the principles of environmental safety and protection;
5. Participation in international research and development programs that promote efficiency, accountability and pollutants' reduction within the shipping sector;
6. Constantly being updated on environmental issues and adopting new cutting-edge practices regarding the environment.

Examples of how Arista applies strict environmental criteria of operation include:

1. All chemicals used in ships have been selected based on their friendliness to the environment.
2. Prohibition of use of substances that cause ozone depletion; all chemical additives in use have been chosen for their environmental compatibility.
3. As far as human resources are concerned, Arista trains its employees on best practices and minimum disturbance to the environment.

“Arista Shipping is an active member of the HELMEPA (Hellenic Marine Environment Protection Association), a non-profit, non-governmental association, the purpose of which is the development of ecological awareness and the establishment of the ‘safe operation’ culture within the shipping sector, with the help of publicity, advertisement and information” (Arista Shipping, 2018).

2.7.1 Project Forward

Project Forward was conceived in 2013, and funded by Arista Shipping, to combat global ship emissions by promoting the adoption of LNG as a marine fuel. The project is a joint development that engaged extensive research to develop a technically reliable and commercially feasible design of kamsarmax sized gearless bulk carriers (kamsarmax got its name by meeting the 229-meter limit on ship length at the Port of Kamsar, a major bauxite shipping port in the Republic of Guinea on the west coast of Africa). This design was developed

to have increased deadweight, improvements in vessel manoeuvrability, stability, fuel efficiency and propulsion over the traditional panamax. Arista's Project Forward R&D was made possible by the integration of efforts from industry leaders such as American Bureau of Shipping (one of worlds' leading ship classifications societies), Deltamarin (a ship designer, offshore engineering and construction group), Gaztransport & Technigaz (leading engineering company specialized in the design of membrane containment systems for the maritime transportation and storage of LNG), Wärtsilä (manufactures and services state of the art power sources and equipment in the marine and energy markets) and Royal Dutch Shell plc has also allied with Project Forward to assist in the global distribution of LNG ("Project Forward," 2018).

The projects' LNG-powered vessels, Forward Ships, not only comply, but exceeds all known applicable and forthcoming environmental regulations, including International Maritime Organization's (IMO) Energy Efficiency Design Index 2025 standards, NOx Tier III and Marpol Annex VI SOx emission levels. Forward ships were built to reduce emissions of CO2 up to 35%, reduce NOx by 80%, reduce SOx by 99% and reduce particulate matter by 99% ("Project Forward," 2018).

A NEW CLASS OF HYBRID DUAL FUEL SHIPS

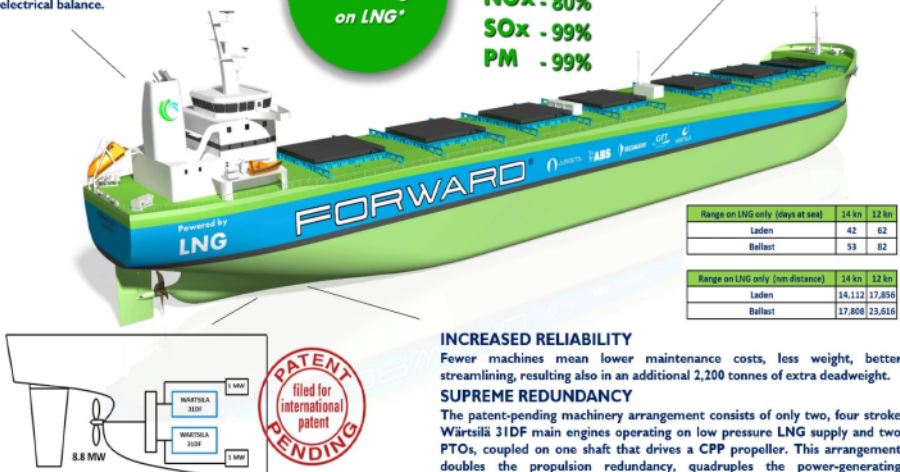
A UNIQUE FUEL MIX
LNG requires neither scrubbers nor catalytic converters ("SCR"). The result is also a lower, more economical electrical balance.

**40 days
ocean range
on LNG***

**Emissions Savings:
[over HFO]**

CO₂ - 35%
NO_x - 80%
SO_x - 99%
PM - 99%

NO HFO
The 2,500 m³ membrane-type LNG tank is adequate for 40 days in the ocean or for 14,000 nautical miles and it is positioned midships for better trim management and volume optimization. (HFO: Heavy Fuel Oil)



Range on LNG only (days at sea)		
Laden	14 kn	32 kn
Ballast	42	62
Ballast	53	82

Range on LNG only (nm distance)		
Laden	14 kn	32 kn
Laden	14,112	17,856
Ballast	17,808	23,616

✓

**EEDI 2025
Standards
Exceeded**

DESIGN BASIS:
Deltamarin B-delta 82

INCREASED RELIABILITY
Fewer machines mean lower maintenance costs, less weight, better streamlining, resulting also in an additional 2,200 tonnes of extra deadweight.

SUPREME REDUNDANCY
The patent-pending machinery arrangement consists of only two, four stroke Wärtsilä 31DF main engines operating on low pressure LNG supply and two PTOs, coupled on one shaft that drives a CPP propeller. This arrangement doubles the propulsion redundancy, quadruples the power-generating redundancy, and provides safe return to port.

2.8 The Holdback: Disengagement with Critical Stakeholders

Project Forward in the eyes of Arista is the perfect innovation that the industry needs. However, not all stakeholders have the same opinion, and unfortunately this has put the progress of the project to a halt. As previously mentioned, shipping is a very capital-intensive industry but not

labour or technologically advanced, thus financing plays a rather disproportionately valuable role. Naturally, due to its' exorbitant capital, the opportunity can be quite easily miscalculated and end up in massive losses. Therefore, it is of no surprise Arista has been struggling to engage with critical stakeholders such as investors, charterers and shipyards whose main interests are the commercialisation of the ships as well as profit maximisation.

2.8.1 Stakeholder Apprehensions

Charterers – Availability of LNG

After a thorough discussion with charterers, it was clear to see their worries lie in the short-term uncertainty that follows the project, more specifically, the availability of LNG.

Although other types of LNG fuelled vessel, such as ferries, are in operation on short-sea routes i.e.: Baltic Sea, where there is fixed port rotation, and super-sized contained vessels which are employed on Asia to North Europe trade, i.e.: 15,000 TEU (twenty-foot equivalent unit – measuring unit used for container shipping) plus sizes. LNG supply is being developed now, for vessels currently being built.

The issue for Project Forward (being a bulk carrier design for LNG), is the tramping (no fixed trading routes) nature of these vessels, i.e.: the vessel throughout its' life may be employed for different trading ports, countries and regions. Thus, these types of vessel must operate under a certain level of flexibility, where LNG is not currently available in many ports worldwide.

The requirements for LNG availability include port infrastructure and storage facilities improvements which are extremely costly. Although this is a major concern, charterers themselves know “this will eventually change over time as LNG use becomes more widespread” (expert).

Charterers – Commercial Considerations

The Project Forward kamsarmax vessels will have an increased capital of approximately USD 9.5M per vessel over traditional old generation designs. Hence, additional charter hire income will be required to pay by the charterer of USD 2, 050 per day over the contracted charter period of ten years, taking into consideration the current market conditions (see Appendix 3 for vessel acquisition analysis comparisons).

However, the charterer will get the benefit of the eco design and improved bunker fuel saving, that would outweigh additional charter hire costs. Based on Project Forward's fuel cost saving comparisons, an LNG vessel will save an additional USD 1.3M per year per vessel (USD 3,500 per day) in comparison to a traditional vessel that burns low sulphur fuel oil that.

Financiers and Investors

In shipping there are four main methods of financing which include: equity, debt, mezzanine and leasing; with money deriving from three main markets: the money market (short-term debt), the capital market (long-term debt), and the stock market (equity) (Mykoo, 2003).

In equity financing, the company seeks investors that are willing to share the risks as well as rewards. In debt financing, the company borrows money in the form of a loan and can then repay the lender in a flexible manner and retain full ownership of the business. Mezzanine is a combination of equity and debt financing. In lease financing, the owner of the ship (the lessor), hands over the vessel to the lessee who is free to operate it as if it was his own. During the lease there's a rental stream and at the end of the lease the ship reverts back to its owner (lessor).

The project is in very early stages, and too early to define the best financing option particularly for the current instability in financial market. Nonetheless, for the sake of this project, it seems most viable for Arista is to lease finance the project.

Shipyards

Usually, a ship is built by sections, which involves thousands of separate purchase orders. Initially, the shipyard prepares a framework of design, cost estimates, building strategy and production plans. If the buyer, in this case Arista, approves it and signs the shipbuilding contract, the framework will be refined with more detailed working drawings and parts lists. Typically, payment instalments from the buyer (Arista) or his financing bank match the costs and financial risks the shipyard must bear.

Hence, shipyards may not be keen to commit to Project Forward at first due to high risk exposure. More specifically, if Arista does not pay for construction of the vessels on time, the shipyards are then left with ships in semi completed state to complete the shipbuilding at their own expense and then try to find buyers for the vessels. In this scenario the shipbuilder will be highly exposed to 'vultures' in the industries. i.e.: private equity companies or traditional shipowners only willing to pay a marginal value for the vessels (e.g.: 50% of cost of construction), as these vessels have no track record of performance.

