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# Blue Economy and the Circuitry of the Circle

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## Abstract

Blue Economy is a relatively new denomination circumscribing the perceived economic functionalities of the oceanic spheres. This paper articulates a definition for both Blue Economy and Circular Economy in one concentric circle and functionally links the two for a spherical strategic ideation. This paper coins the term Blue Space as a marker for both vertices in one and focuses the attention of the triad of economy, ecology and security on it. The paper analyses the potential strategic inducements for operationalizing the Blue Space in a tangible, outcome oriented and results-driven programming by using the Oxford Vantage Point of Technology-Markets-Organisations.

**Disclaimer:** This paper is the responsibility of the author alone and the government of Bangladesh is no way responsible for any writing/comments contained therein.

## Acronyms and Abbreviations

| | |
|---|---|
| CCI: | Caribbean Challenge Initiative |
| CLME: | Caribbean Large Marine Ecosystem |
| CMSP: | Coastal and Marine Spatial Planning |
| CRFM: | Caribbean Regional Fisheries Mechanism |
| CRIFF: | Caribbean Catastrophic Risk Insurance Facility |
| DOWA: | Deep Ocean Water Applications |
| ECROP: | Eastern Caribbean Regional Oceans Policy and Action Plan |
| EEZ: | Exclusive Economic Zone |
| EIA: | U.S. Energy Information Administration |
| EIU: | Economist Intelligence Unit |
| ESCAP: | UN Economic and Social Commission for Asia and the Pacific |
| FOSP: | Future Ocean Spatial Planning |
| GDP: | Gross Domestic Product |
| GEF: | Global Environment Facility |
| GNI: | Gross National Income |
| ICT: | Information and Communication Technology |
| IEA: | International Energy Agency |
| IUU: | Illegal, Unregulated and Unreported |
| MPA: | Marine Protected Area |
| MSP: | Marine Spatial Planning |
| NGOs: | Non-Governmental Organisations |
| NOEP: | US National Ocean Economic Program |
| NPV: | Net Present Value |
| OECD: | Organization for Economic Co-operation and Development |
| OECS: | Organization of Eastern Caribbean States |
| SDG: | Sustainable Development Goal |
| SIDS: | Small Island Developing States |
| SMEs: | Small and Micro Enterprises |
| SOPAC: | South Pacific Applied Geoscience Commossion |
| TEU: | Twenty Foot Equivalent Units |
| UN: | United Nations |
| UNCED: | United Nations Conference on Environment and Development |
| UNCTAD: | UN Conference on Trade and Development |
| UNDP: | United Nations Development Programme |
| UNEP: | United Nations Environment Programme |
| UNFCCC: | United Nations Framework Convention on Climate Change |
| UWI: | University of the West Indies |
| WATO: | We are the Oceans |
| WTTC: | World Travel and Tourism Council |
| WWF: | World Wide Fund for Nature |

## Two Key Definitions

## 1. Introduction

The world is going through a morphosis. A profound change in the way we conceive and perceive the world around us, the lives and livehoods of humans. For the purpose of this paper, two key definitions dominate the discourse. One is that of the Blue Economy and the other is the Circular Economy.

As far as records suggest, the 'blue economy' first came up as a concept in the 2012 United Nations Conference on Sustainable Development (Silver et al. 2015[1]). Since before that watershed year, it has remained an evolving construct which recognises the need to optimize the economic potential presented by the ocean, while preserving its delicate biological, genetic, geophysical, ecological and morphological balances. Originally devised on the theoretical platforms of the 'green economy', 'Blue Economy' as a concept did not deny the same desired outcome, i.e., "the improvement of human well-being and social equity, while significantly reducing environmental risks and ecological scarcities (UN Conference on Trade and Development (UNCTAD, 2014[2]). But it recognized, however, to institute a rather unconventional approach towards the conventional development model, with financial and physical capital given a somewhat more equitable priority as those of the human (lives and livelihood) and natural capital (UN Economic and Social Commission for Asia and the Pacific (ESCAP, 2012[3]). The Blue Economy approach aims to scale up traditional uses of the ocean, using the latest technologies and steered by new, enabling public policies (World Wide Fund for Nature [WWF], 2015[4]).

The European Union definition of the Circular Economy captures comprehensively the existing range of definitions, amongst others, and it goes as, "**Circular economy is a manifestation of economic models that highlight business opportunities where cycles rather than linear processes, dominate. It is restorative and regenerative by design and aims to keep products, components, and materials at their highest utility and value at all times"** (European Regional Development Fund, 2020[5])

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[1] Silver, JJ, NJ Gray, LM Campbell, LW Fairbanks and RL Gruby (2015), 'Blue economy and competing discourses in international oceans governance', Journal of Environment & Development, Vol 24,135–106

[2] UNCTAD (2014), The Oceans Economy: Opportunities and Challenges for Small Island Developing States, UNCTAD, Geneva

[3] Economic and Social Commission for Asia and the Pacific (ESCAP) (2012), Green Economy in a Blue World: Pacific Perspectives, United Nations Economic and Social Commission for Asia and the Pacific, Suva, Fiji.

[4] World Wide Fund for Nature (WWF) (2015), All Hands on Deck: Setting Course Towards a Sustainable Blue Economy, WWF Baltic Ecoregion Programme, available at: http://wwf.panda.org/wwf_news/?254101/ All-Hands-on-Deck-Setting-Course-to-a-Sustainable-Blue-Economy-inthe-Baltic-Sea-Region (accessed 22 March 2020).

[5] **Circular Economy. Sustainability Guide. European Union. 2020.** Hållbarhetsguiden, EcoDesign Circle
© SVID, Stiftelsen Svensk Industridesign 2018 https://sustainabilityguide.eu/sustainability/circular-economy/

The challenges of the Blue Economy and Circular Economy are rooted in the asymmetries of information and aspirations held by stakeholders both present and future. It would not be an understatement that part of the challenge is also deeply entrenched in the human audacity to claim access to superior intelligence in its thought processes – again based on their current levels of acquired information and worldviews heavily skewed with various biases. In other words, humans have a tendency to 'declare' control over other elements of the planet – if not the cosmos – even before they have even remotely understood the nature and contours of the systems that they are asserting to have gained control. So far, it is only the Planet Earth which is found inhabitable to the human species and it is in this century that humans will be forced to move into the last eco-frontier which has so far sustained human intervention. For again, it would not be an understatement if we contend that the dominant current conceptualization of the human-centric economic order – spanned by boundary conditions of perpetual and fixed growth rate as an indicator of economic health – has already created substantial chaos on the domains of both the ecological balance of the planet and the security of the human habitations. While even humans themselves have a natural span of life – business and other such interests are given nearly perpetual life expectancies. These points are important to note since even Fortune 500 companies have an average life expectancy of approximately 30 years and their departures from the corporate scene is nearly as smooth as the departure of a physical life form.

As for the maritime domain, other than fishing, a limited for of mining and quarrying, and shipment, it is for the first time that Man (as in mankind) is actively contemplating and conceptualizing both the means and the mechanisms to actively engage the world of the oceans for survival, living and livelihoods options. But after the severe ecological imbalance caused by his actions on the land-based ecosystems and also in the limited accesses that he has gained into the world of the oceans - this is also the last frontier that man has to his disposal. It is important that man understands the consequences of his action in the world of the oceans. It is also important that man puts the ocean into the center of his survival and growth options before he moves into the ocean. Since time immemorial – the industrial thought processes have always put man in the center of his universe. But this is time that the oceans – and indeed the entirety of the world of waters be put in the centre and man places himself at one of its epicenters for any economic or other form of activities. This also calls for a comprehensive overhaul of man's conception of the economic spheres and the methods for evaluating, appreciating and exploiting the resources offered by the oceanic world. Only a few years before, such a possibility for reevaluating the human question in terms of their economic metrices would have been close to economic blasphemy – it is now more or less well appreciated – if not openly supported – that if there is no imminent change, close to a paradigm shift, the planet will not be able to sustain mankind and its current state of existence for much longer and some of the post-apocalyptic dystopias which had hitherto been subjects of science fictions may not be very far away from actually taking place.

For all practical reasons, the Blue Space - alternatively used as representing the wider and deeper strategic formulation underwriting the Blue Economy conceptualisations – essentially suffers from what Oxford strategists call 'institutional voids' (Mair, Marti & Ventresca, 2012[6]). By theoretical postulations, such 'voids' where exchange rules – markets, finance and governance – are unclear or are absent altogether – can be leveraged can be "leveraged by applying appropriate innovation models" (Mamun, 2018[7]).

It is important to understand some of the core vertices of the new thought processes emerging in the conceptualization of businesses and business models from reputed B-schools with active participation of corporate entities and often governments. These concepts will become important as we conceive, conceptualize, analyses and suggest the ways forward for integrating the Blue Space in the human economic spaces. It is important to understand that the very question of human identity, what it ought to aspire for and how to achieve the aspirational gambit into operational effectiveness and ultimately excellence – is under scanner. Why the economy ought to operate the way it does at this moment is questioned and why there could not be a model of economic and social wealth – tied to the survival and sustenance of the planet and its ecosphere. However, the voices

As noted earlier, it has been opined that the ideational vertices associated in defining business "inception, conceptualization, execution, acceptance and realization" (Lohsin, 2012[8]; Gordon, 2016[9]). and "the technology of business (production, trade and finance), composition of organizational fabric (Miroshnik, 2013[10]), relationship with the actors in the political economy sphere (Miroshnik & Basu, 2015[11]) and existential sustainability in terms of the ecosphere (Commonwealth, 1997[12]) is changing" (Mamun, 2018[13]). As Mamun (2018) contends, "the economic and political stimuli emanating from converting an hitherto sub-optimally organized, or even unorganized, space into a strategic business sphere where factors of production and markets for the produce – both goods and services – are connected in a

[6]Mair, J., Martí, I. and Ventresca, M.J., (2012). Building inclusive markets in rural Bangladesh: How intermediaries work institutional voids. Academy of Management Journal, 55(4), pp.819-850

[7] Mamun, Syed M. 2018. Where The Land Meets The Sea A Blue Economy Innovation Model For Bangladesh Mangroves: Application of the Oxford Vantage Points of TMO (Technology, Markets and Organizations) for creating Blue Economy business opportunities linking Climate Change Adaptation (CCA) and Disaster Risk Reduction (DDR) ecosystems. Thesis document. Saïd Business School. University of Oxford.

