**ANNEX A: Blue Paper Technical Review Form**

Date: 05 Aug 2019: Title of Blue Paper: Blue Paper 2: The expected impacts of climate change on the ocean economy

Reviewer 4

**Overarching Questions**

Reviewers are requested to answer the following questions to assess the overall analytical quality of the contributing paper

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| 1. Analysis: Are there any concerns, flaws in logic, or gaps in empirical basis, calculations or theoretical reasoning? |
| Our biggest concern – although this paper is well written – is warming of ocean’s waters particularly surface waters (between 0 m and - 600 m) and its consequences (as well as those developed in this Blue Paper/BP, in terms of “de-oxygenation”, acidification, changing of oceans’ patterns, circulation and disturbances including their negative impacts on upwelling’s, on the resources – fisheries and aquaculture among others - and other physical elements of the oceans and coasts including sea level rise, etc…)….Warming of ocean’s waters is nothing short that a crisis of the commons, and tackling it will require a global collaborative effort certainly; but far more efforts from industrial countries that are still responsible since 1850 up to now for most of the GHG’s emissions….  If we want to move into the solutions space as well as practical actions (considering further aspects related to ethics and equity with the risks to further impoverish many more people located e.g. in SIDS and Africa’s and Latin America’s); this Blue Paper should clearly and upfront tackle the essential issue of carbon footprints reduction as well as the financing of adaptation and mitigation to further limit global warming impacts on the oceans, hence stimulate innovation and demand for “green technologies as well as blue economy”; This should be a pre-requisite if we are serious about tackling issues of negative impacts of marine resources and ecosystems as well as its biodiversity. This needs to be debated now if one would like to avoid severe degradation with larger losses on oceans resources in the very near future. Linkages are cleared with SDG’s 14 and 12 of United Nations Agenda 2030 in particular, as well as African Union 2063 Agenda and 2050 Africa’s Integrated Marine Strategy/AIMS.  In this regard, it is important to refer to the IPCC report 1.5 degree where I quote “limiting global warming to 1.5 degree implies reducing of carbon dioxide by about 45% by 2030 compared to 2010 levels with the goal to reach net zero around 2050”.  Clearly there is a need to address the issue of vulnerable populations at higher risks (including indigenous people) who are dependent on coastal and marine livelihoods…This is a fundamental question of equity.  Furthermore, addressing this issue as described above will have huge impacts of the future of the ocean economy. |
| 1. Content: Is the paper clearly written, structured, with a logical presentation, and easy to read? |
| Yes |
| 1. Content: Does the paper provide a fair and comprehensive treatment of the topic? Are the conclusions justified? Are the recommendations based on the content? |
| Comprehensive BUT limited recommendations based on the above – Re: Part 1 |
| 1. Eligibility for public distribution: Does the paper require minor/major revisions before it is ready for public distribution? |
| Recommend to integrate somehow concerns raised above |

The issues below are suggestions for the reviewer to consider.

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| **List of issues to be checked** | **Yes/No** | **Comments** |
| Were assumptions clearly identified? | Yes | But issues of Equity and fairness to be better addressed for policy makers |
| Is the methodology explained in a transparent way? | Well! | To include concerns raised above in order to be even more transparent |
| Are quantitative and qualitative sources referenced appropriately and thoroughly? | Yes but | To be completed with the latest references |
| Does the research effectively address relevant gender and indigenous aspects? | No | Further and in-depth analysis are needed….to be completed |
| Are there significant and relevant issues that are missing from the paper? | Yes | Issue of vulnerable populations at higher risks and issues of phasing out perverse subsidies of all sorts on marine resources while avoiding protectionism. Moreover the need to address limiting global warming of oceans worldwide and by whom? |
| Are there any faults in empirical basis, calculations or theoretical reasoning? | No | But further analysis needs to be done |
| Is the information contained in the document up-to-date? | Well! | To update with the latest references; **e.g.** IPCC, 2018: Global Warming of 1.5°C. An IPCC Special Report on the impacts of global warming of 1.5°C above pre-industrial levels and related global greenhouse gas emission pathways, in the context of strengthening the global response to the threat of climate change, sustainable development, and efforts to eradicate poverty [Masson-Delmotte, V., P. Zhai, H.-O. Pörtner, D. Roberts, J. Skea, P.R. Shukla, A. Pirani, W. Moufouma-Okia, C. Péan, R. Pidcock, S. Connors, J.B.R. Matthews, Y. Chen, X. Zhou, M.I. Gomis, E. Lonnoy, T. Maycock, M. Tignor, and T. Waterfield (eds.)]. In Press. |
| Does the manuscript present original material and/or an original viewpoint or if it is a synthesis is the methodology comprehensive and appropriate? | Yes |  |
| Was sensitivity analysis performed where applicable? | No | See above |
| Are you aware of any reputable evidence that contradicts the arguments presented in the paper and is not mentioned? | No |  |
| Are the conclusions and recommendations supported by the evidence? | Yes and No | i.e. issues that will need to be mentioned even, highlighted, as this is valuable for coastal communities and populations: “while people in poverty are responsible for just a fraction of global emissions, they will bear the brunt of climate change, and have the least capacity to protect themselves”, while the primary solution and action go through drastic reduction of Co2 emissions including key role by major industrial countries and private sector.. |

**3. Memo for specific comments**

The following table is intended to facilitate the work of the reviewers, arbiters and authors and we kindly request you to use this format. This provides space for specific comments, suggestions and responses from the author. The memo will be used to inform the sign-off.

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| Ref. no. | Page/ Para/ Line | Comment | Suggestion | Author Response |
| On Para 3 and 4 | Pages 4 to 10 | Particularly relevant to developing countries, Africa included… | To include in the recommendations the following:   * Support the establishment of National/Regional Littoral Observatories for the production and sharing of knowledge in order to underpin decision-making processes for planning and governance of coastal and marine areas; * Develop and implement action research programs on coastal risks typologies and risk assessments and coastal vulnerability through robust methodologies at national and regional levels; * Implement the Warsaw Mechanism on “Losses and Damages” Related to Climate Change in reference to Paris Accord on climate Change – SDG’s 13. * Promote greater involvement of local communities and support endigenous dynamics and practices in the sustainable management of marine and coastal resources, fisheries in particular. |  |
| 5.2 | 26 | On Expansion of ocean renewables | To include in the recommendations the following: “Develop training offers on marine renewable energy technologies (thermal energy, waves and swells, tides, solar, wind)” |  |
| 5.4 | 27 | On Geoengineering solutions | Not sure how those solutions could be applied worldwide while minimizing impacts that sometimes are even quite unknown…  Hence first solutions are in our hands, through drastic reduction of carbon dioxide emissions….While further scientific research continues… |  |