

## Defining the Blue Economy

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### ABSTRACT

Oceans are increasingly gaining in importance in terms of enabling international trade via linking sellers and buyers. The behaviour patterns of such linking enablers on the oceans are receiving more attention from a regulatory and economic perspective as the relationship between land and ocean evolves in its role and importance. The “Blue Economy” as a concept finds its origin against this background. A literature review is undertaken to analyse an appropriate definition for the Blue Economy. These definitions are analysed in terms of the minimum criteria which are necessary for a Blue Economy. The paper also attempts to structure various types of activities which are associated with ocean services. It is done with a view to identify what one may perceive as the focus areas for the growth of the Blue Economy.

### KEYWORDS

Blue Economy; oceans; maritime; marine; definition; sustainability; industrialisation; validity; cluster analysis; value chain

## Introduction

The oceans are indeed correctly compared to a cornucopia for humanity, by providing us with food, oxygen and livelihoods, as stated in UNEP’s (United Nations Environment Programme) Synthesis Report titled *Green Economy in a Blue World*.<sup>1</sup> As the ocean has an inherently fluid nature, the compartmentalisation of ocean, coastal and marine industries from its operating environment of watersheds and ecosystems, to the harmonisation of traditional economic activities with sustainable economic values, becomes a challenging activity.

This complexity is subject to a multilayer, multidimensional regulatory framework under the United Nations Conventions on the Law of the Sea (UNCLOS),<sup>2</sup> together with other international conventions from the International Maritime Organization (IMO), acceded to and ratified by countries all over the globe. This regime is then nationalised and localised by the specific country, region and continent’s legislation, regulation and initiatives as applicable. To balance these regime-related obligations with countries’ economic activities and regime value approaches to obtain a coherent, integrated and structured framework relating to sectoral reforms, parallel regulation and institution building are considered by various countries; however, the challenge lies in the measurement of the effectiveness of such approaches.

The need for an approach that provides for the assessment of the balance between regime-related obligations with economic activities and values, and for the measurement of the effectiveness of such, has been the driving force behind the so-called “Ocean Space

Approach”,<sup>3</sup> or what is more commonly known as marine spatial planning. The importance of applying marine spatial planning becomes very clear as the contents of this complex prism range from the sources of energy to those of minerals, feed for animals and food for humans, and as a mode of transportation which links buyers and sellers to each other.

## Defining the Blue Economy

The concept of “Oceans Economy” or “Blue Economy” is recent and originated from the United Nations Conference on Sustainable Development held in Rio de Janeiro in 2012.<sup>4</sup> At the heart of the concept is a separation of socio-economic development from environmental degradation, which is how it has traditionally been seen as a global status quo.

This concept may now be aligned with economic and trade activities, and emerges from a need to integrate conservation and sustainability in the management of the maritime domain. It can also be extended to include the marine ecology or environment. The sustainability aspect makes provision for the inclusion of activities based on patterns of consumption and replenishment whilst generating lower or no greenhouse gas (GHG) emissions fundamental in the process of executing the activities. This sustainability aspect is also taken to mean sustainability of the oceans, thereby providing feed for both animals and humans.

However, a variety of definitions exist for Blue Economy or Oceans Economy, and the first part of this paper seeks to find a definition that is easy to remember, easy to apply, easy to manage and easy to measure.

In *The Economist*, specifically the Intelligence Unit of 2015,<sup>5</sup> in a report on “The Blue Economy: Growth, Opportunity and a Sustainable Ocean Economy”, a working definition of Blue Economy is stated as follows: “A sustainable ocean economy emerges when economic activity is in balance with the long term capacity of ocean ecosystems to support this activity and remain resilient and healthy”.

In The Rio+20 Green Economy Initiative, Blue Economy<sup>6</sup> was espoused with the desired outcome of “improved human wellbeing and social equity, while significantly reducing environmental risks and ecological scarcities, endorsing low carbon, resource efficiency and social inclusion. This desired outcome is also found in the United Nations Environment Programme of Green to Blue Economy<sup>7</sup>. This desired outcome is based on the current circumstances and needs of a developing, changing and increasingly populous world, whose future resource base is located in the oceans: “Improved human wellbeing and social equity, while significantly reducing environmental risks and ecological scarcities, endorsing low carbon, resource efficiency and social inclusion”.

The *Complexity in Small Island Developing States* (SIDS) concept paper of the World Bank<sup>8</sup> provides a working definition as follows: “Blue Economy is a marine-based economic development that leads to improved human wellbeing and social equity, while significantly reducing environmental risks and ecological scarcities”.