[8] Loshin, David. (2012). Business Intelligence: The Savvy Manager's Guide. [electronic resource] 2nd ed. St. Louis : Elsevier Science (Accessed from : https://ebookcentral.proquest.com/lib/oxford/detail.action?docID=1034439. Accessed on: 03 February 2018)

[9] Gordon, R.J., (2017). The rise and fall of American growth: The US standard of living since the civil war. Princeton University Press.

[10] Miroshnik, Victoria. (2013). Organizational culture and commitment : transmission in multinationals. Basingstoke: Palgrave Macmillan

[11] Miroshnik, Victoria & Basu, Dipak R. (2015). International business and political economy. Basingstoke : Palgrave Macmillan

[12] Commonwealth Human Ecology Council. (1997). Human ecology. London : Commonwealth Human Ecology Council

[13] Ibid

manner characteristic of synergistic fit (Grant, 2007[14]), ambidexterity (Markides, 2008[15]) and co-creation (Ind et al, 2012[16]) across the vectors of technology, markets and production is one of the more prominent ideational challenges of the current world (Ivey, 1995). The model also presupposes a concept of 'shared value' (Porter & Kremer, 2011[17]) by reconfiguring both the commodity placement within the global value chains and redesigning the inter-relationships amongst stakeholders". Taking note of these concepts are important for understanding the nature, contour and evolutionary tendencies of the "Blue Space" – as it very slowly continues to emerge clearer in the human conception. Because unless the space is conceptualized as clearly as is possible – the possibilities are very high that human would make fatal miscalculations and would ultimately jeopardise not the survival of their economic sphere – but would also jeopardise the ecological balance and ultimately, survival of the planet. Post-fordism is continuously being challenged by concerns for ecology and also an increasingly more emphasis on the democratic control over the market and market-based institutions (Lipietz and Slater, 1992[18]).

## 2. After Green, it's Blue

Blue Economy (Paili, 2010[19]) has become the newest buzzword as humans try to move out of the cramped and crushing rubbles of the economy it created mostly on land. On the other hand, Circular Economy (Geissdoerfer et al, 2017[20]) – loosely based on the percepts of 'biomimicry' (Benyus, 1997[21]; Pawlin, 2019[22]) has emerged as a possible solution to the deep-rooted consequences of men's proclivity towards unmitigated consumption (Potschin et al, 2015[23]). It is important that the correct approach towards conceptualizing the Blue Economy is adopted to mitigate the adverse impacts of human intervention into the maritime ecosphere for meeting primarily economic ends. Conceptualizing these two very futuristic vertices of the human economic endeavors also lie at the root of the future sustainability of

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[15] Markides, Constantinos. (2008). Game-changing strategies [electronic resource] : how to create new market space in established industries by breaking the rules. 1st ed. San Francisco, CA : Jossey-Bass. Accessed from: https://ebookcentral.proquest.com/lib/oxford/reader.action?docID=343673&query=). Accessed on 03 February 2018

[16] Ind, Nicholas; Fuller, Clare; Trevail, Charles. (2012). Brand together : how co-creation generates innovation and re-energizes brands. London ; Philadelphia : Kogan

[17] Porter, M.E. and Kramer, M.R., (2011). The Big Idea: Creating Shared Value. How to reinvent capitalism—and unleash a wave of innovation and growth. Harvard Business Review, 89(1-2)

[18] Lipietz, A. and Slater, M., 1992. Towards a new economic order: postfordism, ecology and democracy (p. 112). Cambridge: Polity Press.

[19] Pauli, G.A., 2010. The blue economy: 10 years, 100 innovations, 100 million jobs. Paradigm publications.

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[21] Benyus, J.M., 1997. Biomimicry: Innovation inspired by nature.

[22] Pawlyn, M., 2019. Biomimicry in architecture. Routledge.

[23] Potschin, M., Kretsch, C., Haines-Young, R., Furman, E., Berry, P. and Baró, F., 2015. Nature-based solutions. OpenNESS Ecosystem Service Reference Book. OpenNESS Synthesis Paper. Available at: http://www. openness-project. eu/library/reference-book/sp-NBS.

the human race on the planet itself (Bogdan et al, 2014[24]). It is important that these emergeant aspects of the human actions are understood well before actual actions are taken – as once initiated – it would be virtually irreversible because of the high entry and exit barriers that the Weastphalian capital would erect at the portals of the water world (Ehlers, 2016[25]). It is also important for ensuring justice and equity to a large number of human individuals and entrepreneurial initiative which depend on the output of the marine ecosystem but in themselves are not sufficiently capable to effect an deeper invasive channel to fundamentally alter the regenerative capabilities of the marine ecosphere (Cohen, et al., 2019[26]) and also ensure that a 'safe space' for ensuring a somewhat equitable distribution of the economic benefits is sustained (Dearing et al, 2014[27]). Lastly, it is important that a correct reference frame for both conceptualizing and interpreting the measures and consequences of human interventions is deployed to take into account the environmental sustainability of the aggregate human initiative in this field (Lubchenco et al, 2016[28]). Given the time horizon that we are engaged in, it is fundamentally important the effect of the paradigm shifts in technology is factored into the consideration for any design contemplated for deployment in the Blue Economy or for that matter the circular blue economy conceptual plane. It can be safely argued that empowered by the likes of IOT-devises and blockchain (Kalinnan and Artuc, 2019[29]) - some form of Artificial Intelligence – even if its more primitive configurations will be deployed (Kupriyanobsky, 2017[30]) by the time Blue Economy is fully integrated into the human economic-thought processes. The very way risk and returns are calculated will also have been streamlined further to reflect a more realtime and shared perspective in the calculations – reflecting a strong inclination towards the Black-and-Schöles model (Phillip and Gerlitz, 2019[31]; Mamun, 2018[32]).

[24] Bogdan, A., Istudor, N., Gruia, R., Tobă, G.F., Bulz, N., Gâf-Deac, I., Chelmu, S., Găvan, C., Prică, I. and Paşalău, C., 2014. New holistic approach of bioeconomics and ecoeconomics theories, practical bridging from the green economy to blue economy, trough new integrated and innovative paradigm about "bio-eco-geo-economy". Procedia Economics and Finance, 8, pp.83-90.

[25] Ehlers, P., 2016. Blue growth and ocean governance—how to balance the use and the protection of the seas. WMU Journal of Maritime Affairs, 15(2), pp.187-203.

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[30] Kupriyanovsky, V., Sinyagov, S., Klimov, A., Petrov, A. and Namiot, D., 2017. Digital supply chains and blockchain-based technologies in a shared economy. International Journal of Open Information Technologies, 5(8), pp.80-95.

[31] Philipp, R., Prause, G. and Gerlitz, L., 2019. Blockchain and Smart Contracts for Entrepreneurial Collaboration in Maritime Supply Chains. Transport and Telecommunication Journal, 20(4), pp.365-378.

[32] Mamun, Syed Muntasir. 2018. Blockchain, CAPM and Black-Schöles Model: A Chapeau Note. LinkedIn. Accessed from: https://www.linkedin.com/pulse/blockchain-capm-black-sch%C3%B6les-model-chapeau-note-syed-muntasir-mamun/

It is important, thus, to identify the institutional aspects of Blue Economy (or the Blue Space) and how the concept is evolving as time passes. It is also important to put this perspective projected onto a temporal background and see the inflection points as and when they emerged and whether they tallied with the other major vertices emanating from the scheme of institutional innovations (if not inventions). It is also important, third, to examine the strategic imperatives affecting the Blue Space; and fourth, the innovation S-Curves [Yao, 2019[33]; Nunes and Breene, 2011[34]], vernacular [Voyer et al, 2018[35]], epistemological

| TYPE OF ACTIVITY | OCEAN SERVICE | ECONOMIC SECTOR/ INDUSTRY | FUTURE TRENDS |
|---|---|---|---|
| Harvesting of living resources | Seafood | Fisheries | Demand for fish and hence seafood continue to grow, requiring aquaculture production to double by 2050 without improved capture fisheries yields. However, ending overfishing in the ocean and rebuilding depleted stocks could increase the ocean's yield by as much as 20 percent (MEA 2005; Waite et al. 2014). |
| | | Aquaculture | |
| | Marine biotechnology | Pharmaceuticals, chemicals | The first drugs derived from marine organisms were commercialized over the past decade, together with considerable growth in nutraceutical and other nonmedical uses of marine natural products, and new technologies are fostering renewed interest in marine biotechnology (MEA 2005). As such, the global market for marine biotechnology products and processes is a significant and growing opportunity, projected to grow from US$2.8 billion in 2010 to US$4.6 billion by 2017 (OECD 2016). |
| Extraction of nonliving resources, generation of new resources | Minerals, sand, and gravel | Seabed mining | Interest in seabed minerals is expected to be sustained over the long-term future, given limitations on some land-based mineral resources, though it remains unclear whether deep-sea mining will develop any time soon on a commercial scale (notably given uncertainty over environmental impacts) (OECD 2016). According to one projection, by 2030, 10 percent of the world's minerals, including cobalt, copper, and zinc could come from the ocean floors (UNEP 2014a). |
| | Energy | Oil and gas | In 1980, offshore oil and gas production provided 20% of consumption needs. By 2014 it rose to 30% and is expected to continue to grow as most of the new discoveries globally are primarily offshore in waters as much as 3 kilometers deep, as compared to 1 kilometer just 20 years ago (Brakenhoff 2015). The coming 15 years could see a significant increase in deep water offshore production, while production from shallow-water fields may decrease (OECD 2016). At the same time, gas extraction is expected to grow in both shallow and deep waters, from slightly above 17 million barrels of oil equivalent/day in 2014 to 27 mboe/d in 2040 (OECD 2016). Total hydrocarbons (gas and oil) from offshore are expected to grow at about 3.5% per year up to 2030 (IAEA 2014). |
| | Energy | Renewables | An assessment of the world's exploitable offshore wind resources has placed the estimates around 22 TWa(a) (Arent et al. 2012) which is approximately nine times greater than the International Energy Agency's (IEA) 2010 estimate of average global electricity generation capacity (MEA 2005). Global installed offshore wind capacity has developed from practically nothing twenty years ago to greater than 7 gigawatts (GW) today, while projections suggest there is potential for 40–60 GW by 2020 and growth of a further order of magnitude by 2050 (OECD 2016). |

[33] Yao, J., 2019. The Development Trend of Marine Economy based on Multi-objective Decision Analysis. *Journal of Coastal Research*, *94*(sp1), pp.613-616.

[34] Nunes, P.F. and Breene, T., 2011. *Jumping the S-curve: how to beat the growth cycle, get on top, and stay there*. Harvard Business Press.

