Summary of reviews

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| 1. Analysis: Are there any concerns, flaws in logic, or gaps in empirical basis, calculations or theoretical reasoning? |
| Important to consider   * Several key analyses have not been peer reviewed. Authors should distinguish between conclusions based on published work and non-published work and should caveat accordingly * IPCC report on ocean and climate change is coming out next week and should be considered in the next iteration of this paper * Report needs to more clearly establish the (IPCC report on 1.5 degrees) mitigation goal of “*reducing carbon dioxide by about 45% by 2030 compared to 2010 levels with the goal to reach net zero around 2050*” as absolutely central to the health of the ocean and the welfare of vulnerable populations * Reports needs to present, on top of its sectoral analysis, an overall synthetic view of the impact of climate change on the ocean – an overarching message, a system’s analysis. * Report needs to outline the industrial nation’s responsibility for mitigation and adaptation * Report needs stronger focus on vulnerable populations at higher risks (including indigenous people) who are dependent on coastal and marine livelihoods, i.e. fundamental issues of equity   Less important to consider   * There were some criticisms of the the report’s exclusive focus on climate change (i.e. its failure to consider a global food systems perspective).   + Arbiter’s note: This is probably due to a an overly broad interpretation of the TORs for this paper. |
| 1. Content: Is the paper clearly written, structured, with a logical presentation, and easy to read? |
| Less important to consider:   * Reread and review with an eye towards accessibility by the educated non-specialist. Consider carefully whether the high level of oceanographic detail provided will actually serve the intended audience. Present technical details with a clear connection to how they affect ocean economic issues.   + Arbiter’s note: There is a good case to be made that the main text should remain at a technical level, but the authors prepare an additional 2-4 page “brief for policy makers” which summarizes the insights in more accessible language. |
| 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? |
| Important to consider:   * The analysis is largely global – which one would understand and expect. However, most fishers are small scale operators, whose realities, from policy implications to market impacts, differ substantially from the global trends. It is possible this oversight will be criticised by readers for missing the “on the ground” touch. * The paper has some gaps in its treatment of the literature (reflected in the detailed comments below * Impacts of sea level rise and increased storminess on marine infrastructure, such as ports, marinas, offshore energy, and aquaculture operations are insufficiently covered (probably the costliest and most disruptive impacts – upcoming IPCC report predicts a 100-1000-fold increase in flood risk). Needs a dedicated, data-rich section.   Somewhat important to consider:   * Narratives very academic, without much road-testing. Paper should acknowledge the specific socio-economic realities which make e.g. adaptive fisheries management so difficult in many countries. |
| 1. Eligibility for public distribution: Does the paper require minor/major revisions before it is ready for public distribution? |
| Important to consider:   * None   Somewhat important to consider   * The paper requires major revisions around presentation, structure, and some improved citations before it can be distributed.   + Arbiter’s note: There is a good case to be made that the main text should remain at a technical level, but the authors prepare an additional 2-4 page “brief for policy makers” which summarizes the insights in more accessible language.   Less important to consider   * How long is a piece of string? The corrections I suggest are quite straight forward, but I encourage the authors to be more ambitious in their messaging and conclusions. Only when these are right should the paper be released. I will give you a start: Despite covering over 70% of the planet, and despite the fact that land ecosystems are extremely stressed, the ocean economy has not taken off yet (it is only 2.5% of the global GVA). Why is that when it is probably the only region of the planet that has the capacity to multiply the services it provides? What are the compromises we are prepared to take to reach this ambition? What does society expect from Oceans? A place to spend our holidays, a solace to gather emotional tranquillity and relaxation, a source of nature documentaries? Or all this as well as the future of our food, and a central place in our economies? Who owns the Oceans and for what purpose. This is our vision….   + Arbiter’s note: This comment is based on an overly broad interpretation of the TORs of this paper (they were specifically about climate impact, not about the entire ocean food system) |
| i   |  |  |  | | --- | --- | --- | | **List of issues to be checked** | **Yes/No** | **Comments** | | Were assumptions clearly identified? | Not all | In several places, work in preparation was cited. Without examining the full methods etc. for that work, I can’t judge how sound the assertions are based on that work. | | Is the methodology explained in a transparent way? | Mostly yes, but not all | See above | | Are quantitative and qualitative sources referenced appropriately and thoroughly? | Mostly | There are passages that need updated references or simply, assertions or generalities that need references. | | Does the research effectively address relevant gender aspects? | No | Fisheries and Aquaculture have a very strong gender component which is not explored | | Are there significant and relevant issues that are missing from the paper? | Yes | Equity is touched on in passing but not treated comprehensively. SLR impacts on infrastructure under-represented. Full range of climate impacts on mariculture under-represented. Coral reef tourism analysis too superficial and numbers in e.g. GBR and Caribbean already ahead of analysis. No discussion of MPA as hedging strategy. Overall synthesis is lacking. | | Are there any faults in empirical basis, calculations or theoretical reasoning? |  | Hard to tell; see above comments about works in prep. | | Is the information contained in the document up-to-date? | Mostly | 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. * Bryndum-Buchholz A et al. (2019) Twenty-first-century climate change impacts on marine animal biomass and ecosystem structure across ocean basins. Global Change Biology 25:459-472 * Lotze HK et al. (2019) Global ensemble projections reveal trophic amplification of ocean biomass declines with climate change. Proceedings of the National Academy of Sciences 116:12907-12912 * Roberts CM et al. (2017) Marine reserves can mitigate and promote adaptation to climate change. Proceedings of the National Academy of Sciences 114:6167-6175 | | Does the manuscript present original material and/or an original viewpoint or if it is a synthesis is the methodology comprehensive and appropriate? | both |  | | Was sensitivity analysis performed where applicable? | N/A | Analyses are very bare bones which is fine for here, but needs to be appropriately caveated. | | 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 | But incomplete, see comments above | |