When applying a qualitative comparative analysis (QCA),<sup>9</sup> a data analysis technique to determine which logical conclusions a data set supports, the definitions of Blue Economy list and count a combination of variables observed in the data sets or definitions as the starting point. Thereafter, the rules of logical interference are applied as a rational means to observe patterns of facts and the indirect establishment of new meanings and contexts for understanding the concept of Blue Economy, in order to define it. The

result of the analysis shows that the definition of Blue Economy could be: “Blue Economy is the sustainable industrialisation of the oceans to the benefit of all”.

The motivation for “sustainable” is the inclusion of the concept of Blue Economy originating from Green Economy:<sup>10</sup> the balance between activities (economic, trade, legislative and regulatory), the supporting system (ecological environment) and the communities depending on it (livelihoods and food). This balance can be calculated and has the ability to be translated into a measure of effectiveness for striking the balance.

The motivation for including “industrialisation” is from the meaning of the word which implies large-scale manufacturing, advanced technical enterprises and other productive economic activity in an area, society or country. Alternatively, industrialisation may also be described as the conversion to the methods, aims and ideology of an economic activity, to achieve development within an area. Industrialisation is calculable and can be expressed as a measurement of effectiveness.

“Oceans” is included to define the operating environment and differentiate it from the land where traditional activities take place. These activities are now being transferred to a non-traditional operating environment: the oceans. The motivation for including “benefit” is to balance improvements in equity and wellbeing of both humankind and the environment with a reduction in ecological scarcities, bringing in the elements of resource efficiency and a low-carbon footprint. Benefit, as defined in this context, allows for measurement of all the included elements, which may be interpreted as a measurement of effectiveness. The motivation of “all” is to emphasise that it is a holistic, all-inclusive approach that covers humans, systems and operations, and is endowed with a calculation function, making it a measure of effectiveness.

In conclusion, the shortened definition includes all of the critical aspects of the various definitions and working concepts of the Blue Economy; however, most importantly, the definition allows for the effectiveness of its application to be measured in calculable terms.

## Testing the definition

The report of the United Nations on the opportunities and challenges for the Oceans Economy for SIDS<sup>11</sup> has conceptualised the oceans as development spaces, which brings spatial planning and the value of oceans into decisionmaking and policymaking. As indicated earlier, the international framework is driven by the Law of the Sea as encapsulated by LOS 1982.

To develop and apply a validity testing process to the definition of the Blue Economy adopted in this paper, a number of minimum criteria from the Mediterranean Maritime Integrated Projects<sup>12</sup> are useful.

The minimum criteria address human needs, refer to ecosystem sustainability, and refer to a systems approach. These may also be interpreted only as sustainability standards, which are covered by the inherently calculable nature of the definition’s terms, which allows not only for measurement, but also for standards to be developed.

## Applying the definition

By adopting the definition of the Blue Economy as “the sustainable industrialisation of the oceans to the benefit of all”, together with the criteria linked to it and the balance it seeks to

strike between activity and value, several aspects need to be analysed. This may be seen as activity on one axis and value on the other.

The activity side of the scale includes aspects such as the type of activity, the service the activity is providing, established and emerging industries, and growth drivers for sustainable industrialisation. Cluster analysis<sup>13</sup> was used to find a natural grouping of the units under consideration, which are activities in this case, where firstly a measure of similarity was found (activities) and secondly how to form the cluster was determined. This was done by clustering the similarity of activities in the service it provides, the status of the industries, and the drivers of change which impact on the status.

This paper identifies five activities relating to the oceans including harvesting of living resources, extraction of non-living resources, generation of new resources, and trade of resources and resource health, which were established by applying a value chain method on the oceans. This method was applied on the type of activity using a life-cycle analysis and a cradle-to-grave approach.

The “harvesting of living resources”, as a type of activity, shares its place with the “extraction of non-living resources”, and both are to be analysed separately. For living resource harvesting activity, the service the oceans is providing is firstly that of food security for humans and animals, and has established industries such as fisheries. The emerging industries for this ocean service are aquaculture and mari-culture. As mari-culture is aquaculture in the natural marine environment while aquaculture is undertaken on land, the inferences of traditional land activities can be transferred to the oceans and used to address the industrialisation of the oceans directly. However, one may be inclined to ask which came first; mari-culture or aquaculture? The growth of the established and emerging industries is due to the growth in population, coastal urbanisation, food security demands and the influence of weather patterns on the environment. The ocean services which are provided by the harvesting of living resources are those of bio-diversity and bio-technology, which have almost no footprint in the established industries for oceans, but there is a very large footprint in the established industries for land activities. This again brings in the element of transferring traditional land activities to the oceans. The emerging industries for oceans are the pharmaceutical and chemical industries, and their growth factors are derived from health care demands, medical industry demands and cosmetic industry demands as well as production and manufacturing industry demands.