The yards also run the risk of renegotiation of contract by Arista. If Arista do not find charterers willing to commercialise the vessels, then they may want to delay the delivery of vessels and renegotiate newbuilding contract conditions with the yard. This can have severe consequences for the shipyard depending on the production cycle of the vessel.

3.0 Literature Review

3.1 Hybrid Organisations

Hybrid organizations are defined as “enterprises that design their business models based on the alleviation of a particular social or environmental issue. Hybrids generate income and attract capital in ways that may be consistent with for-profit models, non-profit models, or both” (Walker, 2015, p. 1-4). In other words, a hybrid firm is one that combines for-profit practices with non-profit practices. The concept of “hybridity” can be somewhat “fuzzy” to understand, nonetheless, there are common characteristics often observed in hybrid organisations. These include (Doherty et al., 2014):

- Operating with social and/or environmental purpose, and prioritising economic value creation (distinguishing hybrids from traditional firms);
- Generating income/profits from mission or non-mission related activities (distinguishing hybrids from charities);
- Creating strong stakeholder involvement and relationship based on mutual values and outcomes;
- Reinvesting most of profit back into the firm for social purposes, innovation to improving the business model and activities.

3.2 Stakeholder theory

Before expanding on the theory, it is vital to elucidate what are stakeholders, as *“it is by defining what is and what is not stakeholder that we create the reality of whose interests are, and are not, attended to and, in turn, discriminate what is, and is not, empirically tested by academics, attended to by managers or, regulated in practice”* (David M. Wasieleski, 2017, p. 51-57). One of the most common definitions of stakeholders is: “those groups and individuals who can affect or be affected by the actions connected to value creation and trade” (Freeman, 2010). Thus, it is important to consider that stakeholder theory analyses the relationships between an organization and its stakeholders rather than the company itself (Freeman, 2010). However, it is somewhat wise to take into consideration definitions from other literature, thus, a stakeholder is one who has a ‘stake’ in the organisation and is also able to influence development of the organisation (Donaldson & Preston, 1995). To this definition, it must be incorporated the idea that the character of the relationship between a stakeholder and an organisation is dynamic (Mitchell, Agle, & Wood, 1997).

The theory is often visually described in a framework that is representative of the bidirectional relationship between stakeholders and the firm (Figure 1).

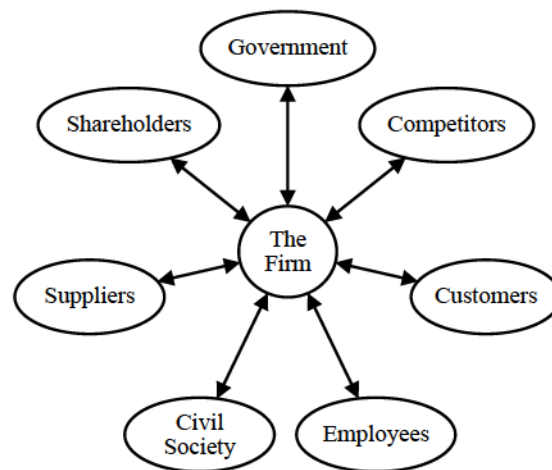


Figure 1 –The Original Stakeholder Theory Model (Freeman, 1984)

Moreover, the theory also proposes that a company’s real success depends on its abilities to satisfy all stakeholders, and not just those who profit financially or from stocks (stockholders) (Freeman, 2010). This unprecedented theory explicitly addresses moral and values as the predominant characteristic of managing organizations (Phillips, Freeman, & Wicks, 2003). Thus, stakeholder theory is about creating higher level of well-being for stakeholders involved in the system of value creation led by the firm. Moreover, the theory assists the identification of stakeholders who are most influential and impactful in respect to the decision-making process of the organisation.

3.2.1 Managing Stakeholder Relationship

All organisations need resources that stakeholders provide them with, and in return they create value for the stakeholders by addressing their different interests (Measure, 2008), creating an interdependence between the two. Organisations are faced with the tricky task of balancing different stakeholder interests to prevent withdrawal of collaboration from stakeholders (Donaldson & Preston, 1995). Stakeholder theory focuses on managing stakeholder relationships which is a particularly important element of hybrid firms. The central task in this approach is to manage and integrate relationship and interests of stakeholders in a way that ensures long-term success for the firm. Therefore, organisations need to interpret, weigh and balance stakeholders’ interest and values (Lewis, 2014). It preserves an active management of the business environment, relationships and promotion of shared interest. Traditional views have ignored some group of stakeholders, although firms have succeeded in the past utilizing this method, current turbulent and ever-changing environments may pose this as ineffective

(Freeman, 2010). Therefore, the stakeholder approach has been developed to suit these dynamic environments. Managing stakeholder relationships involves concretizing “names and faces” for stakeholders rather than simply identifying their roles. Furthermore, it is increasingly important to identify the *specific* stakeholders to the firm and not just the stakeholders in general/theory.

This approach also calls for a strategy that satisfies multiple stakeholders simultaneously, by assimilating perspectives of all stakeholders rather than favouring one against the other. Having said, it does not mean that all stakeholders will benefit at the same time (some may be harmed), and that all stakeholders must be treated equally (Phillips et al., 2003). However, management must develop strategies to distribute harms in a way that does not affect the long-term growth of firm.

3.2.2 Stakeholder Management Process

To establish and maintain healthy stakeholder relationships, it is vital that organisations carry out efficient stakeholder management and engagement practices. The failure to do so, can lead to misunderstanding and conflicts between stakeholders, thus affecting success of the organisation. Stakeholder management is the use of a systematic process and techniques for identifying, analysis, planning and implementing actions designed to engage with stakeholders, enhancing the strategic management ability of the organisation (Bal, Bryde, Fearon, & Ochieng, 2013). The process in this case study is illustrated as such:

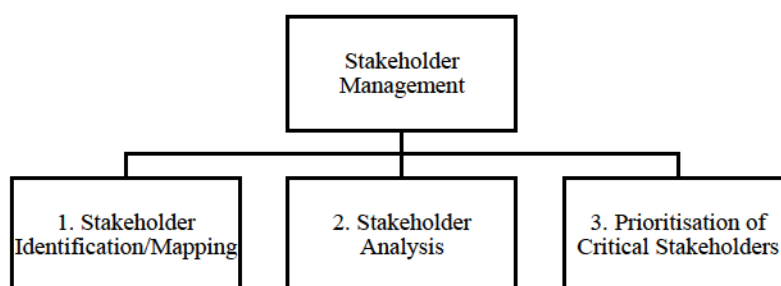


Figure 2 – Stakeholder Management Process (Adapted)

(Pacagnella Júnior, Porto, Pacífico, & Salgado Júnior, 2015)

3.2.3 Stakeholder Identification and Mapping

Stakeholder identification initiates with listing and brainstorming of all entities involved in the organisation. Managers then proceed to a deeper analysis to recognise and acknowledge the stakeholder's interests, involvement, interdependencies, influence, and potential impact on the organisation's success. Firstly, stakeholders should be positioned in an array of power/influence (Figure 3).

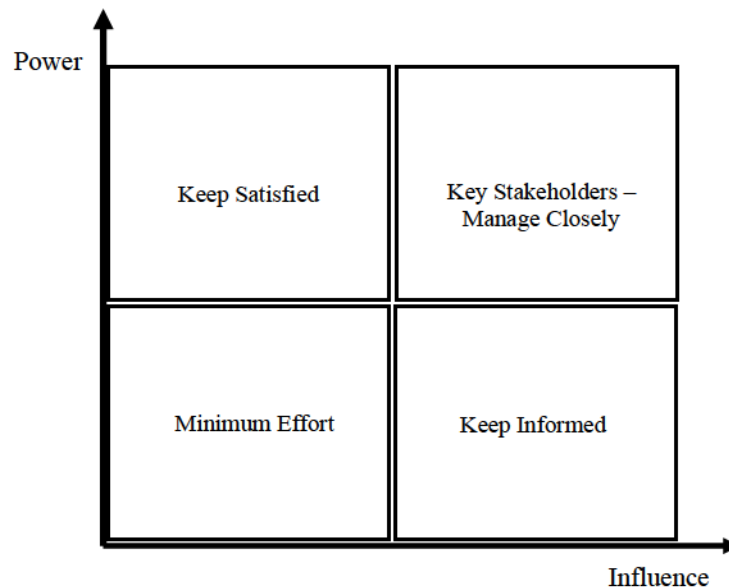


Figure 3 – Power/Influence Grid (Mendelow, 1981)

This analyses the stakeholder's level of power that relate to their ability to impose their will on decisions. (Apiaceae & Doldenblütler, 2010).

3.2.4 Evaluation

Moreover, stakeholders have three common attributes: power (as previously mentioned), legitimacy and urgency.

Power is “a relationship among social actors in which one social actor, A, can get another social actor, B, to do something that B would not have otherwise done” (Mitchell et al., 1997, p. 853-886). This attribute can be categorized based on type of resource used to implement it: coercive, power established on force and physical resources; utilitarian, power established on material or financial means; normative, power established on symbolic resources (Ikeda, 1965). Therefore, stakeholders can have or obtain either type of power, nonetheless, power is transitory and can be acquired as well as lost (Mitchell et al., 1997, p. 853-886).