[35] Voyer, M., Schofield, C., Azmi, K., Warner, R., McIlgorm, A. and Quirk, G., 2018. Maritime security and the Blue Economy: intersections and interdependencies in the Indian Ocean. *Journal of the Indian Ocean Region*, *14*(1), pp.28-48.

| TYPE OF ACTIVITY | OCEAN SERVICE | ECONOMIC SECTOR/ INDUSTRY | FUTURE TRENDS |
|---|---|---|---|
| Extraction of nonliving resources, generation of new resources | Freshwater | Desalination | Global desalination capacity has been increasing exponentially (Lattemann et al. 2010). The size of the global desalination market in 2025 is estimated to be seven times larger than it was in 2000 (Bremere et al. 2001). |
| Commerce, tourism and trade | Transport and trade | Shipping | Currently some 90% of global trade is carried on the ocean, and by 2050 maritime freight transport is projected to quadruple from 2010 (OECD and ITF 2015). More specifically, seaborne trade is expected to grow by 4.3% in 2016, 4.1% per year over the period 2017–19, 4.0% per year on average over 2020–29, and 3.3% between 2030 and 2040 (OECD 2016). |
| | | Port infra-structure and services | Port infrastructure is projected to increase by 4.7% from 2015 to 2020 (Lucintel 2015), with healthy increase over longer term given the expected rise in freight transport. |
| | Tourism and recreation | Tourism | Global tourism and travel's contribution to global gross domestic product [GDP] (already over 10%) is expected to grow at a rate of 3.8% per year from 2015 to 2025(b)—much of the growth occuring in coastal and marine tourism. As populations age and incomes rise in many countries, while transport costs remain relatively low, coastal and ocean locations will become even more attractive tourist destinations, and recent developments suggest that marine tourism is likely to grow at a faster rate than international tourism as a whole (OECD 2016). |
| | | Coastal development | Migration and development of the coastal zone (defined as land <100 km from the coast) around the world has increased faster than inland areas since 1970, leading to much higher population densities in most of the world's 'mega-cities' such as Tokyo, New York, Seoul, Mumbai, Shanghai, Jakarta, and so on. Development is projected to affect 91% of all inhabited coasts by 2050 and will contribute to more than 80% of all marine pollution as we enter a world with 9.6 billion people. For example in China the growth of coastal urban areas is currently more than three times the national rate (Neumann et al. 2015; World Bank 2012a). |
| Indirect contribution to economic activities and environments | Carbon sequestration | Blue carbon (that is, coastal vegetated habitats) | The full social cost of the carbon released into the atmosphere as a result of clearing mangroves has been estimated at between US$3.6 and 18.8 billion per year, at a price (that is, the true 'social' cost) of US$41 per ton of carbon dioxide (Pendleton et al. 2012). Blue carbon conservation is expected to become a significant portion of reductions in tropical forest emissions. |
| Indirect contribution to economic activities and environments | Coastal protection | Habitat protec-tion, restoration | Though it varies by habitat and site measured, analysis has shown that coastal habitats (coral reefs, mangroves, salt marshes, seagrass/kelp beds) reduce wave height significantly (between 35% and 71% on average across 69 sites studied) and thereby help reduce flooding (Narayan et al. 2016). The need for restoration of such habitats will only grow. For example, coastal protection from flooding and erosion is the largest economic service provided by mangrove systems in Thailand, and is a significant function of mangroves in many tropical countries (Barbier 2012). Yet at the current rates of change, most mangrove forests will be lost in the next two decades (Nellemann et al. 2009). As the sea level rises, at least 900 million people could be living in vulnerable low-lying coastal zones (that is, <10 m), mostly in Asia (Neumann et al. 2015). |

| TYPE OF ACTIVITY | OCEAN SERVICE | ECONOMIC SECTOR/ INDUSTRY | FUTURE TRENDS |
|---|---|---|---|
| Indirect contribution to economic activities and environments | Waste disposal for land-based industry | Assimilation of nutrients, solid waste | The demand for use of ocean ecosystems for waste disposal continues to grow. For example, nutrient loads from land to sea are estimated to have increased roughly threefold from pre-industrial levels (UNEP 2012a). Similarly, an estimated 275 million metric tons of plastic were produced in 2010, of which 4.8 to 12.7 million tons entered the ocean (Jambeck et al. 2015). Subsequently, global plastic production rose to roughly 299 million tons in 2013.(c) |
| | Existence of biodiversity | Protection of species, habitats | Assuming the recent 4.5 percent annual growth rate of the area of the global ocean designated for some form of protection could be maintained beyond 2020, the current target of 10% of the global ocean under protection would be reached by 2035 (Boonzaier and Pauly 2016). This does not necessarily imply that all protection designations prevent extraction, or are effectively enforced to protect species and habitats within these zones. |

*Source: Adapted from Economist Intelligence Unit (2015), OECD (2016).*
*Note: (a) TWa = average number of terawatt-hours over a specified time.*
*(b) World Travel and Tourism Council. http://www.wttc.org/-/media/files/reports/economic%20impact%20research/economic%20impact%202015%20summary_web.pdf.*
*(c) http://www.worldwatch.org/global-plastic-production-rises-recycling-lags-0.*

[Quanchi, 2004[36]], ontological [Steinberg and Peters, 2015[37]], technological [Ming, 2008[38]; Vega and Hynes, 2017[39]] and socio-political [Armitage and Bashford, eds, 2014[40]; Wang, 1992[41]; Azam, 2019[42]], which are affecting the Blue Space. Lastly, it is consanguineous to also examine the nature [Mcllgorm, 2016[43]], contour [Chaudhuri, 1990[44]; Hay, 2016[45]], and vertices [Evers, 2010[46]; Chaturvedi and Samdarshi, 2011[47]] of evolution in Blue Space innovation that the stakeholders may look at.

## 3. Blue Economy and Circular Economy

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[40] Armitage, D. and Bashford, A. eds., 2014. *Pacific histories: ocean, land, people*. Macmillan International Higher Education.

[41] Wang, J.C., 1992. *Handbook on Ocean Politics & Law*. Greenwood Publishing Group.

[42] Azam, K.J. ed., 2019. *Indian Ocean: The New Frontier*. Routledge.

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[44] Chaudhuri, K.N., 1990. *Asia before Europe: Economy and Civilisation of the Indian Ocean from the Rise of Islam to 1750*. CUP Archive.

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[46] Evers, H.D., 2010. Measuring the maritime potential of nations. The CenPRIS ocean index, phase one (ASEAN).

[47] Chaturvedi, A. and Samdarshi, S.K., 2011. Energy, economy and development (EED) triangle: Concerns for India. *Energy policy*, *39*(8), pp.4651-4655.

Contrary to some popular suspicion – Blue Economy is much deeper and wider than only fishing and quarrying into the maritime sphere. Rather, it is a whole new way of conceptualizing what human economic activities, and indeed, the ways in which humans would inhabit the planet, are conceptually configured to be. At conservative estimates – it's a salad bowl of more than US$ 24 trillion of economic value at 2015 estimates (Hoegh-Guldberg et al, 2015[48]; The Economist, 2015[49]). However, questions about how much we actually know about the depth and diversity of the vast blue space.

Our knowledge – even those of observational nature are very sketchy and touches only the surface of the oceans that we observe most from a distance. Human capability to venture deeper into the oceans and particularly to the ocean beds are still seriously handicapped by technological inadequacies. Two factors contribute to make the situation further complex. One emanates from the sheer weight of the financial resources required to sustain a deeper enquiry into the oceanic domains. The other comes from the inadequacies originating in the human inexperience to dig in (or for that matter, dive into) such magnitude of depths. One core suggestion which has emerged very powerful in the policy domain is that ""*to deepen engagement with the private sector and particularly private capital's involvement with the ocean*" (Project Aware, 2018[50]). But the exact contours of the conception is still much debated – if even properly appreciated to begin with (Silver et al., 2015[51]; Barbesgaard, 2018[52]; Brent Z.W. et al., 2018[53]).

One very comprehensive way of looking at the Blue Economy has been outlined in the Blue Economy handbook created by the World Bank Group for the Caribbeans […]. It goes on to suggest that "this natural ocean capital as consisting of three components:

a) renewable stocks or living resources that are harvested for use, such as fisheries;
b) nonrenewable stocks or nonliving resources harvested for use, such as seabed minerals; and
c) ecosystems and ecosystem processes that consist of interaction between the living and nonliving environment as a functional unit (e.g. coral reef ecosystems, mangrove ecosystems, etc.)."

The same resource also stipulates that "The physical context of the ocean shapes this new economic frontier: a fluid, buoyant, three-dimensional environment, where resources can

[48] Hoegh-Guldberg, O., Beal, D., Chaudhry, T., Elhaj, H., Abdullat, A., Etessy, P., et al. (2015). Reviving the Ocean Economy: The Case for Action. Geneva: WWF International.

[49] The Economist (2015). World Ocean Summit. Available at: http://www.economistinsights.com/sustainability-resources/event/world-ocean-summit-2015

[50] Project AWARE (2018). The Economist World Ocean Summit 2018. Rancho Santa Margarita: Project AWARE.

[51] Silver, J. J., Gray, N. J., Campbell, L. M., Fairbanks, L. W., and Gruby, R. L. (2015). Blue economy and competing discourses in international oceans governance. J. Environ. Dev. 24, 135–160. doi: 10.1177/1070496515580797

[52] Barbesgaard, M. (2018). Blue growth: saviour or ocean grabbing? J. Peasant Stud. 45, 130–149. doi: 10.1080/03066150.2017.1377186

[53] Brent, Z. W., Barbesgaard, M., and Pedersen, C. (2018). The Blue Fix: Unmasking the Politics Behind the Promise of Blue Growth. Amsterdam: Transnational Institute.

shift or migrate over long distances." […]. This is a more dynamic definition of the space which constitute the oceans but not only oceans and rather includes a plethora of ancillary and corollary spaces – including the airspace above the oceans, the ocean beds, the continental slopes, and the earth's crust below the ocean. The space also includes the platitudes and plenitude of both mineral, gaseous, ionic and genetic materials which comprise the state of physical existence that the oceanic spheres constitute.

The idea is important to articulate since it captures essentially the three broad categories of resources which are subject to the dispensation of the Blue Economy 'thought-processes'. It is conceptualised as 'thought-process' since the ideas are still evolving and continuously undergoing changes in the way the contours are shaped and spread.

