

'CONTRIBUTION TO THE SUSTAINABLE DEVELOPMENT OF MARITIME TRANSPORT IN THE CONTEXT OF BLUE ECONOMY'



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For decades, the transport industry has been considering how to reduce its environmental footprint. A wide range of stakeholders has taken part in the public debate on transport and climate change, yet within one sector reaching agreement on how best to progress has been complex: maritime transport.

Understanding and tackling the shipping industry's role in environmental protection is as important as it is for all other methods of transport. Firstly, maritime transportation accounts for the majority of global freight transport: ships carry around 80% of the volume of all world trade and 70% of its value. In addition, although shipping is considered the most energy-efficient mode of transport, it still uses huge amounts of so-called bunker fuels, a by-product of crude oil refining that takes a heavy toll on the environment.

Global audiences are now calling on the maritime sector to challenge the status quo and limit its environmental impact and its overall place in the

sustainable development of the blue economy.

While the main thrust of the question would on the surface appear to focus on defining sustainable maritime transport and from there, considering 'net zero shipping', while this is a significant factor in terms of the sustainable development of maritime transport, it is only one facet within a complex and integrated system and so I have slightly adjusted the focussed question to provide clarity:

Therefore, this paper will consider: 'What is the Contribution of Maritime Transportation to the Sustainable Development of the Blue Economy'

This paper concludes that rather than considering maritime transport's contribution to the sustainable development of the blue economy through the adoption of a series of individual measures, that is to narrowly focus on the development of a 'Green Ship', it is of greater value to consider how the sustainable development of maritime transportation can contribute to a broader transformation which is not only of environmental

benefit, but which offers significant economic benefit. In the same way that we cannot continue to destroy our planet's eco-system for profit, we cannot protect the planet while jeopardising the livelihoods of the huge proportion of the world's population that depend on the blue economy or by

strangling the arteries through which the lifeblood of the world's economy flows. To support this hypothesis, this paper is broken down into three sections.

Section one will consider the definition of maritime transport within the context of the blue economy, outlining its contribution and economic importance, but also reflecting on the pressures it applies across social, economic and environmental sectors.

Section two will examine the concept of sustainability and introduce the concept of Environmental, Social and Governance, or ESG, as the lens through which I would like you to consider the sustainable development of maritime transportation.

The final section will consider some of the impediments to the transformation of the sector and provide you with one example of how approaching the sustainable development of maritime transport, that is the importance of designing a whole life cycle for maritime transport, could form part of a model for the future.

In its broadest sense the blue economy, or the ocean economy, is a term used to describe the economic activities associated with the oceans and seas.

In total, it is estimated to be worth more than \$2.5 trillion per year globally, which the OECD predicts may double in size by 2030. It provides over 30 million jobs and supplies a vital source of protein

to over three billion people.

There is, however, no consensus on the exact definition and the lens through which the blue economy is viewed depends on the organization that uses it. The World Bank defines it as the "sustainable use of ocean resources to benefit economies, livelihoods and ocean

ecosystem health". Within the context of this paper, the most significant aspect is that the concept, as first highlighted by the UN in 2012, is underpinned by the requirement for sustainable management, based on the fundamental argument that marine ecosystems and the system as a whole are productive when it is healthy in every sense.

Within the eco-system of the blue economy, maritime transportation is an equally broad term which includes passenger transportation: sea, coastal and inland passenger water transport; freight transport: sea, coastal freight and inland freight water transport and services for transport: renting and leasing water transport equipment.

The maritime community instinctively knows and understands the strategic importance of maritime transportation to the global economy. Both maritime transport and its related activities have a disproportionately significant impact on that economy, influencing almost every sector, directly or indirectly. While maritime transport itself is considered the lifeblood of global trade, a lot of other industries also rely heavily on it, as an array of resources are transported to manufacturing centres and their products moved via sea onto the global market. The Mahanian 'maritime virtuous cycle' in action.