Legitimacy is “a generalized perception or assumption that the actions of an entity are desirable, proper or appropriate within some socially constructed system of norms, values,

beliefs and definitions” (Suchman, 1995, p.571-610). It is a desirable attribute, that is defined and conveyed differently at various levels of a social system. Legitimacy and power may combine to create authority (Hermann, 1983), although authority can exist autonomously too. A stakeholder may hold strong legitimate reputation, but unless it has power to enforce its will in the relationship or urgency in its claim, it will not achieve salience for the organisation (Mitchell et al., 1997, p. 853-886).

Urgency is “*the degree to which stakeholder claims call for immediate attention*” (Mitchell et al., 1997, p. 853-886). Nonetheless, urgency is based on two attributes: (1) time-sensitivity – when managerial delays concerning the relationship are unacceptable by stakeholders; (2) criticality – importance of the relationship to the stakeholder (Mitchell et al., 1997, p. 853-886).

These attributes provide ‘salience’, which is the “degree to which managers give priority to competing stakeholders’ claims”. The salience model brings clarity in prominence and importance of different stakeholders. The diagram illustrates the model (Figure 4).

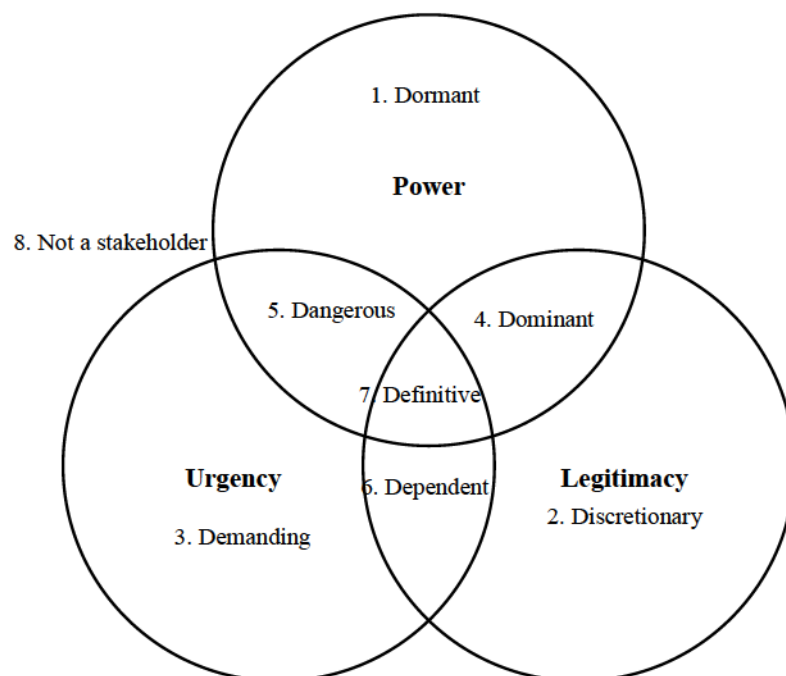


Figure 4 – Stakeholder Salience Diagram (Mitchell, 1997)

- 1. Dormant stakeholders:** have power but not urgency nor legitimacy. These stakeholders should be acknowledged but no extensive plan of communication needed.

2. **Discretionary stakeholders:** are legitimate but have no power nor urgency. Little attention should be given, and minimal communication is sufficient.
3. **Demanding stakeholders:** They are with urgency and their needs have to be met when asked for.
4. **Dominant stakeholders:** Power and legitimacy overlap. Dominant stakeholders have legitimacy and authority. Their communication needs must be taken into account.
5. **Dangerous stakeholders:** These stakeholders have a combination of power and urgency. Making them very useful for the welfare of the project, thus their needs must be met.
6. **Dependent stakeholders:** They are legitimate and have the urgency but do not have proportionate power. Keep them informed as they could be of help when you need to leverage their strengths in navigating the organization complexities.
7. **Definitive stakeholders:** The most important area in this model – where the power and legitimacy converge and gets combined with ability to get urgency from the organization; the most critical category of stakeholders which is always to be kept informed, satisfied and involved.

(Mitchell et al., 1997)

With the gathered information from the above analysis, organisations can prioritize their attention to specific stakeholders; i.e.: the definitive stakeholders.

3.3 Stakeholder Engagement and Analysis

Stakeholder engagement is the interaction and influencing stakeholders to the overall benefit of the project. How stakeholders view a project determines the successful completion of the project (Development, 2011). Stakeholders expectations, needs, acuties, concerns and personal agendas influence the project and outcomes that can be achieved as well as shape its' success. Therefore, stakeholder engagement is undoubtedly important. The current level of stakeholder engagement can be analysed and compared for successful implementation of engagement strategy.

The engagement level of the stakeholders can be classified as follows (Guide & Edition, 2010):

- **Unaware.** Unaware of project and potential impacts.
- **Resistant.** Aware of project and potential impacts and resistant to change.
- **Neutral.** Aware of project yet neither supportive nor resistant.

- **Supportive.** Aware of project and potential impacts and supportive to change.
- **Leading.** Aware of project and potential impacts and actively engaged in ensuring the project is a success.

This is analysed using the ‘stakeholder engagement assessment matrix’, where ‘C’ indicated the current engagement and ‘D’ indicates the desired engagement (Figure 5). The desired level of engagement is based on background information regarding the stakeholders (stakeholder analysis).

Stakeholder	Unaware	Resistant	Neutral	Supportive	Leading
Stakeholder 1	C			D	
Stakeholder 2			C	D	
Stakeholder 3				C, D	

Figure 5 – Stakeholder Engagement Assessment Matrix (Guide & Edition, 2010)

This analytical process allows for gaps between the current and the desired level of engagement to be identified.

Once all analysis is complete, organisations then consider all the engagement methods that apply to build relationships, gather information, consult and disseminate organisation’s information to stakeholders (Appendix 4).

4.0 Teaching Notes

4.1 Introduction

This case study presents Arista Forward Fleet, an innovative shipping company operating in Greece and Portugal. The case describes how Arista actively seeks to protect the environment with their Project Forward, and how this project is a key element that makes Arista, currently, the only hybrid organisation in the shipping industry. Covering in sufficient detail the present industry environment, the case provides insight into the challenges that Arista have faced and are facing now.

The main purpose of this case study is to understand the complexity of stakeholders involved in the project and to describe potential approaches to effectively engage with key stakeholders in attempt to overcome challenges so that the project can successfully take effect. It should be discussed using the stakeholder theory and the stakeholder management as well as stakeholder engagement methods provided in the Literature Review chapter.

4.2 Case Overview

Arista is a global provider of shipping transportation and services that specialises in managing the worldwide ocean transportation of dry bulk cargoes, including commodities such as iron ore, coal, grain, salt, alumina and other minor bulk cargoes. The company places particular importance to the environment where it has invested millions in the game changing Project Forward.

Project Forward is a joint development project with globally established industry leaders whom aspire to combat global ship emissions in the most effective manner. The project was conceived in 2013 and presented in 2015. After extensive research and development programs it identified liquefied natural gas (LNG) as the most effective and sustainable marine fuel. Moreover, major efforts were made to come up with a technically reliable and commercially feasible design of vessel, Forward Vessels, that produces extremely low environmental carbon footprint and reduces the cost of transportation at sea. Thus, modernizing the shipping industry and defining new standards of vessel for the near future. The Forward Vessels will exceed all known, applicable and forthcoming environmental regulations, including those imposed by the International Maritime Organization (IMO) 2016 Tier III regulations (explained in case). It will also exceed the most rigorous Energy Efficacy Design Index 2025 standards and emission levels.

Being the first hybrid company with such great environmental and social concerns in the shipping industry has proven to be laborious. Arista is now facing the ultimate challenge in managing stakeholders with common values who have strong interest and sees the potential of the project.

4.3 Learning Objectives

The case study presents the difficulties that organizations face when managing stakeholders, in trying to adopt a hybrid business model.

At the end of the case study, students should be able to identify:

- Who are the critical stakeholders that have strong influence in the project's success are, their roles, interests and attributes
- Strategies to effectively engage with those stakeholders (communication & influence)

4.4 Assignment questions

The following questions intend to help students apply theoretical concepts that address to the case study. They were designed to promote the use of managerial knowledge, to provide a solution to the case for managing stakeholders.

The assignment questions are:

3. Who are the critical stakeholders of Arista Forward Project?
4. How to engage with critical stakeholders in order to develop and maintain healthy relationships with critical stakeholders?

4.5 Class Discussion

The following teaching discussion is structured for a 90-minute class, covering in detail a methodical process of analysing stakeholder management as well as stakeholder engagement.

4.5.1 Guidelines for the instructor

In the first 15-20 minutes of class, the instructor should present the concept of **hybrid organisations**. Moreover, he/she should then present information and facts about the shipping industry, as it is not an industry many students are familiar with. Students should now be aware of the importance of the industry and its impact on the environment. The instructor should then

present Arista and Project Forward, describing in detail its main objectives and aims of the business.

Assignment questions

4.5.2 Who are the critical stakeholders of Arista’s Project Forward?

For the first question, the students should spend 35 minutes analysing the stakeholder management process – identify, evaluate and classify stakeholders in this respective order. Firstly, the instructor is to facilitate the activity by mapping the stakeholders and assisting the discussion. Students are encouraged to volunteer to name stakeholders (or groups of them). Students may not be aware of all of the stakeholders as they are industry specific, for this reason, the instructor is advised to give a brief explanation of stakeholders’ roles. Figure 6 presents a suggestion of Arista Project Forward stakeholders, even though it is possible that more/less alternatives appear during the class discussion. Instructor may also describe the operational stage in order to make understanding easier for students.