What is more crucial is that the private sector spans are bounded by its inherent obligations to the 'shareholders' – for whom a complete disclosure for actions and endeavours undertaken is a must to justify allocation of resources. However, like the proverbial 'Plato's Paradox', it is difficult for the 'corporation' (as a general approximation of the private sector bodies) to suitably justify what would consist of an enquiry of a general scientific nature and what would constitute to be one of market value and thus net worth to the shareholder. While it is appreciable that such questions may hold a position of ignobility to the scientific community – but this is how the world of business and finance has operated since time immemorial. It has mostly been private endowments, and later government subsidies, and now adventurists like Bill Gates, or Jeff Bezos, or Elon Mask, or [google…alphabet] who have ventured to steer at tangent by a few degrees to their regular business undertakings. However, these are also question marks in the corporate equity ladder and their long-term sustainability is 'forecasted' to be as unpredictable as was their original entry into the corporate equity domain.

However, such pessimism must not preclude our thoughts being diverted away from contextualizing the idea of Blue Economy in its core constituent assemblies and suggest a possible mechanism out of the dichotomies of the capital markets in coming up with a sustainable solution to the question.

Over the last couple of decades, one way of looking at the Blue Economy is that it "includes the Circular Economy but goes beyond it" (Geisendorf and Pietrulla, 2018[54]) and it is "a process of cycle redesign: production-consumption-recycling, and reduce, reuse, recycle to replace the linear 'take-make-dispose' model" (Sillanpää and Ncibi, 2019[55]).

[54] Geisendorf, S. and Pietrulla, F., 2018. The circular economy and circular economic concepts—a literature analysis and redefinition. Thunderbird International Business Review, 60(5), pp.771-782.

[55] Sillanpää, M. and Ncibi, C., 2019. The Circular Economy: Case Studies about the Transition from the Linear Economy. Academic Press.

Another way of conceptualizing has been to merge the twin flames of economy and ecology into one whole spectrum of thoughts, i.e., as "Ecolonomy" (Charnovitz, 2019[56]). The concept is an adaptation on the observations made on the natural processes deployed by the planet earth where each 'outcome' of any process is an 'input' for yet another cycle of processing and both energy and material are conserved in a perfectly harmonized biome (Popescu and Stanciu, 2012[57]). Another way of conceptualizing the process is to offer "biomimicry" which suggests that "the best solution to safeguard nature is to imitate it" (Potschin et al, 2015[58]). European Union, amongst others, have championed the cause more prominently than most other strategic players (Maes and Jacobs, 2017[59]). 27 specific areas have been identified by Bangladesh in a groundbreaking study (Alam, 2019[60]) and includes an emphasis on the sustainable use of ocean and marine resources for economic growth, jobs, and improved livelihoods. Areas include fisheries, aquaculture, bioprospecting, renewable energy, oil and gas, and other businesses. Defining parameters include ensuring that socially equitable and sustainable development occurs should be the mandate of governments and industry, and researchers (UBC, 2019[61]).

Under such an "opportunity paradigm" it is of paramount import that access to both resources and markets are ensured across justifiably equitable platforms. Platformification of the resource utilization is also important to generate and sustain the human economic endeavours in the form of entrepreneurship (Mitea, 2018[62]).

## 4. The role of multilateral innovation in the creating a sustainable circuit-based design

The evolution of the Blue Economy – from a purely oceanic dream (of trade and transport and fishing or quarrying) is a continuing saga of historic institutionalism [Lockwood, et al, 2017[63]]. If we take a closer look at the way oceans were approached (note: there was no concept of

[56] Charnovitz, S., 2019. Competitiveness, Harmonization, and the Global Ecolonomy. In Agriculture, Trade, And The Environment (pp. 47-58). Routledge.

[57] Popescu, C., Taşnadi, A. and Stanciu, M., 2012, October. Ecolonomy–A New Way of Life,(2012). In Proceedings of the 6th International Conference on Globalization and Higher Education in Economics and Business Administration (pp. 346-353).

[58] Potschin, M., Kretsch, C., Haines-Young, R., Furman, E., Berry, P. and Baró, F., 2015. Nature-based solutions. OpenNESS Ecosystem Service Reference Book. OpenNESS Synthesis Paper. Available at: http://www. openness-project. eu/library/reference-book/sp-NBS.

[59] Maes, J. and Jacobs, S., 2017. Nature-based solutions for Europe's sustainable development. Conservation Letters, 10(1), pp.121-124.

[60] Alam, Rear Admiral Md. Khurshed. 2019. BLUE ECONOMY –DEVELOPMENT OF SEA RESOURCES FOR BANGLADESH. Ministry of Foreign Affairs. Accessed from: https://mofa.gov.bd/site/page/8c5b2a3f-9873-4f27-8761-2737db83c2ec/OCEAN/BLUE-ECONOMY--FOR-BANGLADESH

[61] University of British Columbia. (2019, October 15). Achieving a safe and just future for the ocean economy. ScienceDaily. Retrieved December 1, 2019 from www.sciencedaily.com/releases/2019/10/191015092238.htm

[62] Mitea, D.R.E., 2018. The expansion of digitally mediated labor: platform-based economy, technology-driven shifts in employment, and the novel modes of service work. Journal of Self-Governance and Management Economics, 6(4), pp.7-13.

[63] Lockwood, M., Kuzemko, C., Mitchell, C. and Hoggett, R., 2017. Historical institutionalism and the politics of sustainable energy transitions: A research agenda. *Environment and Planning C: Politics and Space*, *35*(2), pp.312-333.

blue economy even half a century before) was mostly oligarchical, if not downright imperial. Much of what was accessed in deeper seas by the human societies were institutionally woven into the fabric of the sovereign power. The traders who accessed the seas were de-facto emissaries of the sovereigns who held sway over their home grounds. The trading posts that the sea hosted paid rich tributes to the sovereigns which held authority over them. Even after a short whiff of fishing by sea-faring artisanal fishermen – the rest of the deep-sea fishing was essentially controlled by richer big-shipowners commissioned and protected by sovereign powers. The situation remained the same across ages as Persian, Greek and Roman sea prowess gave rise to Arab, Turkish and ultimately European sea power. Just as human habitations – mostly cities – grew on the side of big rivers, large empires founded themselves on what their sea access had brought them. Be it the trading ship or the visiting armada, or for that matter, the whaling ships and the oils that they carried, seas facilitated a multitude of human interactions and interventions into the realms of what had hitherto been boundary conditioned by physical barriers of the planet earth.

Taking Orton's "trifecta for innovation" (2017) further, connecting the desirability for such a business model to both the feasibility and viability of its actual incorporation – with a caveat that we test the idea in an information technology enabled application-sphere where multiple layers and levels of stakeholders and interventions are re-combined and re-coupled for creating solid value generation opportunities – is the core idea behind integrating innovation in the design of the schema of the Blue Space.

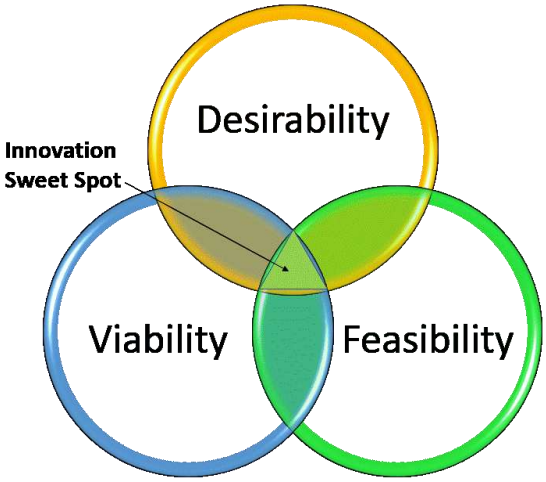



*Figure 1: Innovation Trifecta (Orton, 2017)*[64]

One of the more realistic ways of looking at the Blue Economy paradigms is to look at the issue through the lenses of innovation. Innovation is, intrinsically, a mechanism to cross over the functional boundaries of a particular system and reconfigure the existing mechanism to enable attainment of a higher order of performance. For the perspective of Blue Economy, rethinking innovation to link science and markets and connecting both the factor markets and

[64] Orton, Kristann. (2017). Desirability, Feasibility, Viability: The Sweet Spot for Innovation. Medium Blog published on: Mar 29, 2017. Accessed from: https://medium.com/@Inceodia/desirability-feasibility-viability-the-sweet-spot-for-innovation-d7946de2183c. Accessed on: 31 December 2017

the consumer markets in a sustainable feedback loop which would enable both ecosystem preservation and economic growth is of paramount import (OECD, 2019[65]). It is important to connect markets, organisations and technology – in spite of their being emergent and experimental in nature – in one comprehensive framework of thoughts so that the innovation streams could merge the discoveries into 'expectations' for wealth by the shareholders – so that the resource allocation for both inventions and discoveries are continued. Also, it is essential to incorporate the 'unknown' factors along with the 'risk' and 'uncertainty' associated with any business modeling. Finding a way to continuously update the risk profile and projecting a profit-loss analysis realtime could be considered one way of addressing the concerns emanating from the shareholders' expectations from the Blue Economy business ventures and connecting them to the communes of pure science and scientific discoveries. One plausible way of incorporating such ideations could be create a window of market value creation from purely scientific expeditions – so that the interest of the common shareholder is sustained.

There are avenues in which innovation is conceptualized – is also one important element to consider before making decisions with the ideas of innovation. Innovation is not or can not be confined to inventions or discoveries on their own. Rather, it is more of a recalibration of existing systems and matrices to realise new goals from often existing resources and ecosystems. The defining pivot rests on reconfiguring the ecosystem so that new processes and new relationships are formed (Chesbrough et al, 2006[66]).

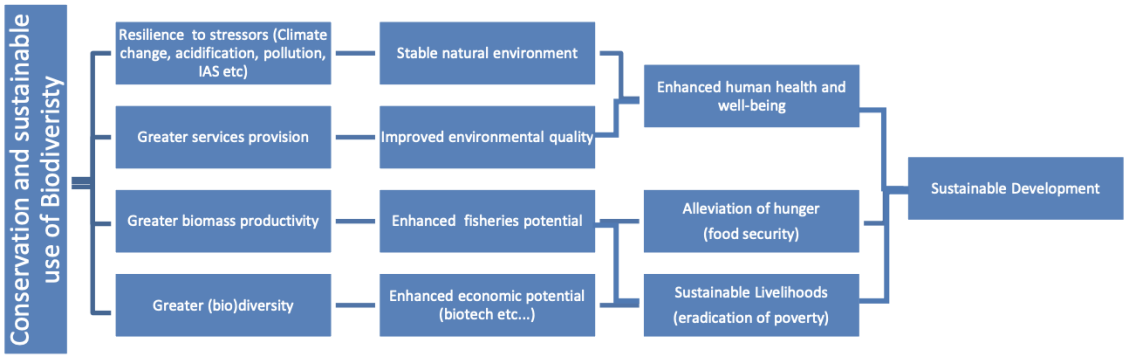
In the field of Blue Economy – it may suffice to be noted that the entire sector is in a form of flux. The various vertices of technologies and ideational paradigms which are shaping the early thought processes are in the crucible of the grey markets of realities and possibilities.