Based on a recent analysis of its economic contribution to the European Union, which accounts for a significant volume of the world's fleet, maritime

transport and its related sectors constitute around 40% of the total value added of blue economy activities. Moreover, across a broad range of academic research, there is significant evidence indicating a positive link between maritime transport, related investments, and economic growth, with a stronger correlation with economic growth than land and air transportation.

Beyond the purely economic benefits of the sector, historically maritime transport has also had a critical role in proliferating ideas and culture and for many maritime transport supports leisure and social activity.

Even though among all modes of transport (air, road and rail), the maritime sector is considered to be the most environmentally friendly, maritime transportation still applies significant pressures on the environment and there is an equivalent negative correlation between environmental impacts and economic growth.

The major focus has been on the global impact of air pollutants and greenhouse gas emissions caused by ships and ports. This is primarily exhaust emissions, namely carbon dioxide, sulphur dioxide, nitrogen oxides and particulates. As an example, the proportion of maritime transport of all globally emitted greenhouse gases is assessed to be as large as 2.9%. However, beyond these global environmental impacts, the local marine and coastal environment is affected by maritime transport as the activity generates the risk of accidents and acute pollution events and impacts local eco-systems through the historical use of antifoulants, underwater noise, marine litter, and the introduction of invasive alien species mostly due to ballast water discharges.

With the IMO estimating that carbon emissions

from shipping could increase by 90%-130% (compared to 2008 data) by 2050, there have been calls for the maritime transport sector to do more. It is within that context that this paper proposes an expansion on the concept of sustainability and sustainable development and introduces the Triple Bottom Line concept of Environmental, Social, Governance (ESG) which provides a useful model against which to consider the broader sustainable development of the sector as it considers the benefits of sustainability within a profitable business model.

The broad concept of sustainability has been interwoven into almost every aspect of modern life but can have a range of differing interpretations and while the terms are often used interchangeably it is distinct from sustainable development. UNESCO provides the following definition, "Sustainability is often thought of as a long-term goal (i.e. a more sustainable world), while sustainable development refers to the many processes and pathways to achieve it."

The United Nations (UN) Bruntland Commission Report, (UN, 1987), defines sustainable development as "development that meets the needs of the present without compromising the ability of future generations to meet their own needs.". The UN has identified seventeen Sustainable Development Goals (SDG): recognising the need to work together globally and holistically. Many of the SDGs require a change of mindset and behaviour, for successful implementation.

Sustainability is often considered as having three supporting pillars, economic, social, and environmental, but the business community moves beyond sustainability and assesses financial performance and long-term value of potential investments by considering risks and opportunities

associated with environmental, social and governance or ESG factors. ESG and sustainability are related but not the same. ESG is more specific and focused on investors, while sustainability is broader and covers internal and external stakeholders. By considering ESG factors material to a business and taking a risk-based approach to strategic thinking and growth management, companies improve transparency across their whole organization, allowing for better operational management and hence improving performance.

The underpinning principle of ESG is that sustainability builds business value, with analysis concluding that resource-efficient companies deliver higher financial returns, higher levels of innovation and corresponding margins, and returns on assets and equity.

By understanding the risks and issues presented across ESG you can see how this presents a useful model to apply to the sustainable development of the maritime transport sector. (ie the processes and pathways to achieve sustainability). An approach that could be applied to every level of the sector, from a small-scale business to a national or multi-national perspective.

The final section will consider one specific pillar of the model, that of Environmental Sustainability; a concept that is more than simply Environmental Protection. As such this section will examine some of the barriers to the transformation of the sector and introduce the importance of the establishment of a lifecycle model to enable environmental sustainability.