Figure 6 – Mind Map of Arista Shipping Project Forward’s Stakeholders

After the identification stage the instructor should guide the students through the mapping, evaluation and classification stage. Here, students should analyse stakeholder’s roles & responsibilities, key interests, Power/Influence and salience attributes (Power, Legitimacy, Urgency) in order to categorize into different types of stakeholders (Table 3). Not all stakeholders will be analysed, however, instructor should prioritise those with higher salience level (i.e.: more attributes).

Table 3 – Evaluation and Classification of Arista’s Project Forward Stakeholders

Stakeholders	Roles & Responsibilities	Key General Interests	Power	Influence	Saliency Attributes	Type of Stakeholder
Shipowner (Arista)	Provide Voyage Information	Safe and efficient plan	High	High	Power, Legitimacy, Urgency	Definitive
	Provide equipment, training and system	Depend on the contractual relationship				
	Give orders for any change	Safe navigation to meet schedule				
	Provide assistance					
	Instruct the port agent about cargo handling	Timely loading /unloading				
Charterer	Provide voyage information	Less expense, time, fuel and distance	High	High	Power, Legitimacy, Urgency	Definitive
	Give direction regarding any change	Fuel and time saving				
	Provide assistance					
	Instruct the port agent about cargo handling	Timely loading /unloading				
Vessel Crew	Provide assistance, experience and knowledge	Planning according to legislation and company guidelines	Low	High	Legitimacy, Urgency	Dependent
	Assist master in navigational and onboard operations	Performance of activities according to standards				
	Provide assistance for safe port entry/leaving	Performance of activities according to standards				
	Assistance in cargo handling operations	Safety of cargo, vessel and workers				
	Provide assistance onboard to navigate through the port area					
IMO	Provide rules, regulations and guidelines	Plan according to rules; Safety of life, environment	High	High	Power, Legitimacy, Urgency	Definitive
	Provide regulatory framework to port authorities	Safety of life, vessel crew, vessel, environment				
	Provide guidelines for port operations to master Guideline on cargo handling	Safety of cargo, vessel, vessel crew, workers and environment				
Port State Authorities	Provide guideline and regulation on port entry/leaving	Compliance with the rules and guidelines	High	Low	Power, Legitimacy	Dominant
	Provide guideline, assistance, services, rules and regulations	Ensure compliance with regulations and International standards				
Agents	Provide Updated information	Provide information as requested	Low	High	Legitimacy, Urgency	Dependent
	Provide Assistance in all port operations	Safe and short stay at port				
	Act according to party who hired them					
	Make arrangements for loading /unloading operations	Safe and efficient loading and unloading				

Flag State Authorities	Prepare necessary documentation	Timely and safely receiving and delivering cargo				
	Set rules and regulations	Compliance with state and international rules				
	Ensure the vessel on voyage meet all the international regulations	Compliance with state and international regulations	High	Low	Power, Legitimacy	Dominant
Classification Societies	Classification of vessel based on rules and regulation	Safety and efficiency of vessel				
	Guidelines on the vessel operational capacity	Safety of vessel, equipment and operations	High	High	Power, Legitimacy	Dominant
	Notification to flag state on if class not maintained					
Cargo Owners	Provide cargo and voyage related information	Safe and schedule cargo transportation				
	Inform charterer/ shipowner any change	Performance and position of the vessel				
	Receive /deliver cargo	Timely and safely receiving and delivering cargo	Low	High	Urgency	Demanding
Academia	Prepare necessary documentation					
	Advices and guidelines on voyage planning	Safe and efficient voyage plan				
	Advice and recommendation on operational efficiency and safety	Safe and efficient navigation	Low	High	Legitimacy	Discretionary
Navy	Provide information and regulation for vessel navigation	No illegal activity or violation of law				
	Monitor the vessel movements	No entry to prohibited areas	High	High	Power, Legitimacy	Dominant
Stevedores	Perform the cargo handling	Do the job as instructed	Low	Low	Legitimacy, Urgency	Dependent
Terminal Operator	Provide facilities and services for cargo handling	Performance of operations as instructed	Low	Low	Urgency	Demanding
Investors/ Financiers	Invest money in the business in order to finance it by means of equity and allow for progression of project/expansion of business	High returns on investment/equity; partial ownership	High	High	Power, Legitimacy, Urgency	Definitive
	Lend money to lessee/business	Return an amount and conditions agreed upon all parties in contract				
Shipbuilders	Provide framework with: design, materials, costs, etc.	Assurance of payment for their services as agreed in contract	High	High	Power, Legitimacy, Urgency	Definitive
	Build and deliver vessel in timely manner					

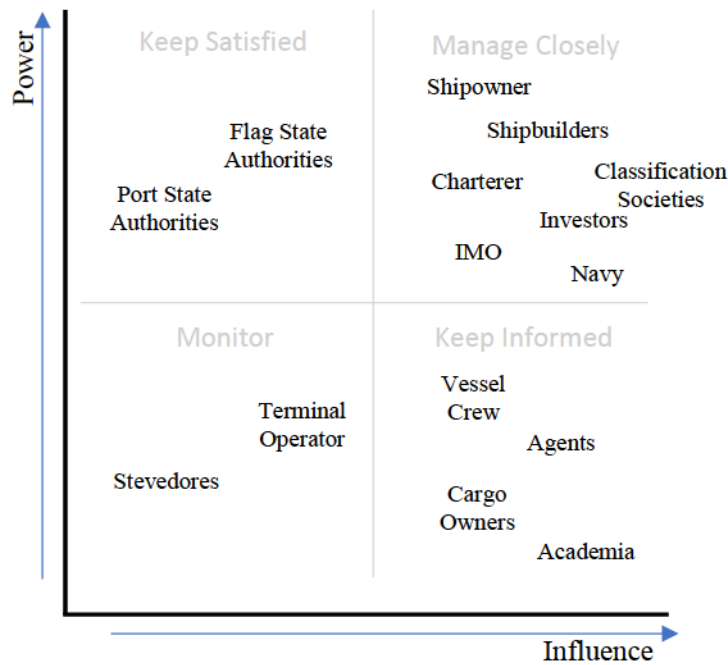


Figure 7 – Map of Power/Influence for Arista’s Project Forward stakeholders

Once the mapping, evaluation and classification are complete, students should now be able to depict which stakeholders Arista should prioritize based on the analysis of salience attributes, thus the type of stakeholder. The definitive stakeholders (IMO, Shipbuilders, Charterers, Investors) are those with strongest salience and thus the ones that Arista need to prioritize. Furthermore, the Power/Influence Map aid students in choosing the method of engagement with all stakeholders.

Below are notes and points of reference that should be discussed when analysing stakeholder’s interests/ roles and the reasoning behind salience attributes given to specific stakeholders:

Charterer.

A charterer is one who hires the vessels from a shipowner for the purpose of commercial operations. The charterer may or may not own cargo. The role and interests of the charterer is bound by the charter party agreement. Charterers independently confirm whether or not ships considered for charter are in satisfactory conditions and well maintained with a reliable crew to ensure first class performance of the vessel owners’ obligations. Charterer is the commercial entity whose main interest is always towards the financial efficiency profit maximisation. Ships stay in business when there’s a charterer willing to deploy it (high power, high influence, urgency and legitimacy)

Vessel Crew.

Onboard vessel crew all have assigned roles and responsibilities that are important throughout all vessel operations (high influence, urgency). Their main interest is to promote the safest

(environmental considerations as well) and most efficient vessel operations. The crew is recruited and trained by the shipowners (legitimacy). They act on the direction of the master (low power).

IMO.

IMO is a “*specialized agency of united nation, for the global standard-setting authority for safety, security and environmental performance of international shipping*” (IMO) (legitimacy). IMO’s role and interest is to establish regulation for the shipping industry that are then globally implemented in a timely manner (urgency), as well as providing legislative framework for proper implementation. Although IMO does not have direct authority to coerce players in the industry to adopt the regulation, the states signatory to IMO conventions do (high power). All maritime authorities work under IMO to ensure its’ main interests are met (high influence).

Flag State.

Nations must exercise control over ships entitled to fly its flag, thus flag state has the administrative, technical, social and juridical authority to enforce its law on the vessel flying its flag (high power, legitimacy). Flag states ensure that vessels meet the international standards, as well as providing the documentation the vessel needs as proof of inspection, safety and pollution prevention measures. Flag state operates its regulations under IMO’s framework and guidance. Signatory states to the IMO conventions have the responsibility to ensure the compliance with convention regulations.

Port state authority.

Once a ship enters the seaward boundary of the demarcated limits for a port, it enters the port under the terms and conditions governing access, and in so doing it becomes subjected to the full jurisdiction of that sovereign state (high power, legitimacy). Port state exercise control based on the principle that it will recognize the international certification issued by, or on behalf of the flag states. It ensures the vessels are in compliance with international regulation. The port can detain vessels that do not meet the required standards. Their main interests are to ensure safety of vessels, in port and for the environment.

Terminal operators.

Terminal operators are privately or public owned entities that provide the cargo handling services. Port state controls the terminal operations and conduct inspection to ensure compliance with regulation (low power, low influence). Terminal operators also follow instructions from the charterers and work accordingly. Their main interest is profit maximisation.

Stevedores.