Under such paradigmatic conditions, it is important to note that some global and regional bodies have come up with tools and approaches which could be utilized to approach the field across a multiplayer and multilayer orientation. The Commonwealth Blue Economy toolbox (titled, Blue Charter) is one such approach. Routing finance and technology particularly towards the SIDS (Small Island Developing States) for sustainable blue economy resource development is one of the core agenda of the toolbox (UN, 2016[67]).

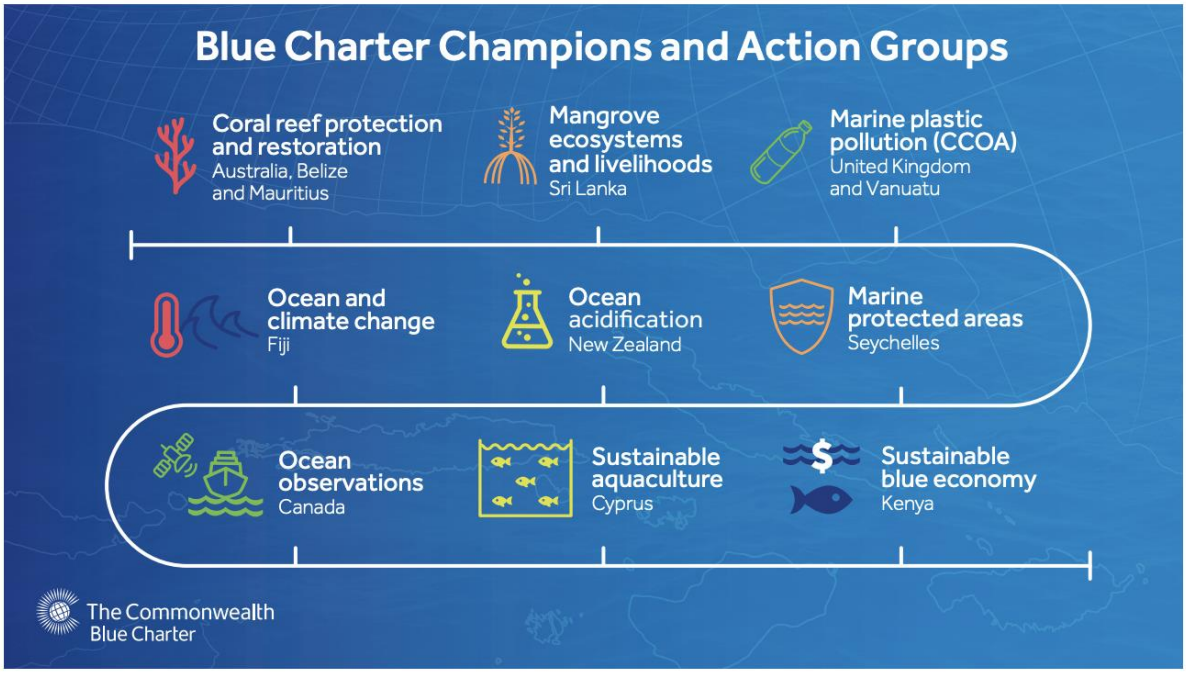
[65] OECD (2019), Rethinking Innovation for a Sustainable Ocean Economy, OECD Publishing, Paris. https://doi.org/10.1787/9789264311053-en. Accessed from: http://www.fao.org/fi/static-media/MeetingDocuments/BlueHope/secondmeeting/Blue%20Economy%20blue%20growth/Rethinking%20Innovation%20for%20a%20Sustainable%20Ocean%20Economy.pdf. Accessed on: 02 December 2019

[66] Chesbrough, H., Vanhaverbeke, W. and West, J. eds., 2006. *Open innovation: Researching a new paradigm*. Oxford University Press on Demand.

[67] United Nations Sustainable Development. Concept Paper. 2016. New York, USA. Accessed from https://sustainabledevelopment.un.org/content/documents/2978BEconcept.pdf




According to the Commonwealth, the Blue Charter works through a set of Action Groups, each devoted to a particular ocean issue. Action Groups are driven by member countries, led by 'Champion' countries. So far 13 countries have stepped forward to be Champions on 10 topics, which include, Commonwealth Clean Ocean Alliance, Coral Reef Protection and Restoration, Mangrove Ecosystems and Livelihoods, Marine Protected Areas, Ocean Acidification, Ocean and Climate Change, Ocean Observation, Sustainable Aquaculture, Sustainable Blue Economy, and Sustainable Coastal Fisheries (Commonwealth, 2017[68]).




The Blue Charter – while apparently comprehensive in its nature – can hardly be adequate to assess and appraise even a percentage range of activities and ideations possible with the Blue Space[69]. For this matter, though, the Water Vision of the BLUE SPACE (Organisation of the

[68] Commonwealth Secretariat. 2017. London. Accessed from: https://bluecharter.thecommonwealth.org/

[69] Commonwealth Secretariat. Commonwealth Blue Charter Shared Values, Shared Ocean A Commonwealth Commitment to Work Together to Protect and Manage our Ocean. 2018. Commonwealth Secretariat, Marlborough House London.

Islamic Conference) is probably more comprehensive and brings forth an element of connecting to the factor markets the idea of the Blue Space – albeit tied to the surface and ground water components (Shukurnova, 2019[70]).

## 5. The role of Systems Design in maneuvering the Blue Economy space

Oceans provide some of the most broad-based public goods – however – because of both the vastness and the opaqueness which comes along with such magnitude of operations, they also carry with themselves the possibility of coagulating the access and accretion of wealth to a select group of more advantageous groups which then could become the new status quo (Brent and Pedersen, 2018[71]). It is important that Blue Economy activity and growth indicators deploy measures which can embody transition towards a more sustainable and balanced oceanic economy. An example is Caribbean (Patil et al., 2016[72]).

The Blue Economy Policy Framework ought to include Coastal and Marine Spatial Planning – which is, essentially, a public process of analyzing and allocating ocean uses over space and time to achieve economic, ecological, and social objectives (Ehler and Douvere 2007[73])

The thought processes which define the Blue Economy sector is displaying acute characteristic traits of an S-Curve in systems design. Several competing ideologies and technologies are competing for a share of the mindscape which can adequately conceptualise the full spectrum of considerations and activities for the Blue Space. One of the core ideas which came up during an Intergovernmental Oceanographic Commission (IOC) meeting in Kuwait was to launch a Minimum Viable Innovation Engine (MVIE) particularly geared towards servicing in markets marked by inchoate demands and infested with institutional voids for connecting both factor markets and consumer markets in an architecture of information and communication technology […].

The European Commission has come up with a comprehensive portal on 'Blue Growth' – which suggests that the strategy consists of three components [EU, 2020[74]]:

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[70] Shukurova, N.Y., 2018. The approach of the Organization of Islamic Cooperation on the water issue. *Гілея: науковий вісник*, (134), pp.399-400.

[71] Brent, Z. W., Barbesgaard, M., and Pedersen, C. (2018). The Blue Fix: Unmasking the Politics Behind the Promise of Blue Growth. Amsterdam: Transnational Institute.

[72] Patil, P.G., Virdin, J., Diez, S.M., Roberts, J. and Singh, A., 2016. Toward a blue economy: a promise for sustainable growth in the Caribbean. World Bank. Accessed from: http://documents.worldbank.org/curated/en/965641473449861013/pdf/AUS16344-REVISED-v1-BlueEconomy-FullReport-Oct3.pdf. Accessed on 02 December 2019

[73] Ehler, C. and Douvere, F., 2007. Visions for a Sea change: Report of the First International Workshop on Marine Spatial Planning, Intergovernmental Oceanographic Commission and the Man and the Biosphere Programme UNESCO Headquarters. Paris, France. 8-10 November 2006.

[74] European Commission. 2020. Blue Growth portal. Accessed from: https://ec.europa.eu/maritimeaffairs/policy/blue_growth_en

1. Develop sectors that have a high potential for sustainable jobs and growth, such as: aquaculture; coastal tourism; marine biotechnology; ocean energy; seabed mining

2. Essential components to provide knowledge, legal certainty and security in the blue economy through - marine knowledge to improve access to information about the sea; maritime spatial planning to ensure an efficient and sustainable management of activities at sea; integrated maritime surveillance to give authorities a better picture of what is happening at sea.

3. Creating Sea-basin strategies to ensure tailor-made measures and to foster cooperation between countries in the Adriatic and Ionian Seas; the Arctic Ocean; the Atlantic Ocean; the Baltic Sea; the Black Sea; the Mediterranean Sea; and the North Sea.

The European Commission's Blue Economy dashboard[75] indeed a treasure trove for conceptualising the spectrum of Blue Economy and ita various indicators.
We have already cited a comprehensive table from the World Bank group before and its 2017 publication has a detailed plan which could generate systemic responses to both the prospects and challenges of Blue Economy (World Bank, 2017[76])

At even developing country levels – the thought-trains are not far behind. As a country, Bangladesh has now settled its maritime boundary issues with two of its neighbors (Sharma, 2014[77]; Singh & Kotasthane, 2014[78]). It is now in the early stages of formulating an appropriate strategy to harness the potential of Blue Economy – which some estimates suggest, would not be anything lesser and possibly more than those accorded by the land based economic systems (Alam, 2016[79]).
The national maritime territory of 1,18,813 $km^2$ has opened up opportunities in marine fisheries, mariculture, renewable energy, off-shore energy and minerals, submarine mining, marine biotechnology, maritime trade, shipping, tourism and various other marine ecosystem-based services (Hussein et al, 2017[80]).

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[75] Website: https://blueindicators.ec.europa.eu/access-online-dashboard_en

[76] World Bank and United Nations Department of Economic and Social Affairs. 2017. The Potential of the Blue Economy: Increasing Long-term Benefits of the Sustainable Use of Marine Resources for Small Island Developing States and Coastal Least Developed Countries. World Bank, Washington DC.