There are considerable structural issues that prevent the maritime industry from rapidly embracing sector-wide sustainability initiatives,

particularly in terms of attracting private-sector investment and supporting developing nations' needs. The transition of a traditional sector, with a mix of infrastructure (shipping and supporting infra) in terms of the age of platforms and breadth of operational requirements infers huge investment and the shipping market is highly volatile and cyclical, with no stable cash flows. There is significant

uncertainty and complexity associated with the application of technological or operational solutions to 'green' the existing fleet or supporting infrastructure, and financial instability currently acts as a deterrence to longer-term investment in shipbuilding. These disincentives are amplified by a lack of certainty over technological solutions or a long-term vision for the sustainable development of the maritime transport sector. Additionally, there has been insufficient pressure on the industry to self-regulate or manage externally imposed restrictions, something that may change with the adoption, in July, of the revised IMO Green House Gas Strategy. These factors alone demonstrate the importance of the impetus for change to come from consumers, from the boardroom and shareholders and from the adoption of a broader model which integrates across the sustainability pillars to provide long-term certainty, profitability, and environmental protection. Given the structural challenges facing the sustainable development of the maritime transport sector, it is even more important that focus in this area is centred on the synergy between business value and the adoption of measures across the spectrum of ESG to satisfy the shareholders' demand for profit within an environmentally aware model.

There are various emerging technologies available to reduce the sector's immediate impact on

the environment, however, to be environmentally sustainable the industry must adopt a model which assesses its environmental impact over the whole lifecycle across every element of maritime transport. Moreover, it must be convinced that following a sustainable approach across ESG and applying its principles to asset design, procurement, operation, and disposal, can also provide opportunities for improvements and more efficient operation throughout the platform lifecycle.

A critical element in sustainable development is incorporating environmental impact assessments and mitigation into every aspect of the sector to ensure we don't leave a toxic legacy. This can be achieved by designing with the end in mind and building in circularity, so we design to dismantle and reuse and recycle responsibly. This is particularly relevant given the very recent adoption of the Hong Kong International Convention for the Safe and Environmentally Sound Recycling of Ships, which from 2025 requires that ships, when being recycled after reaching the end of their operational lives, do not pose any unnecessary risks to human health, safety and to the environment.

To consider the Royal Navy's approach to asset management as an example, which undoubtedly mirrors the commercial sector, the lifecycle is considered to follow the path of Concept, Assessment, Demonstration, Manufacture, In Service, Disposal (CADMID). Using this lifecycle framework allows the designer to assess and minimise the overall impact on the environment. It applies equally to components, equipment, systems, and platforms.

By undertaking an Environmental Impact Assessment (EIA) early in the lifecycle, the full environmental impact of any platform across its life and into disposal can be understood and mitigated.

The impacts of the production, transportation and disposal aspects of a programme are often overlooked yet are easily designed out during the early phases and by reassessing throughout the lifecycle, rather than attempting to remedy the impacts of equipment or platforms once in service. By starting with the end in mind, the design of the platform may be optimised throughout its life. The EIA should be reviewed at key milestones throughout the design process (for example, at design reviews and when a key design change is made), to assess the impact of the platform at each phase of its lifecycle. The cost of designing mitigations at the front end is almost always lower, and simpler than attempting to rectify later.

The UN states that the Blue Economy should "promote economic growth, social inclusion, and the preservation or improvement of livelihoods while at the same time ensuring environmental sustainability of the oceans and coastal areas".

This paper has sought to define the importance of maritime transport within the context of the blue economy, highlighting its significance to the global economy, but also outlining the impact it has across the economic, social and environmental pillars of sustainability all of which are predicted to significantly increase in the near term.

It highlighted a range of structural challenges to be overcome to transform the industry, providing a model for consideration which, rather than focussing on environmental protection and low carbon vessels broadened the concept of sustainability, and introduced the ESG business model which focusses on sustainability as a key factor in profitability.

In meeting its ambitious SDG, the UN highlights the importance of global cooperation across borders

and sectors and suggests that governments, organizations and decision-makers need to join forces to ensure that their policies are coherent. This paper suggests that within the context of the blue economy maritime transport has an important role to play and that with the adoption of ESG across the lifecycle of its platforms, programmes and supporting industries, it can harness the synergy between the provision of a profitable livelihood today and safeguarding the future for generations to come.