Stevedores are those who load and unload the cargo in and out of vessels. They are hired by the entity in charge for the loading/unloading of the cargo that is agreed upon terms of contract and thus hired by shipowners and charterers (legitimacy). Stevedores work under the supervision of the vessel master, crew and port agents (low power). Their main responsibility is to load/unload the cargo according to the interests of the hirer (low influence).

Classification societies.

Classification societies represent the process through which the principal standards for constructing ships and their essential engineering systems are developed (high influence). Design appraisals and surveys during construction and periodically through a ships' life ensure certification of compliance with international standards and regulatory bodies (legitimacy). Thus, main interests of the classification societies are to protect the ships as a piece of property. Classification societies work closely with flag states in order to validate certifications of equipment and construction, as well as conducting inspections for safety and pollution.

Navy.

Navy has the authority to restrict the navigation of ships in specified areas (high power, legitimacy), thus, vessel master must take into account any prohibited areas during voyage planning and during navigation (high influence, although only during operation). Inspections are carried out by navy.

Academia.

Academia and educational institutes conduct research on the safety and efficiency of vessels to provide the industry with various solution to potential issues (legitimacy). Thus, their main interests are to make factual recommendations based on scientific data in order to enhance all operational aspects of vessels. Shipowners take the research material into consideration in order to achieve a greater efficiency in the operation of their vessels that in turn can lead to bigger economic benefits (high influence).

Cargo owner.

Cargo owners are those who own the cargo which needs to be shipped. They are usually responsible for providing all the related arrangements and documentations for the transportation of the specific cargo. Cargo owner reaches out to shipowners or charterers. The main interests of the cargo owners are the safety of the cargo and the timely delivery (urgency).

Agents.

Shipping agents legally represent and act on the behalf of the shipowner, cargo owner or charterer (low power). They are held responsible for handling shipments and cargo, and the general interests of its client (urgency). Their main interests are to satisfy the shipowner/cargo owner/charter's needs while complying with local authorities (legitimacy).

Investors/Financiers.

Capital payments dominates a shipowner's cash flow and important financial decisions; thus, investors and financiers contribute to alleviating a lot of the capital so that business can initiate or expand (high influence). Depending on the type of financing method, investor may have partial ownership of the business and their opinions would have to be taken into account for decision making purposes (high influence, high power). Independent of financing method, returns are always expected, either as return on investment/equity or the conditions per agreed in contract.

Shipbuilders.

Shipbuilders and shipyards main job is to construct and deliver new buildings. Having said, shipyards also make/adapt ship designs to their capabilities and expertise (legitimacy) that shipowner must agree to in order for construction to go forth (high power, high influence). They have to make sure that all orders are delivered on time as the production process is directly dependent on the supply of materials and a substantial delay gives the owner the right to kill the contract (urgency).

Shipowners.

Shipowners owns vessels, thus they are responsible for technical, commercial and safety management, as well as legislative tasks, crew recruitment/training, provision of tools and equipment and all necessary documentation. Shipowners have direct authority over its vessels. Their main interests are profit maximization without forfeiting safety and efficiency.

4.5.3 How to engage with critical stakeholders in order to develop and maintain healthy relationships with critical stakeholders?

The second assignment question should be answered in 25 minutes. Here, students will judge and evaluate the current and desired level of engagement for the critical stakeholders: Charterers, IMO, Shipbuilders and Investors. Thus, students should create a Stakeholder Engagement Assessment Matrix, where their judgement is based on the criteria provided in the literature review and information from the case study.

Table 4 – Stakeholder Engagement Assessment Matrix for Arista’s Project Forward

Stakeholder	Unaware	Resistant	Neutral	Supportive	Leading
Charterers		C			D
IMO				C, D	
Investors		C		D	
Shipbuilders		C	D		

Students can now begin analysing the most effective methods of engagement with the critical stakeholders that have a discrepancy in level of engagement: Charterer, Investors, Shipbuilders.

Table 5 – Most Suitable Stakeholder Techniques

Stakeholder	Technique	Justification/Recommendations
Charterers	1) Public Meetings	In order to reach large chartering audience and filter out those that do not align with the same environmental concerns Focus on major charterers, or combining smaller charters to align requirements, in order to have specific trading routes where LNG is available
	2) Personal Interview	Charterers need confidentiality in order to have competitive advantage over other charterers. Focus on trading routes where vessel can be employed and large tonnage in semi-permanent trading routes, at least in the beginning stages while LNG supply is not widely available Charterer will want to amend/improve various aspects of vessel design and terms & conditions that will be specific to each charters’ trading patterns and/or cargo types
Financier/ Investors	1) Forums	Start with forums to get initial buy-in from investors that share same values and investment portfolio perspectives
	2) Personal Interview	Once Arista have buy-in from potential investors, then personal interviews will need to commence for initiation of negotiations and sourcing the lead stroke minority financiers Although confidentiality is key, investor would also need to know who the other investors are for risk management assessment and credit rating purposes
Shipbuilders	1) Workshops	Workshops where main, financially stable yards are. E.g.: China, Japan, Korea, etc. To achieve initial buy-in interest prior to tender bidding process between Arista and yards
	2) Personal Interview	Direct negotiations are required between owner and the shipyard Confidentiality prevents shipyards from exchanging information with other shipyards and shipowners, thus preventing copy of designs and ideas

4.6 Class conclusion & Wrap Up

By the end of the case, the instructor should spend the last 10 minutes debriefing and wrapping up each assignment questions. The instructor should then proceed to explain the importance of the methodical steps of analysis and how it can contribute to Arista's success.

In the end, students should be able to understand the importance of managing stakeholders and stakeholder engagement to successfully integrate a hybrid business model.

5.0 Conclusion

In an industry that is considered to be ‘old-fashioned’ and slow to change, it is of no surprise Arista Shipping stands out. Their ambition to excel in delivering the most environmentally friendly services possible surpasses any competitor in the market. This ambition, together with Arista’s innovative drive to construct and operate Forward Fleet, has made them a hybrid organisation.

However, when engaging in personal interviews with one of Arista’s representative, the obstacles they have been facing with stakeholders, as described in the case study, was presented in a very clear manner. Although Arista had an idea of who their critical stakeholders were, their analysis had been based on first-hand experience and intuition rather than a factual framework. With this in mind, the research focus of this study is to analyse the stakeholders involved in Project Forward in order to understand how Arista should engage with them for the success of the project.

To achieve this, the case study was conducted to describe the situation in a more academic approach, that allows a methodical practice to be developed. Hence, stakeholders are firstly prioritised using key management processes and analysis. Once stakeholders’ roles, interests and attributes are thoroughly understood, they can be matched with the most adequate method of engagement. The match also takes into consideration the objectives of both the stakeholder and Arista.

The initial analysis presented the critical stakeholders: charterers, shipyards, investors, and regulatory body (IMO). This was done by qualitatively measuring out stakeholder’s salience (Table 3) and visually mapping out their position (Figure 7) in terms of power/influence in the project. The level of engagement is then outlined, showing a discrepancy with all critical stakeholders with exception of IMO, as the project’s goals are in line with IMO’s objectives. Now that stakeholders whose relationships need to be improved are recognised, they can be matched to a method of engagement. This is done by taking into account the initial stakeholder analysis as well as the methods of engagement criteria (Appendix 4) (Centre et al., 2009). This resulted in the conclusion that the best engagement practices are the following: public meetings and personal interviews for charterers, forums and personal interviews for investors, workshops and personal interviews for shipyards. These results allow Arista to know exactly where their main focus and resources should be channelled, to increase their chance of overcoming their current stakeholder challenge considering the above justifications and recommendations.

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7.0 Appendices

7.1 Appendix 1

Strategic options that will be pursued by players in the industry, consequently distinguishing losers from the winners (BSR, 2010).

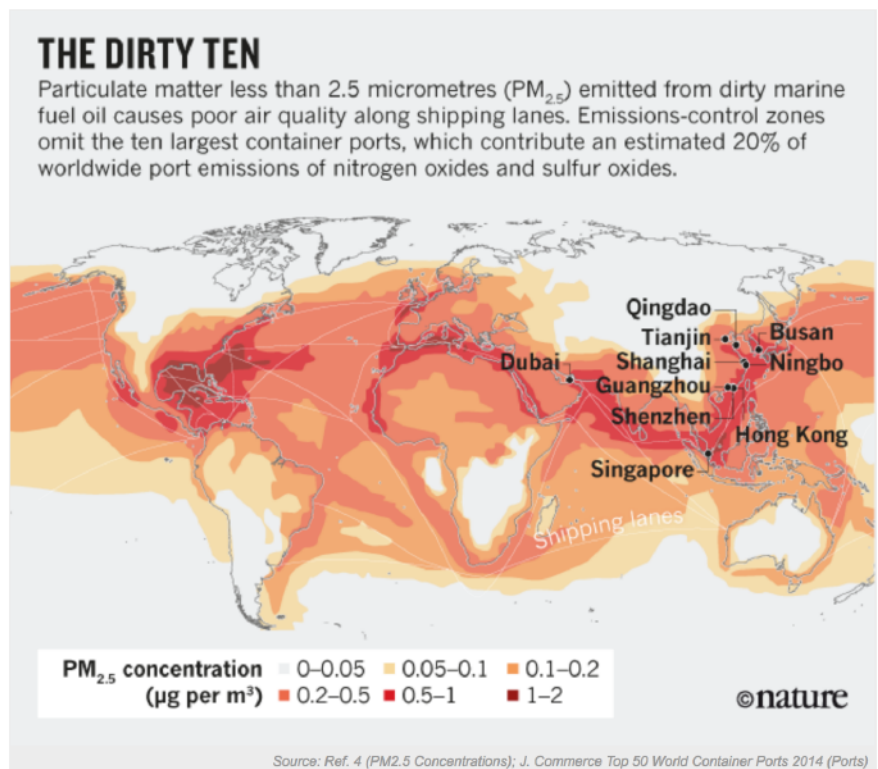
Value creation from product and business model transformation	Dreamers	Winners
	» Only green lanes, low-sulfur fuel only, loose sight of costs, solar panel driven ships, etc.	» Use operational efficiency as a baseline to develop new green services to customers such as green lanes, and complete data sets on cargo impacts. » Proactively work with customers on reducing their sustainability impacts.
Value creation from waste, cost, and risk reduction	Losers	Defenders
	» Pursue a strict legal compliance strategy.	» Focus on operational efficiency while building green elements into existing business models. » Limited innovation around services. » Limited cooperation with value chain partners.
	Capacity of tactical execution	Capacity for strategic execution

Inspired by David A. Lubin and Daniel C. Esty in Harvard Business Review, May 2010

7.2 Appendix 2

‘The Dirty Ten’

(Wan, 2016).