[77] Sharma, Rajeev. (2014). UN tribunal puts an end to 40-year-old India-Bangladesh maritime dispute by Rajeev Sharma; RT Op-Ed: 16 July 2014. Accessed from: https://www.rt.com/op-edge/172960-un-india-bangladesh-dispute-end/ on 04 February 2018

[78] Singh, Piyush & Kotasthane, Pranay. (2014). Resolving the Indo-Bangladesh Maritime Dispute by Piyush Singh and Pranay Kotasthane; Bengaluru: Takshashila Institution Briefing Note; Accessed from: http://takshashila.org.in/wp-content/uploads/2014/06/TDD-Resolving-Indo-Bangladesh-Maritime-Dispute-PS-PK-2014-01.pdf Accessed on 31 January 2018

[79] Alam, Rear Admiral M. Khurshed. (2016). Ocean/Blue Economy For Bangladesh. Bangladesh Ministry of Fisheries and Livestock Web Resources. Accessed from: http://mofl.portal.gov.bd/sites/default/files/files/mofl.portal.gov.bd/page/d1b6c714_aee6_499f_a473_c0081e81d7dc/Blue%20Economy.pdf. Accessed on: 01 January 2018

[80] 69. Hussain, M. Gulam; Failler, Pierre; Karim, A. Al & Alam, M. Khurshed. (2017). European Union Policy Paper: Major opportunities of blue economy development in Bangladesh; Pages 1-12; Routledge Journal of the Indian Ocean Region 2017 https://doi.org/10.1080/19480881.2017.1368250 published online on: 16 Sep 2017. Accessed from http://www.tandfonline.com/doi/full/10.1080/19480881.2017.1368250 . Accessed on: 02 February 2018


The most important element in this exercise is the possibility of 'defining' a new economic doctrine (Sattar & Rahman, 2016[81]), which is independent, balanced and expanding (Mamun, 2014[82]) in matters of technology, innovation and entrepreneurship. This is where, as a test case, come in the Mangrove ecosystem of the Sundarbans (Channel24, 2017[83]), which is situated at the interface of the sea and the land.

## 6. Creating a parallel human interface without destabilizing the blue economy matrix by means of co-creation

The world is changing in more ways than one and the percentage dependence of the humankind on the Ocean Economy will reach a considerably significant proportion as early as 2030 (OECD, 2016[84]). Long identified as a 'key source' of "food, energy, minerals, health, leisure and transport upon which hundreds of millions of people depend" (ibid), the industrial landscape associated with the maritime domain is already in morphosis. Some of the stressors in this latest transformation are, "population growth, rising incomes and income-inequalities, depleting reserves of natural resources, adverse changes in the climate and breakthrough technologies (ibid).

Records are emerging which indicate both inventions and innovations taking place at all levels of activities in the maritime sphere. They also indicate that not all are equally paced and not all have an equitable access, much less equal access, to capital resources which could

[81] Sattar, Zaidi & Rahman, Ashikur. (2016). Political Economy of Trade Policy: Theory and Evidence from Bangladesh. South Asia Economic Journal 17(1) 1–26; Sri Lanka; SAGE Publications; sagepub.in/home.nav ; DOI: 10.1177/1391561415621821; http://sae.sagepub.com. Accessed on: 06 February 2018

[82] Mamun, Syed M. (2014). Trade Not aid: the Shining Case of Bangladesh. Economy Lead (FEATURED Blog) Accessed from: http://www.economylead.com/featured-news/trade-aid-shining-case-bangladesh-38175 . Accessed on: 04 February 2018

[83] 28. Channel24. (2016). Blue Economy video-resource: Sundarbans, The Source of Blue Economy of Bangladesh! Dhaka: Channel24 Youtube Channel. Accessed from: https://www.youtube.com/watch?v=8X6HfODrONE. Accessed on: 01 Janury 2018

[84] OECD, 2016. The ocean economy in 2030. OECD. Accessed from: https://geoblueplanet.org/wp-content/uploads/2016/05/OECD-ocean-economy.pdf. Accessed on 30 November 2019.

underwrite such endeavours. While artisanal and small-scale fisheries, tourism and shipping continue to encourage inventions and innovation in an incremental pattern, a whole new range of maritime-based ocean-centric industries have started coming up. These include offshore wind, tidal and wave energy; oil and gas exploration and production in ultra-deep water and exceptionally harsh environments; offshore aquaculture; seabed mining; cruise tourism; maritime surveillance and marine biotechnology, particularly, marine genetic resources. The long-range potential for innovation, employment creation and economic growth offered by these sectors is impressive (Autio & Parhankangas, 1998)[85]. Valuation of the core markers of the oceanic economy is also an area which remains mostly undefined (Colgan, 2016[86]).

In spite of the breathtaking advantages which can accrue from maneuvering the various sectors of the Blue Economy – it is also important that the limits of such activities are very clearly understood. This is the first time in the recorded history of mankind that man is intervening into the maritime sector with deeply invasive technologies and processes. While doing so might be technically feasible, it must not be forgotten that this is a part of the human ecosphere which has remained mostly untouched – in spite of interventions such as plastic and other pollutants – literally for millions of years. Disturbing the delicate balance of the oceanic ecosphere can lead to catastrophic and irrevocable changes in the living conditions of the whole planet itself. A complex of risks - include those related to ocean health from over-exploitation of marine resources, pollution, rising sea temperatures and levels, ocean acidification and loss of biodiversity (Anthony, 2008[87]).

Another set of risks emanates from the allocation and utilization of maritime resources and information by nation-states. Both the legality and the political utility of each of the actions of the nation state are to be weighed against a set of benchmarks which could derive value from the quantification of the political-economy risk factors commonly associated with the land-based economic systems and their borderline sub-components (Fritz, 2016[88]).

Also – it is interesting to note that while oceans have been a reality in the human existential sphere since time immemorial – it is only very recently – more precisely since in the last decade that they have gained prominence and attention and started moving up the

[85] Autio, E. and Parhankangas, A., 1998. Employment generation potential of new, technology-based firms during a recessionary period: the case of Finland. Small Business Economics, 11(2), pp.113-123.

[86] Colgan, Charles S. (2016) "Measurement of the Ocean Economy From National Income Accounts to the Sustainable Blue Economy," Journal of Ocean and Coastal Economics: Vol. 2: Iss. 2, Article 12.

[87] Anthony, K.R., Kline, D.I., Diaz-Pulido, G., Dove, S. and Hoegh-Guldberg, O., 2008. Ocean acidification causes bleaching and productivity loss in coral reef builders. *Proceedings of the National Academy of Sciences*, *105*(45), pp.17442-17446.

[88] Fritz, J.S., 2016. Observations, diplomacy, and the future of ocean governance. Science & Diplomacy, 5(4).

"international policy agenda" (Attri, 2016[89]), carrying with them an element of heightened geopolitical risk profile (Suárez-de & Mateos, 2017[90]).

There have been many concerns about the state of the Artificial Intelligence (AI) and its recurring theme of AI-winter (Hendler, 2008[91]). But as technological breakthroughs continue to emerge and as algorithms become more autogenic (Zhang, 2014[92]), the possibility of a reversal in the evolution and deployment of the AI is becoming extinct. Most importantly, AI is fast moving into the very human space of art and design (Curson and Stuart, 2007[93]) – the possibility of which itself is both transformational and dimensionally morphological. The same will inevitably be coming to the management of the oceans and the Blue Space. However, such a possibility – when decisions regarding the exploration, discovery and extraction and maneuvering of resources consecrated to the oceanic domain is considered, the first step would be to equip all intrusive mechanisms and equipment networked. IOT (Internet of Things; Zanella et al, 2014[94]) is the necessary first step – coupled with technologies such as the Blockchain (Swan, 2015[95]) – to encrypt the confidentiality, accessibility and ownership of the resources accessed or utilized. While this possible technological singularity is still work in progress – the solid returns to the Capital Asset Pricing Model (CAPM) and the Black-Schöles Model – which form the basis of the modern financial architectures more realtime and hence, more responsive to the altered risk states of an initiative (read, investment). Hence, the earlier appreciations of the technological S-curves – the dominant design adoption lead time would become progressively shorter and yet – would result in faster innovation cycles. More promisingly, the distributed ledgers might also become what some are already calling incumbent organizational structures (Beck & Müller-Bloch, 2017[96]).

The key idea for focus here is that of 'co-creation' (Sanders & Stappers, 2008[97]). The Blue Space is a frontier which is nearly impossible to govern for any single state or authority at any given level – except for micro-cosmic operations. However, a greater number of actors and players at the individual and artisanal levels are deeply involved with the space over a long

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[89] Attri, V.N., 2016. An emerging new development paradigm of the blue economy in IORA; A policy framework for the future. Chair Indian Ocean Studies, Indian Ocean Rim Association (IORA), University of Mauritius.

[90] Suárez-de Vivero, J.L. and Mateos, J.C.R., 2017. Forecasting geopolitical risks: Oceans as source of instability. Marine Policy, 75, pp.19-28.

[91] Hendler, J., 2008. Avoiding another AI winter. IEEE Intelligent Systems, (2), pp.2-4.

[92] Zhang, B.T., 2014. Ontogenesis of agency in machines: A multidisciplinary review. In AAAI 2014 Fall Symposium on The Nature of Humans and Machines: A Multidisciplinary Discourse.

[93] Curson, B. and Stuart, R., 2007, September. A Duet of Cyborg and Dancer: Creative Autogenesis. In The Second International Conference on Digital Live Art (p. 17).

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[97] Sanders, E.B.N. and Stappers, P.J., 2008. Co-creation and the new landscapes of design. *Co-design*, *4*(1), pp.5-18.

and verifiable track of time. This calls forth a strong possibility for co-creation of value – when the individual contributes to a greater collective of both thoughts and designs and policies and actions. Such a design would inevitably be more democratic, inclusive and syncretic in its conception. The key word to look for here in such a configuration is 'knowledge'. Without a deeper understanding of the elements involved with the Blue Space – all that the humans might end up doing is further damaging the already ruinous health- state of the Blue Space.