Extraction of non-living resources is the balancing leg in the cradle of the ocean, and refers to mining, which is a traditional land activity, but is now transferred to the oceans. The established industries include exploration activities for oil and gas as well alluvial mining. The transferral of the traditional activity to the oceans has led to the rise of emerging industries such as seabed mining as well as shallow-water mining for minerals and metals. The drivers of change behind these industries include the development of heavy industries, such as equipment manufacturing, demand for minerals and metals, energy demands, population growth and patterns, geographical impacts and the demand for mining derivatives.

The next level in the ocean value chain is the generation of new resources, where the service provided is that of energy and water. The established industries are those of oil and gas supply and water desalination. The desalination of water by various methods, such as electrochemical mediation, is to be treated as an emerging industry as it is new to the field. Other emerging industries include alternative and renewable energy, such

as wave energy and ocean wind and solar farming. The drivers of change in these industries include the demand for energy, demand for a lower carbon footprint, increase in international energy regulation, fresh water demand, population patterns, geographical impacts on water stocks, increased water regulation and increased water quality demand.

The fourth level in the ocean value chain is the trade in resources, which also includes the transportation of resources and delivers the services of transport, trade tourism and recreation. The established industries of this activity are shipping, ports and infrastructure supporting the services as well as coastal development aimed at tourism. The emerging industries for this activity are shipping and ports, cabotage or domestic shipping, with growth drivers of seaborne trade, driven by consumer demands, international regulations for trade and transport, and globalisation. For tourism and recreation the emerging industries are eco-marine tourism, marine real estate development, and maritime and marine culture and heritage. Here the drivers are growth in demand for tourism and urbanisation, and increase in mobility, increase in accessibility and the demands for conservation activities. This includes integration via the health sector and labour markets into population lifestyles, which is driven for its part by income distribution.

The last level of the ocean value chain is that of resource health, where the ocean service provided is that of ocean surveillance and monitoring, coastal governance and ocean management, which include carbon sequestration, waste absorption and pollution. The established industries are those of information technologies, carbon regulation, and salvage and towage. The emerging industries demonstrate a transferral of traditional land activities to the oceans through ocean technologies, blue carbon, habitat protection, rehabilitation and restoration, wreck removals and restorations, and pollution and waste technologies. The drivers of change for the emerging industries include research and development in technologies, developments in carbon regulations, growth in tourism, political stability from a security perspective, and developments in security-related regulation, urbanisation, preservation and conservation demands.

Based on the value chain of the oceans, applying the definition of the Blue Economy, the results obtained indicate that at each stage in the value chain it is possible to calculate and measure these in a structured framework.

By incorporating the established and emerging industries in each stage of the ocean value chain, and by balancing the scale with activities on the one side and their value on the other, the salient aspects can be captured. This is done by indicating the established or emerging industry, the system in which it appears, and the communities which are dependent on it. This is taken further by identifying the drivers of growth or change to these established or emerging industries as this enshrines the values linked to the industries and how it impacts on them.

## Conclusion

The research question of the paper was to find an approach that allowed for a definition of the Blue Economy that is easy to remember, apply, manage and measure. This was addressed first by analysing the background of the Blue Economy in its internationally regulated framework and then by investigating, with the use of qualitative comparative analysis, the various existing definitions. The definition derived from this analysis was then tested against minimum criteria to ensure that it is able to uphold its integrity.

The second part of the paper applied the definition in practical terms on the ocean economy as it emerges from existing knowledge. This analysis was done with the aid of value chain analysis and cluster analysis. The methodologies were applied first by structuring the oceans according to a value chain, and then clustering it according to its activities, services, and established and emerging industries, as well as shedding some light on what drives the growth in these industries. The approach was built on applying the individual elements of the definitions to the structure of the ocean value chain and then on clustering of the chain.

The final assessment was to ensure that the drivers of change or growth factors of the activities are now included as a part of the balance to be obtained and as a measurement of effectiveness. Finally, the paper indicated that by defining the Blue Economy in measurable and calculable terms, standards may be set for it, allowing for a systems approach in how it balances regime-related obligations with socio-economic activities, without ecological degradation of the oceans.

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## Notes on contributor

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## Notes

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