7.3 Appendix 3

Vessel acquisition analysis taking into account USD 43.5 million initial cost for LNG Forward kamsarmax design vessel and a charter hire rate of USD 17,000 (to compensate for higher costs). Obtains a return on equity prediction of 6.41%.

Vessel Acquisition analysis																																
02/01/2019																																
Initial cost		\$43,500,000.00			loan			\$30,450,000.00			equity			\$13,050,000.00			Daily income			\$17,000.00												
Salvage value		\$3,000,000.00			interest			6.00%			interest			6.00%			commission			5.00%												
Useful life (years)		25.00			tenor			15.00%			tenor			20.00			net			16,150.00												
ANNUAL DEPRECIATION AMOUNTS					DOCKING/SS COSTS			LOAN AMORTIZATION				DAILY COSTS				EARNINGS																
Years	value (Boo)	Straight Line	Declining Balance	expense	depreciation	Principal	Scheduled Payment	Principal repaid	interest	DEPR	Interest	running cost	Interest on equity	TOTAL	Net Charter hire	Daily additional return	Annual additional return	Daily return	Annual additional return	R.O.E.												
1	\$43,500,000.00	\$1,620,000.00	\$41,880,000.00			\$30,450,000.00	\$3,135,216.16	\$1,308,216.16	\$1,827,000.00	\$4,500.00	\$5,075.00	\$4,750.00	\$14,325.00	\$2,175.00	16,150.00	-\$350.00	-\$126,000.00	\$1,825.00	\$657,000.00	5.03%												
2	\$41,880,000.00	\$1,620,000.00	\$40,260,000.00			\$29,141,783.84	\$3,135,216.16	\$1,386,709.13	\$1,748,507.03	\$4,500.00	\$4,856.96	\$4,892.50	\$14,249.46	\$2,175.00	16,150.00	-\$274.46	-\$98,807.03	\$1,900.54	\$684,192.97	5.24%												
3	\$40,260,000.00	\$1,620,000.00	\$38,640,000.00	\$250,000.00	\$125,000.00	\$27,755,074.71	\$3,135,216.16	\$1,469,911.68	\$1,665,304.48	\$4,847.22	\$4,625.85	\$5,039.28	\$14,512.34	\$2,175.00	16,150.00	-\$537.34	-\$193,443.48	\$1,637.66	\$589,556.52	4.52%												
4	\$38,640,000.00	\$1,620,000.00	\$37,020,000.00		\$125,000.00	\$26,285,163.03	\$3,135,216.16	\$1,556,106.38	\$1,577,109.78	\$4,847.22	\$4,380.86	\$5,190.45	\$14,418.54	\$2,175.00	16,150.00	-\$443.54	-\$159,672.95	\$1,731.46	\$623,327.05	4.78%												
5	\$37,020,000.00	\$1,620,000.00	\$35,400,000.00	\$500,000.00	\$166,666.67	\$24,727,056.64	\$3,135,216.16	\$1,651,592.76	\$1,483,623.40	\$4,962.96	\$4,121.18	\$5,346.17	\$14,430.31	\$2,175.00	16,150.00	-\$455.31	-\$163,910.13	\$1,719.69	\$619,089.87	4.74%												
6	\$35,400,000.00	\$1,620,000.00	\$33,780,000.00		\$166,666.67	\$23,075,463.88	\$3,135,216.16	\$1,750,688.33	\$1,384,627.83	\$4,962.96	\$3,845.91	\$5,506.55	\$14,315.43	\$2,175.00	16,150.00	-\$340.43	-\$122,553.17	\$1,834.57	\$660,446.83	5.06%												
7	\$33,780,000.00	\$1,620,000.00	\$32,160,000.00		\$166,666.67	\$21,324,775.55	\$3,135,216.16	\$1,855,729.63	\$1,279,486.53	\$4,962.96	\$3,554.13	\$5,671.75	\$14,188.84	\$2,175.00	16,150.00	-\$213.84	-\$76,982.63	\$1,961.16	\$706,017.37	5.41%												
8	\$32,160,000.00	\$1,620,000.00	\$30,540,000.00	\$300,000.00	\$150,000.00	\$19,469,045.92	\$3,135,216.16	\$1,967,073.41	\$1,168,142.76	\$4,916.67	\$3,244.84	\$5,841.90	\$14,003.41	\$2,175.00	16,150.00	-\$26.41	-\$10,227.07	\$2,146.59	\$772,772.93	5.92%												
9	\$30,540,000.00	\$1,620,000.00	\$28,920,000.00		\$150,000.00	\$17,501,972.51	\$3,135,216.16	\$2,085,097.81	\$1,050,118.35	\$4,916.67	\$2,917.00	\$6,017.16	\$13,850.82	\$2,175.00	16,150.00	\$124.18	-\$44,704.81	\$2,299.18	\$827,704.81	6.34%												
10	\$28,920,000.00	\$1,620,000.00	\$27,300,000.00	\$700,000.00	\$233,333.33	\$15,416,874.70	\$3,135,216.16	\$2,210,203.68	\$925,012.48	\$5,148.15	\$2,569.48	\$6,197.67	\$13,915.30	\$2,175.00	16,150.00	\$59.70	\$21,492.04	\$2,234.70	\$804,492.04	6.18%												
11	\$27,300,000.00	\$1,620,000.00	\$25,680,000.00		\$233,333.33	\$13,206,671.02	\$3,135,216.16	\$2,342,815.90	\$792,400.26	\$5,148.15	\$2,201.11	\$6,383.60	\$13,732.86	\$2,175.00	16,150.00	\$242.14	\$87,169.40	\$2,417.14	\$870,169.40	6.67%												
12	\$25,680,000.00	\$1,620,000.00	\$24,060,000.00		\$233,333.33	\$10,863,855.12	\$3,135,216.16	\$2,483,384.86	\$651,831.31	\$5,148.15	\$1,810.64	\$6,575.11	\$13,533.90	\$2,175.00	16,150.00	\$441.10	\$158,795.44	\$2,616.10	\$941,795.44	7.22%												
13	\$24,060,000.00	\$1,620,000.00	\$22,440,000.00	\$350,000.00	\$175,000.00	\$8,380,470.27	\$3,135,216.16	\$2,632,387.95	\$502,828.22	\$4,986.11	\$1,396.75	\$6,772.36	\$13,185.22	\$2,175.00	16,150.00	\$819.78	\$295,120.67	\$2,994.78	\$1,078,120.67	8.26%												
14	\$22,440,000.00	\$1,620,000.00	\$20,820,000.00		\$175,000.00	\$5,748,082.32	\$3,135,216.16	\$2,790,331.22	\$344,884.94	\$4,986.11	\$958.01	\$6,975.54	\$12,919.66	\$2,175.00	16,150.00	\$1,055.34	\$379,922.41	\$3,230.34	\$1,162,922.41	8.91%												
15	\$20,820,000.00	\$1,620,000.00	\$19,200,000.00	\$900,000.00	\$300,000.00	\$2,957,751.10	\$3,135,216.16	\$2,780,286.03	\$177,465.07	\$5,333.33	\$492.96	\$7,184.80	\$13,011.09	\$2,175.00	16,150.00	\$963.91	\$347,006.50	\$3,138.91	\$1,130,006.50	8.66%												
16	\$19,200,000.00	\$1,620,000.00	\$17,580,000.00		\$300,000.00	\$0.00	\$3,135,216.16	\$0.00	\$0.00	\$5,333.33	\$0.00	\$7,400.35	\$12,733.68	\$2,175.00	16,150.00	\$1,241.32	\$446,875.72	\$3,416.32	\$1,229,875.72	9.42%												
17	\$17,580,000.00	\$1,620,000.00	\$15,960,000.00		\$300,000.00	\$0.00	\$3,135,216.16	\$0.00	\$0.00	\$5,333.33	\$0.00	\$7,622.36	\$12,965.69	\$2,175.00	16,150.00	\$1,019.31	\$366,951.99	\$3,194.31	\$1,149,951.99	8.81%												
18	\$15,960,000.00	\$1,620,000.00	\$14,340,000.00	\$400,000.00	\$200,000.00	\$0.00	\$3,135,216.16	\$0.00	\$0.00	\$5,055.56	\$0.00	\$7,851.03	\$12,906.58	\$2,175.00	16,150.00	\$1,068.42	\$384,630.55	\$3,243.42	\$1,167,630.55	8.95%												
19	\$14,340,000.00	\$1,620,000.00	\$12,720,000.00		\$200,000.00	\$0.00	\$3,135,216.16	\$0.00	\$0.00	\$5,055.56	\$0.00	\$8,066.56	\$13,142.11	\$2,175.00	16,150.00	\$832.89	\$299,839.47	\$3,007.89	\$1,082,839.47	8.30%												
20	\$12,720,000.00	\$1,620,000.00	\$11,100,000.00	\$1,100,000.00	\$366,666.67	\$0.00	\$3,135,216.16	\$0.00	\$0.00	\$5,518.52	\$0.00	\$8,329.15	\$13,847.67	\$2,175.00	16,150.00	\$127.33	\$45,837.98	\$2,302.33	\$828,837.98	6.35%												
21	\$11,100,000.00	\$1,620,000.00	\$9,480,000.00		\$366,666.67	\$0.00	\$3,135,216.16	\$0.00	\$0.00	\$5,518.52	\$0.00	\$8,579.03	\$14,097.55	\$2,175.00	16,150.00	-\$122.55	-\$44,116.88	\$2,052.45	\$738,893.12	5.66%												
22	\$9,480,000.00	\$1,620,000.00	\$7,860,000.00		\$366,666.67	\$0.00	\$3,135,216.16	\$0.00	\$0.00	\$5,518.52	\$0.00	\$8,836.40	\$14,354.92	\$2,175.00	16,150.00	-\$379.92	-\$136,770.38	\$1,795.08	\$646,229.62	4.95%												
23	\$7,860,000.00	\$1,620,000.00	\$6,240,000.00	\$500,000.00	\$166,666.67	\$0.00	\$3,135,216.16	\$0.00	\$0.00	\$4,962.96	\$0.00	\$9,101.49	\$14,064.45	\$2,175.00	16,150.00	-\$89.45	-\$32,203.50	\$2,085.55	\$750,796.50	5.75%												
24	\$6,240,000.00	\$1,620,000.00	\$4,620,000.00		\$166,666.67	\$0.00	\$3,135,216.16	\$0.00	\$0.00	\$4,962.96	\$0.00	\$9,374.54	\$14,337.50	\$2,175.00	16,150.00	-\$362.50	-\$130,499.60	\$1,812.50	\$652,500.40	5.00%												
25	\$4,620,000.00	\$1,620,000.00	\$3,000,000.00		\$166,666.67	\$0.00	\$3,135,216.16	\$0.00	\$0.00	\$4,962.96	\$0.00	\$9,655.77	\$14,618.73	\$2,175.00	16,150.00	-\$643.73	-\$231,744.59	\$1,531.27	\$551,255.41	4.22%												
AVERAGE DAILY RATES																	\$ 6,927.26		\$ 13,824.84				\$ 15,999.84									
Total															40500000																	