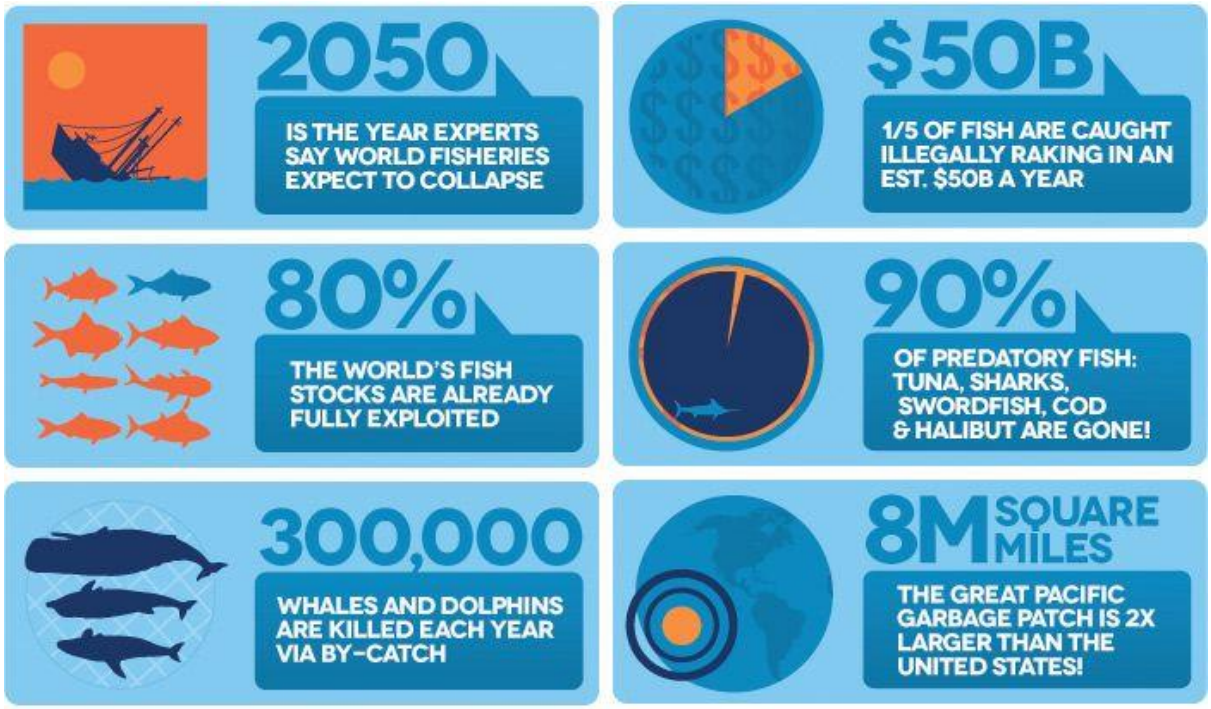


*Figure 2: Oceanic Health Status (Image Credit in Reference[98])*

## 7. Role of the State in balancing economy, ecology and security in the Blue Space.

The Blue Economy space which is slowly emerging into the clear from its more abstract conceptions of the mind is abundantly smeared with deep pockets of misconceptions, misperceptions and deficient definitions and measurement tools (EIU, 2015[99]).

Blue Economy is not marine or maritime economy (with all its facets and features of functional propensity). Rather, it is a 'strategic space' with many congruent layers and several hub-and-spoke formations intersecting at different planes on the time and space continuum (Wenhai et al, 2018[100]).

[98] Image copied from: https://images.app.goo.gl/dJ9WWV6TWoXJriKs9

[99] Unit, E.I., 2015. The blue economy: Growth, opportunity and a sustainable ocean economy. Available at https://www. eiuperspectives. economist. com/sustainability/blue-economy/white-paper/blue-economy. Downloaded from: https://www.oceanprosperityroadmap.org/wp-content/uploads/2015/05/2.-State-of-the-Blue-Economy_briefing-paper_WOS2015.pdf. Accessed on 01 December 2019

[100] Wenhai L, Cusack C, Baker M, Tao W, Mingbao C, Paige K, Xiaofan Z, Levin L, Escobar E, Amon D, Yue Y, Reitz A, Neves AAS, O'Rourke E, Mannarini G, Pearlman J, Tinker J, Horsburgh KJ, Lehodey P, Pouliquen S, Dale T, Peng Z and Yufeng Y. 2019. Successful Blue Economy Examples With an Emphasis on International Perspectives. *Front. Mar. Sci.* 6:261. doi: 10.3389/fmars.2019.00261

The international society is increasingly coming to terms with defining that blue economy covers three economic forms: economy coping with global water crisis (McGlade et al., 2012[101]); innovative development economy (Pauli, 2009[102]) and development of marine economy (Behnam, 2012[103]).

While the oceans, both surface and submarine, have always been in the active imagination of the human mind – the academic research in the field of Blue Economy as a Strategic Space has always been rather myopic. The research literature about blue economy mainly include four or five primary avenues. Kathijotes (2013)[104] put forward the aim of Blue Economy models as an active effort to shift resources from scarcity to abundance, and to start tackling issues that cause environmental problems and ends there. Mulazzani et al. (2016)[105] put forward the management tool based on ecosystem service framework to solve the coastal blue growth. While marine spatial planning has found some import in the text – very little, if any, attention has been given to the geo-strategic footprints that such an endeavor would automaritcally entail. Soma et al. (2018)[106] outlines long-term sustainable blue growth through collaboration, inclusion and trust in the marine sector – but fails to construct a comprehensive picture of the underwriting mechanism which could sustain such an endeavour. While van den Burg et al. (2019)[107] focuses more on summarizing the possible boundaries of the growth of the marine industry from the spatial dimension of blue growth – it again fails to put the very continuity and survival of the marine ecosphere into focus.

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Accessed from: https://www.oceanprosperityroadmap.org/wp-content/uploads/2015/05/2.-State-of-the-Blue-Economy_briefing-paper_WOS2015.pdf. Accessed on 30 November 2019.

[101] McGlade, J., Werner, B., Young, M., Matlock, M., Jefferies, D., Sonnemann, G., et al. (2012). *Measuring Water Use in a Green Economy, A Report of the Working Group on Water Efficiency to the International Resource Panel.* Nairobi: UNEP. In: Wenhai, L., Cusack, C., Baker, M., Tao, W., Mingbao, C., Paige, K., Xiaofan, Z., Levin, L., Escobar, E., Amon, D. and Yue, Y., 2019. Successful blue economy examples with an emphasis on international perspectives.

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[103] Behnam, A. (2012). "Building a blue economy: strategy, opportunities and partnerships in the Seas of East Asia," in *The East Asian Seas Congress 2012*, Changwon. In: Wenhai, L., Cusack, C., Baker, M., Tao, W., Mingbao, C., Paige, K., Xiaofan, Z., Levin, L., Escobar, E., Amon, D. and Yue, Y., 2019. Successful blue economy examples with an emphasis on international perspectives.

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[106] Soma, K., van den Burg, S. W. K., Hoefnagel, E. W. J., Stuiver, M., and van der Heide, C. M. (2018). Social innovation – a future pathway for blue growth? *Mar. Policy* 87, 363–370. doi: 10.1016/j.marpol.2017.10.008

[107] van den Burg, S. W. K., Aguilar-Manjarrez, J., Jenness, J., and Torrie, M. (2019). Assessment of the geographical potential for co-use of marine space, based on operational boundaries for Blue Growth sectors. *Mar. Policy* 100, 43–57. doi: 10.1016/j.dib.2018.11.118

Most management research of the blue economy is based on a sustainable development perspective and have inevitably been drawn in one way or the other around the SDG 2030. While this is not a bad thing per se – it limits the focus into a very stylized and idealistic formulation only. The convergence of the blue economy and marine ecosystem, ecosystem accounting is closely linked to blue growth (Häyhä & Franzese, 2014[108]; Lillebø et al., 2017[109]). While Sarker et al. (2018)[110] developed a framework of blue growth which focuses on "joint efforts" to achieve sustainable development goals (SDGs), Keen et al. (2018)[111] proposes another framework for sustainable marine management. Howard (2018)[112] had in-depth discussion on the role of stakeholders in sustainable development and draws heavily on the World Bank report on the Small-States and coastal economies (World Bank, 2017[113]).

One core aspect of the Blue Space is that it is becoming fast urbanized (Smith-Godfrey, 2016[114]). Not only for tourism (Dwyer, 2018[115]), or the concentration of technology (Behnam 2014[116]) – evinced by artificial island formation (Löfgren, 2007[117]) and introduction of superior and military grade technology in concentrated floating formations (Ji & Xu, 1991[118]), but also for a comprehensive extension of the urban designspace into the blue space (Couling, 2018[119]). Essentially, such a concentration of ideation, technology and finances associated with it would inevitably beseech a deeper political underwriting for the blue space. It ought to be a priority of the state, any state, to ensure that the basic amenities and tenets which underwrite the urban space is rendered useful to the design of the Blue Space.

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[113] World Bank and United Nations Department of Economic and Social Affairs, 2017. The potential of the blue economy. Increasing long-term benefits of the sustainable use of marine resources for Small Island Developing States and COastal Least Developed Countries. Accessed from: https://sustainabledevelopment.un.org/content/documents/15434Blue_EconomyJun1.pdf on: 04 December 2019

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[116] Behnam, A., 2014. *Tracing the blue economy* (Vol. 1). Lulu. com.

[117] Löfgren, O., 2007. Island magic and the making of a transnational region. *Geographical Review*, *97*(2), pp.244-259.

[118] Ji, Y. and Xu, Y., 1991. In search of blue water power: the PLA Navy's maritime strategy in the 1990s. *The Pacific Review*, *4*(2), pp.137-149.

[119] Couling, N., 2018. Formats of Extended Urbanisation in Ocean Space. In *Emerging Urban Spaces* (pp. 149-176). Springer, Cham.

## 8. Blue Circular Economy in Fisheries and Aquaculture

One of the core measures of support that the state level actor can render to the Blue Economy stakeholders is supporting environmentally-sustainable and creative ways to implement the circular economy in fisheries and aquaculture by identifying and investing in innovators and educating operators to rethink design, production, usage and recycling in a way that protects the environment, whilst increasing economic opportunities in the form of new jobs and businesses areas (Seminar Highlight, 2018[120]).

One core assumption is that **Blue Circular Economy** (BCE) aims to help small and medium-sized enterprises (SMEs) offering products and services. This is a saleable proposition for the political elements and the public domain operators. An example is easily found within the **fishing** gear **recycling** solutions. There have been entrepreneurs showcasing products made from fisheries, aquaculture and marine by-products and "waste" [….]. Items such as skateboards, bags and 3D printing filament incorporating old fishing nets; exfoliant and string made from mussel barb; filtrating paving stones made from scallop shells; cups made from fish scales; and tiles and jewelry from mussel shells.

There has also been instances of designing **smart ecosystems for seaweed and oysters:** uses for by-products with the integrated multi-trophic aquaculture (IMTA) of oysters and longline algae production. These innovative ideas have been put into use for supporting local companies to put this in place, while exploring outlets for unwanted seaweed by-products in cosmetics, food additives or organic fertilizer.