Vessel acquisition analysis taking into account USD 34.0 million initial cost for traditional kamsarmax old generation vessel (burns low sulphur fuel oil) and a charter hire rate of USD 14,950 (market values). Obtains a return on equity prediction of 6.48%.

Vessel Acquisition analysis																					
02/01/2019																					
Initial cost	\$34,000,000.00											loan	\$23,800,000.00	equity	\$10,200,000.00	Daily income	\$14,950.00				
Salvage value	\$3,000,000.00											interest	6.00%	interest	6.00%	commission	5.00%				
Useful life (years)	25.00											tenor	15.00	tenor	20.00	net	14,202.50				
ANNUAL DEPRECIATION AMOUNTS				DOCKING/SS COSTS			LOAN AMORTIZATION					DAILY COSTS				EARNINGS					
Years	value (Beg)	Straight-Line	Declining Balance	expense	depreciation	Principal	Scheduled Payment	Principal repaid	Interest	DEPR	Interest	running cost	TOTAL	Interest on equity	TOTAL	Net Charter hire	Daily additional return	Annual additional return	Daily return	Annual additional return	R.O.E.
1	\$34,000,000.00	\$1,240,000.00	\$32,760,000.00			\$23,800,000.00	\$2,450,513.78	\$1,022,513.78	\$1,428,000.00	\$3,444.44	\$3,966.67	\$4,750.00	\$12,161.11	\$1,700.00	\$13,861.11	14,202.50	\$341.39	\$122,900.00	\$2,041.39	\$734,900.00	7.20%
2	\$32,760,000.00	\$1,240,000.00	\$31,520,000.00			\$22,777,486.22	\$2,450,513.78	\$1,083,864.61	\$1,366,649.17	\$3,444.44	\$3,796.25	\$4,892.50	\$12,133.19	\$1,700.00	\$13,833.19	14,202.50	\$369.31	\$132,950.83	\$2,069.31	\$744,950.83	7.30%
3	\$31,520,000.00	\$1,240,000.00	\$30,280,000.00	\$250,000.00	\$125,000.00	\$21,693,621.61	\$2,450,513.78	\$1,148,896.49	\$1,301,617.30	\$3,791.67	\$3,615.60	\$5,039.28	\$12,446.55	\$1,700.00	\$14,146.55	14,202.50	\$55.95	\$20,143.70	\$1,755.95	\$632,143.70	6.20%
4	\$30,280,000.00	\$1,240,000.00	\$29,040,000.00		\$125,000.00	\$20,544,725.12	\$2,450,513.78	\$1,217,830.27	\$1,232,683.51	\$3,791.67	\$3,424.12	\$5,190.45	\$12,406.24	\$1,700.00	\$14,106.24	14,202.50	\$96.26	\$34,653.32	\$1,796.26	\$646,653.32	6.34%
5	\$29,040,000.00	\$1,240,000.00	\$27,800,000.00	\$500,000.00	\$166,666.67	\$19,326,894.85	\$2,450,513.78	\$1,290,900.09	\$1,159,613.69	\$3,907.41	\$3,221.15	\$5,346.17	\$12,474.72	\$1,700.00	\$14,174.72	14,202.50	\$27.78	\$9,999.58	\$1,727.78	\$621,999.58	6.10%
6	\$27,800,000.00	\$1,240,000.00	\$26,560,000.00		\$166,666.67	\$18,035,994.76	\$2,450,513.78	\$1,368,354.10	\$1,082,159.69	\$3,907.41	\$3,008.00	\$5,506.55	\$12,419.96	\$1,700.00	\$14,119.96	14,202.50	\$82.54	\$29,714.98	\$1,782.54	\$641,714.98	6.29%
7	\$26,560,000.00	\$1,240,000.00	\$25,320,000.00		\$166,666.67	\$16,867,840.66	\$2,450,513.78	\$1,450,455.34	\$1,000,058.44	\$3,907.41	\$2,777.94	\$5,671.75	\$12,357.10	\$1,700.00	\$14,057.10	14,202.50	\$145.40	\$52,345.47	\$1,845.40	\$664,345.47	6.51%
8	\$25,320,000.00	\$1,240,000.00	\$24,080,000.00	\$300,000.00	\$150,000.00	\$15,217,185.32	\$2,450,513.78	\$1,537,482.66	\$913,031.12	\$3,861.11	\$2,536.20	\$5,841.90	\$12,239.21	\$1,700.00	\$13,939.21	14,202.50	\$263.29	\$94,784.57	\$1,963.29	\$706,784.57	6.93%
9	\$24,080,000.00	\$1,240,000.00	\$22,840,000.00		\$150,000.00	\$13,679,702.65	\$2,450,513.78	\$1,629,731.62	\$820,782.16	\$3,861.11	\$2,279.95	\$6,017.16	\$12,158.22	\$1,700.00	\$13,858.22	14,202.50	\$344.28	\$123,941.00	\$2,044.28	\$735,941.00	7.22%
10	\$22,840,000.00	\$1,240,000.00	\$21,600,000.00	\$700,000.00	\$233,333.33	\$12,049,971.03	\$2,450,513.78	\$1,727,515.52	\$722,998.26	\$4,092.59	\$2,008.33	\$6,197.67	\$12,298.59	\$1,700.00	\$13,998.59	14,202.50	\$203.91	\$73,406.26	\$1,903.91	\$685,406.26	6.72%
11	\$21,600,000.00	\$1,240,000.00	\$20,360,000.00		\$233,333.33	\$10,322,455.51	\$2,450,513.78	\$1,831,166.45	\$619,347.33	\$4,092.59	\$1,720.41	\$6,383.60	\$12,196.60	\$1,700.00	\$13,896.60	14,202.50	\$305.90	\$110,122.33	\$2,005.90	\$722,122.33	7.08%
12	\$20,360,000.00	\$1,240,000.00	\$19,120,000.00		\$233,333.33	\$8,491,289.06	\$2,450,513.78	\$1,941,036.44	\$509,477.34	\$4,092.59	\$1,415.21	\$6,575.11	\$12,082.92	\$1,700.00	\$13,782.92	14,202.50	\$419.58	\$151,049.40	\$2,119.58	\$763,049.40	7.48%
13	\$19,120,000.00	\$1,240,000.00	\$17,880,000.00	\$350,000.00	\$175,000.00	\$6,550,252.62	\$2,450,513.78	\$2,057,498.62	\$393,015.16	\$3,930.56	\$1,091.71	\$6,772.36	\$11,794.63	\$1,700.00	\$13,494.63	14,202.50	\$707.87	\$254,833.73	\$2,407.87	\$866,833.73	8.50%
14	\$17,880,000.00	\$1,240,000.00	\$16,640,000.00		\$175,000.00	\$4,492,754.00	\$2,450,513.78	\$2,180,948.54	\$269,565.24	\$3,930.56	\$748.79	\$6,975.54	\$11,654.88	\$1,700.00	\$13,354.88	14,202.50	\$847.62	\$305,142.11	\$2,547.62	\$917,142.11	8.99%
15	\$16,640,000.00	\$1,240,000.00	\$15,400,000.00	\$900,000.00	\$300,000.00	\$2,311,805.45	\$2,450,513.78	\$2,173,097.13	\$138,708.33	\$4,277.78	\$385.30	\$7,184.80	\$11,847.88	\$1,700.00	\$13,547.88	14,202.50	\$654.62	\$235,663.24	\$2,354.62	\$847,663.24	8.31%
16	\$15,400,000.00	\$1,240,000.00	\$14,160,000.00		\$300,000.00	\$0.00	\$0.00	\$0.00	\$0.00	\$4,277.78	\$0.00	\$7,400.35	\$11,678.12	\$1,700.00	\$13,378.12	14,202.50	\$824.38	\$296,775.72	\$2,524.38	\$908,775.72	8.91%
17	\$14,160,000.00	\$1,240,000.00	\$12,920,000.00		\$300,000.00	\$0.00	\$0.00	\$0.00	\$0.00	\$4,277.78	\$0.00	\$7,622.36	\$11,900.13	\$1,700.00	\$13,600.13	14,202.50	\$602.37	\$216,851.99	\$2,302.37	\$828,851.99	8.13%
18	\$12,920,000.00	\$1,240,000.00	\$11,680,000.00	\$400,000.00	\$200,000.00	\$0.00	\$0.00	\$0.00	\$0.00	\$4,000.00	\$0.00	\$7,851.03	\$11,851.03	\$1,700.00	\$13,551.03	14,202.50	\$651.47	\$234,530.55	\$2,351.47	\$846,530.55	8.30%
19	\$11,680,000.00	\$1,240,000.00	\$10,440,000.00		\$200,000.00	\$0.00	\$0.00	\$0.00	\$0.00	\$4,000.00	\$0.00	\$8,086.56	\$12,086.56	\$1,700.00	\$13,786.56	14,202.50	\$415.94	\$149,739.47	\$2,115.94	\$761,739.47	7.47%
20	\$10,440,000.00	\$1,240,000.00	\$9,200,000.00	\$1,100,000.00	\$366,666.67	\$0.00	\$0.00	\$0.00	\$0.00	\$4,462.96	\$0.00	\$8,329.15	\$12,792.12	\$1,700.00	\$14,492.12	14,202.50	-\$289.62	-\$104,262.02	\$1,410.38	\$507,737.98	4.98%
21	\$9,200,000.00	\$1,240,000.00	\$7,960,000.00		\$366,666.67	\$0.00	\$0.00	\$0.00	\$0.00	\$4,462.96	\$0.00	\$8,579.03	\$13,041.99	\$1,700.00	\$14,741.99	14,202.50	-\$539.49	-\$194,216.88	\$1,160.51	\$417,783.12	4.10%
22	\$7,960,000.00	\$1,240,000.00	\$6,720,000.00		\$366,666.67	\$0.00	\$0.00	\$0.00	\$0.00	\$4,462.96	\$0.00	\$8,836.40	\$13,299.36	\$1,700.00	\$14,999.36	14,202.50	-\$796.86	-\$286,870.38	\$903.14	\$325,129.62	3.19%
23	\$6,720,000.00	\$1,240,000.00	\$5,480,000.00	\$500,000.00	\$166,666.67	\$0.00	\$0.00	\$0.00	\$0.00	\$3,907.41	\$0.00	\$9,101.49	\$13,008.90	\$1,700.00	\$14,708.90	14,202.50	-\$506.40	-\$182,303.50	\$1,193.60	\$429,696.50	4.21%
24	\$5,480,000.00	\$1,240,000.00	\$4,240,000.00		\$166,666.67	\$0.00	\$0.00	\$0.00	\$0.00	\$3,907.41	\$0.00	\$9,374.54	\$13,281.94	\$1,700.00	\$14,981.94	14,202.50	-\$779.44	-\$280,599.60	\$920.56	\$331,400.40	3.25%
25	\$4,240,000.00	\$1,240,000.00	\$3,000,000.00		\$166,666.67	\$0.00	\$0.00	\$0.00	\$0.00	\$3,907.41	\$0.00	\$9,655.77	\$13,563.18	\$1,700.00	\$15,263.18	14,202.50	-\$1,060.68	-\$381,844.59	\$639.32	\$230,155.41	2.26%
AVERAGE DAILY RATES												\$ 6,927.26	\$ 12,367.01	\$ 14,067.01	14,202.50	\$1,219,451.28	\$16,519,451.28	6.48%			

7.4 Appendix 4

Stakeholder engagement methods (Centre et al., 2009).

Technique	Most Appropriate Application	Advantages	Disadvantages
Forums/ Focus Groups	When the operation is seeking to:	Demonstrates commitment on behalf of company	Participation is limited to a relatively small number of stakeholders
	Identify stakeholder views on a specific issue	Provides an opportunity to build a network of relationships	Individuals may not necessarily be representative of a stakeholder group or a community as a whole
	Discuss the views of a common interest stakeholder group	Allows issues to be verified, tested and solutions developed	Need to provide sufficient (sometimes sensitive) information such that participants can provide informed views
	Gather baseline data	Increases ownership by participants	
	Support, pilot, test, or gain feedback on the outputs of other methods (e.g.: surveys, interviews)		
	Determine stakeholder responses to proposed mitigation/social investment strategies		
	Monitor and evaluate the social Performance of an Operation		
Participatory Tools	When the operation is seeking to:	Demonstrates commitment on behalf of company	Need to manage conflicting community demands
	Scope and identify community needs/aspirations	Provides an opportunity to build relationships and stakeholder ownership of outcomes	Can result in unrealistic community expectations
	Involve stakeholders in the development	Can gain in-depth understanding of community cultures, beliefs, assets and interactions	Process can be dominated by articulate and organised stakeholder groups

	Mitigate Community social investment strategies		
	Monitor and evaluate social impacts and social performance		
Personal Interviews	When the operation is seeking to:	Demonstrates commitment on part of the company	Time and Resource intensive
	Identify issues specific to each stakeholder	Provides an opportunity to build a relationship	No opportunity to test
	Provide opportunities for stakeholder to speak confidentially	Provides detailed data through two-way communication	Individuals may not necessarily be representative of a stakeholder group or a community as a whole
	Build relationships with individual stakeholders		
Public/Town Hall Meetings	When the operation is seeking to:	Relatively inexpensive and quick	There is a risk that vocal but unrepresentative groups may 'hijack' the meeting
	Reach large audiences in particular communities quickly	Allows you to reach a large number of people simultaneously	Some communities, or groups within them may not be comfortable speaking in such public forum
	Present information and seek feedback from stakeholders	Demonstrates willingness to be open	Limited opportunity to explore issues of particular stakeholders in detail
	Ensure that everyone get a chance to provide comment/criticism/feedback	Provides communities with opportunity to speak directly to company representatives	Can be difficult to facilitate if the issue(s) under discussion is(are) controversial or highly emotive
Stakeholder Panels	Some companies such as Camelot, Westpac Vodafone and BT have established stakeholder advisory panels. These small external advisory panels are composed of sustainability experts from academia, NGOs, CR coalitions, etc. Typically, panels meet several times a year and report to the company board or specialist CR/sustainability committee.	Examines specific aspects of corporate policy, action or performance	May not be representative
		Produces comments or recommendations, upon which the company may or may not make specific commitments	May not have expertise in specific subject or in all the issues dealt with the company's CSR strategy
		Helps company to receive advice, gauge expectations and criticism concerning its sustainable development strategy and/or reports	

May anticipate possible threats to their activity that may arise in the future

Surveys	When the operation is seeking to:	Provides detailed data on specific issues	Written surveys are not appropriate in an environment where literacy levels are low
	Identify stakeholder issues and assess community needs	Assuming an appropriate sample is gathered, provides a good insight to the extent an issue(s) is significant within a community	Can be easily manipulated or designed to yield particular results
	Obtain an objective overview of a group of stakeholders to a particular issue or potential impact	Widely known and acceptable, particularly in developed countries	Depending on the response method, surveys can yield poor response rates
	Develop mitigation/social investment strategies		Surveys take considerable time and resources to prepare, implement and analyse results
	Gather data for the evaluation of social performance indicators		
	Monitor social and economic impacts and performance using repeat surveys		
Workshops	When the operation is seeking to:	Demonstrates commitment on behalf of company	Participation is limited to a relatively small number of stakeholders
	Form relationships with and between high level stakeholders and experts	Provides an opportunity to build a network of relationships	Individuals may not necessarily be representative of a stakeholder group or a community as a whole
	Involve stakeholder in thinking through issues to develop a strategic approach or resolve an issue(s)	Allows issues to be verified, tested and solutions developed	Need to provide sufficient (sometimes sensitive) information such that participants can provide informed views
	Communicate aspects of stakeholder engagement process or issues management to stakeholders and employees	Increases ownership by participants	
	Analyse impacts		
Prioritise/rank issues and potential solutions			