There have been market operations for the **possible uses for organic fish waste** in **managing waste in fishing harbors** across multiple sea-fronts. There has also been serious academic papers on the empirical possibilities associated with such operation (Lopez-Mosquera et al, 2011[121]). The idea is rooted in the observation that the fishing sector produces large amounts of waste in fish markets and processing industries. These by-products are mainly used in the manufacture of fish meal. However, there are other potentially valuable uses. One low-investment possibility is the elaboration of agricultural products by composting the fish remains with other marine materials such as seaweed. One of the main outcomes of the fishing waste is a fertilizer suitable for use in organic agriculture, by composting a mix of seaweed and fish waste (ibid). Also, smaller firms, such as West Coast Fishculture (WCF), located at Lois Lake BC, identified an innovative system for the recovery of valuable products from fish farming and processing wastes. This project is the commercialization of this

[120] Seminar Highlights. Closing the Loop: the circular economy in fisheries and aquaculture areas
FARNET TRANSNATIONAL SEMINAR FOR FLAGS. SAINT-JEAN-DE-LUZ, FRANCE 20 – 22 NOVEMBER 2018
Accessed from: https://webcache.googleusercontent.com/search?q=cache:Es7AoO6LhGQJ:https://webgate.ec.europa.eu/fpfis/cms/farnet2/sites/farnet/files/circular-economy-seminar_report_1.pdf+&cd=4&hl=en&ct=clnk&gl=kw&client=safari

[121] López-Mosquera, M.E., Fernández-Lema, E., Villares, R., Corral, R., Alonso, B. and Blanco, C., 2011. Composting fish waste and seaweed to produce a fertilizer for use in organic agriculture. *Procedia Environmental Sciences*, *9*, pp.113-117.

innovative waste utilization system in a BC aquaculture production company (Naylor et al, 2009; Canadian Government, 2020[122]). The waste utilization system was researched and selected for commercial testing because:

- The system consistently processes 100% of wastes with the options of removing high grade oil and using the remainder for soil amendment
- The soil amendment product is produced organically and organic certification was an option providing increased value in the market place
- The system is an economically viable alternative to the current methods for disposal of aquaculture wastes such as composting

WCF has capitalized on earlier research and experimentation to build and test a waste utilization system that produces valuable products in an environmentally friendly and economically feasible manner. The production of high-grade oil and value-added soil amendment has financial as well as environmental benefits. This innovative system has set a new benchmark for fish waste recycling for the aquaculture industry. This is only a small percentage point

The project is a showcase for the first sustainable fish farm 100% waste utilization system and as such is an important step in the future of a sustainable industry.

**Setting up value chains for oyster shells** in a sustainable manner makes the communities interested in the survival of the oyster species without destroying their habitats or themselves in full. There are both harvesting ecosystem management (Crow and Carney, 2013[123]) innovations and innovations in their carbon and nitrogen sequestration techniques (Ceffrey et al, 2016[124]). The global production of marine bivalves for human consumption is more than 15 million tonnes per year (average period 2010–2015), which is about 14% of the total marine production in the world. Most of the marine bivalve production (89%) comes from aquaculture and only 11% comes from the wild fishery. Asia, especially China, is by far the largest producer of marine bivalves, accounting for 85% of the world production and responsible for the production growth. In other continents, the production is stabilizing or decreasing (Europe) the last decades (Wijsman, 2019[125]). Calcium carbonate, a key ingredient in the oyster shells, is one of the most used raw materials in various industries, such as construction materials, food supplement, pharmaceutics, animal feed, plastic production, and others. Calcium carbonate can be derived from marine wastes, like crustaceans and

[122] Naylor, R.L., Hardy, R.W., Bureau, D.P., Chiu, A., Elliott, M., Farrell, A.P., Forster, I., Gatlin, D.M., Goldburg, R.J., Hua, K. and Nichols, P.D., 2009. Feeding aquaculture in an era of finite resources. *Proceedings of the National Academy of Sciences*, *106*(36), pp.15103-15110. Material sourced from: https://dfo-mpo.gc.ca/aquaculture/sustainable-durable/rapports-reports/2011-12/P16-eng.htm

[123] Crow, B. and Carney, J., 2013. Commercializing nature: mangrove conservation and female oyster collectors in the Gambia. *Antipode*, *45*(2), pp.275-293.

[124] Caffrey, J.M., Hollibaugh, J.T. and Mortazavi, B., 2016. Living oysters and their shells as sites of nitrification and denitrification. *Marine pollution bulletin*, *112*(1-2), pp.86-90.

[125] Wijsman, J.W.M., Troost, K., Fang, J. and Roncarati, A., 2019. Global production of marine bivalves. Trends and challenges. In *Goods and Services of Marine Bivalves* (pp. 7-26). Springer, Cham.

bivalve's shells. The majority of the shells are unduly discarded, presenting a public health problem. The production region of Florianópolis, SC, Brazil presented solution is an oyster shell by-product developed by a local company which produces artificial stone. The main component of the artificial stone is a composite material made of oyster shells incorporated in a polymeric resin. The mechanical properties, such as its flexural strength, hardness, Weibull modulus, and fracture analysis, were held in the artificial stone. The mechanical results of the new artificial stone were compared with other natural stones, such as granite and marble, and other commercial artificial stones. This material owns suitable mechanical properties for table tops and workbenches. Using this product as an artificial stone represents an innovation in the development of a new product and adds commercial value to local waste. This product is an excellent example of a circular economy for local producers who care about the environment, and it encourages the reduction of extraction of natural stone, such as granite and marble (H Silva et al, 2019[126]). Also important to note that organizing the harvesters remain one of a kind in its social organisation and economic value addition (Ibid).

**Recycling polystyrene fish boxes** for being reused in the original operations has become a profitable business venture in the various parts of the globe. Innovation and collaboration are limitless when it comes to recycling expanded polystyrene (EPS). Expanded polystyrene fish boxes are commonly used as a container to transport and store fresh fish because of its superior insulation properties. Although a misconception that most containers end up packing landfills throughout Europe (and the world), is has become increasingly more popular to recycle. Cue EPS-SURE to ensure the recycle stage takes place. (Various[127]).

**Collaborating on recycling plastic waste** has remained both a challenge and an opportunity. It is predicted that soon there will be more plastic in the seas than fish.
Netherlands has developed proprietary technology to produce **fashion leather** from **fish skin.** This is an example of **dump to supermarket** transitions. There are both commercial applicators and scientific inquisitiveness about the possibilities associated with converting fish skin to fashionable items. Variously quoting from one such organisation, "There are many sorts of fish leather, but choose to work with salmon leather… which could drastically reduce the use of cow-hide. It appealed the most because of its elegant and refined look. One of the advantages of salmon leather is that it is almost three times stronger than cow leather and at the same time is very flexible and soft. In normal leather the fibers run in one direction, but fish leather has a natural cross-fiber structure. As a result, the material is very sturdy. Besides all this, fish leather is a sustainable alternative to cow leather due to the lack of waste

[126] H Silva, T., Mesquita-Guimarães, J., Henriques, B., Silva, F.S. and Fredel, M.C., 2019. The potential use of oyster shell waste in new value-added by-product. *Resources*, *8*(1), p.13.

[127] Several data sources are referred:
Greenmax company website: https://www.greenmax-machine.com/how-to-recycle-waste-fish-box.html
PlymouthFoam website: 100% RECYCLABLE EXPANDED POLYSTYRENE FISH BOXES from: https://www.plymouthfoam.com/expanded-polystyrene-fish-boxes/

materials produced and because during the tanning and dyeing process the least amount of chemicals are being used" (Maeya-Amsterdam, 2020[128])

## 9. The Way Forward

The Blue Space is evolving fast. The competition for the next idea is taking a cut-throat shape as countries and communities start competing for ever decreasing land space for strategic lifting of their economies. Hence, to introduce a modicum of sense into the Blue Space – several ideas can be taken into cognizance.

First, and in general, this the Blue Space design processes ought to be taken with an open mind, in collective perspective and not in the narrower purview of national interests. We must put the Oceans' and indeed the planet's interest first. The visions of the oceans need to be always synchretic and inclusive. Any focus on the Blue Space must also adhere to similar principles.

Second, we ought to consider means and mechanisms to strengthen the internal dynamics – its software - its role, functions, relations, tools, means, vision, strategies and possibilities in the context of new paradigms of international relations and new opportunities available to meet the emerging challenges of the oceans. The oceanic space is still comprehensively unknown to man and hence, policy formulations must start with the appreciation of this basic fact and with humility. The capability to rise up to the core challenges emanating from the deteriorating climatic conditions of the planet, rising chauvinism and protectionism in the field of trade and finance, disruptive innovations in technology – leading to possible shifts and retrenchments in productive conditions, amongst others, must be recognised as the core deliverables of any strategy formulation for the Blue Space.

Third, we must keep in mind that the Blue Space is the last frontier representing exclusively the core life forms and life-sustaining processes of the planet – its hope, aspirations and above all – its survival. A large part of the known life forms remains outside the BLUE SPACE though-membership. While the question of an equitable identity for the human population must be incorporated into the domain of deliverables that the BLUE SPACE mechanisms and programmes can shape, relevant are also questions of how the BLUE SPACE conducts the livening processes for creating stable resources and management procedures.

Fourth, we need to identify ways and means to engage non-state actors like the academia, the private sector and the civil society that are emerging to make a difference in new partnership models. We must harness the energy of the youth and the women to encourage various professional associations and networks such as the science, technology and

[128] Quoted from the Web Page: https://maeya-amsterdam.com/about/

innovation community in furthering BLUE SPACE objectives and advancing its collective agenda.

Fifth, in an era where individuals provide thought leadership, technology breaks boundary, and innovations disrupt, focused networking and thematic alliancing prove to be key in handling the 4 IR already knocking round the bend. We need to develop professional networks, thematic alliances and a BLUE SPACE culture of work in various human endeavors and use our soft power in dealing with hard problems more durably. Innovative ideas and thoughts are expected on how best to utilize civil paths to peace and soft powers including media, literature, art and culture at least for image righting if not for policy and strategy purposes.

Sixth, in view of the intensity of conflicts that we are witnessing across a greater part of the human realms, we need to ensure that mechanisms and initiatives created for dispute and conflict resolution and diffusion of tension through peaceful means like mediation, arbitration, joint diplomatic moves and peace-making/peace-building missions are activated, harmonised and put into operation.

Seventh, ideas and concepts should come suggesting innovative ways and means for faster development of the Blue Space using complementarities and strategic resources we possess. With peace and stability, development is also our priority as development solves many problems automatically.

Diving head on with the experiences and expectations of the past four hundred years of industrialization, dare we say, falls much short. At the cost of repeating, it might be worthwhile to consider for once – that humans still do not know much and dealing with such a vast and deep dimension such as that of the ocean alias – the Blue Space requires one to be humble even while contemplating such endeavours. With humility comes the softness with which a truly wise design could emerge.