

Summary of results of the BioVal – Workshop “Towards Marine Biodiversity Impact Assessment” in the preconference programme of the International Food LCA conference 2022

Time and place: 11th of October 2022, 2pm – 6pm PET in Lima (Peru)

Held by: Nico Mumm, Julian Quandt and Prof. Jan Paul Lindner from the Bochum University of Applied Sciences

Information about the BioVal-project:

BioVal stands for Biodiversity Valuing and Valuation. The aim of BioVal is to explore how negative impacts of food production and consumption on biodiversity can be reduced and how they can have positive impacts instead. BioVal focuses on the food sector, as food production and diets have the greatest impact on the protection and conservation of biodiversity due to the use of a wide variety of ecosystems (cultivated grasslands, fields, oceans, lakes). Both terrestrial and aquatic biodiversity are included. BioVal addresses the comprehensive research question of how the value of biodiversity can be increased along product life cycles from three perspectives: societal values towards biodiversity, methodological quantification of impacts and entrepreneurial ways to manage it.

Foundation of the methodological research and development of the research group at the Bochum University of Applied Sciences is the Biodiversity Value Increment (BVI) methodology. The BVI method already provides a well-received methodology to quantify direct impacts on terrestrial biodiversity originating from land occupation, implementing several managing parameters like for example nitrogen balance, structural diversity, pesticide application and tillage intensity. One goal within the BioVal project is to further develop the BVI method in three areas:

1. Increase useability by providing datasets and characterization factors
2. Add indirect and non-local impacts like e. g. climate change or landscape fragmentation
3. Develop concepts that transfer the methodological foundation to address marine and freshwater biodiversity

The BVI methodology uses an advanced calculation framework to assess various environmental impacts of land use and provide a quality difference to be used with the UNEP SETAC land use framework, where quality is equal to naturalness of the ecosystem. Naturalness is chosen as the protection target, serving as a biodiversity approximation to include the immense complexity of all levels and interactions of ecosystems and human intervention.

Goal of the workshop:

In the workshop we wanted to discuss the status quo of marine biodiversity impact assessment and which challenges as well as opportunities lie ahead.

Summary:

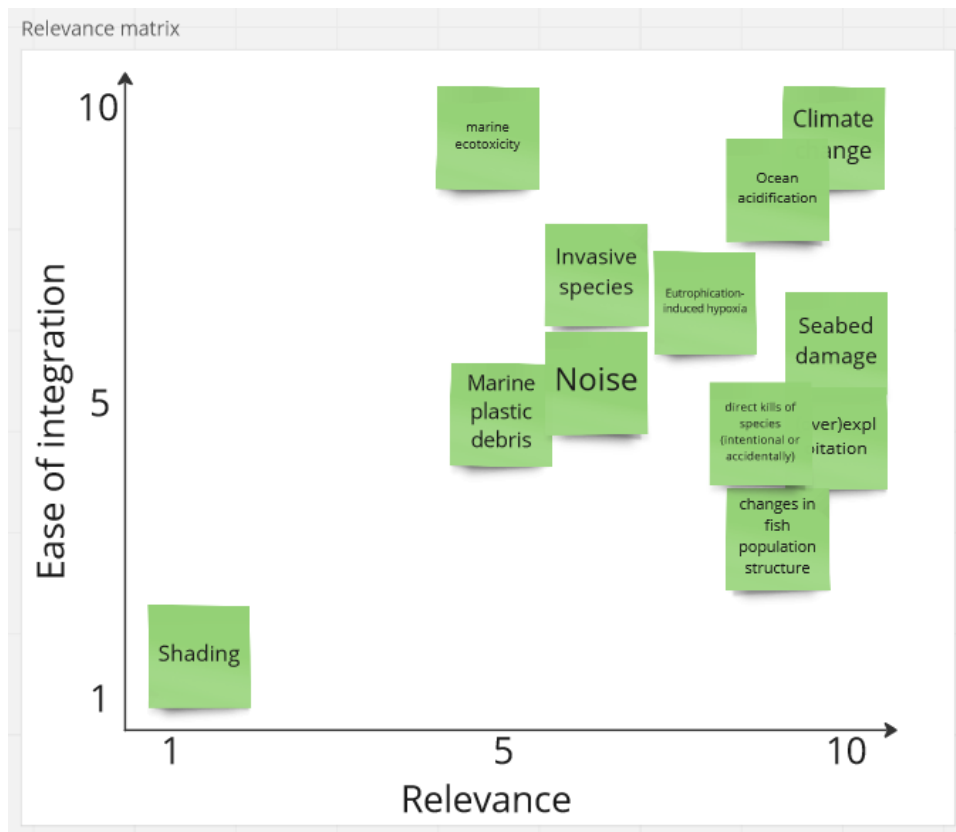
About 30 participants joined us for the workshop, of which about 15 attended in person and 15 were connected using the digital conference platform. The goal of the workshop was to discuss the status quo as well as a path forward towards Marine Biodiversity Impact Assessment in LCA.

To familiarize the participants with the BioVal project, as well as the BVI method, Jan Paul Lindner opened the workshop with a short presentation, followed by a Q & A to get everyone up to speed. Afterwards Nico Mumm gave a short introduction to the challenges associated with method development for Marine Biodiversity Impact Assessment.

The main part of the workshop was set up to be interactive with a collaborative Miro Session on Drivers and Impact Pathways, followed by an open discussion on spatial granularity, necessary for an appropriate assessment.

We are grateful for everyone's time and input and the valuable discussion. The results are summarized in the following:

- There seems to be an agreement on the fact, that marine biodiversity is different from terrestrial biodiversity in terms of impact allocation. Most direct impacts on terrestrial biodiversity can be traced back to a single source (e. g. farmer/company). Marine ecosystem impacts are in most cases not spatially discrete. An area of seabed, a volume of watercolumn or a fishstock (possible target areas) is occupied and impacted by multiple emissions from different sources at the same time. The goal of our research is to find a way to combine all relevant impacts on a target area to evaluate its degree of naturalness and attribute the impact to a single system accordingly.
- Primary productivity is strongly correlated with biodiversity intactness. This can be used to validate the relation between naturalness and intactness, as one dimension of the many ecosystem services the oceans provide.
- The following graph shows a collection of the main impacts and threats influencing marine ecosystems that were elaborated and classified during the workshop. The classification relates these impacts and threats in terms of relevance and methodological progress for usage in LCA. This expert knowledge can be used to apply weighting factors for the various impacts in the final model.



- The following statements can be made regarding necessary spatial granularity for a marine biodiversity assessment method:
 - o Spatial resolution should vary with sea use class: e.g. for fisheries FAO fishing regions can be used, while for coastal tourism marine ecoregions defined by Spalding et al. 2007 could be used
 - o Spatial resolution should be higher in coastal regions
 - o Depth resolution could be of lower granularity. Here we would propose a distinction between benthic, demersal, and pelagic species.

Contact and feedback:

Thank you all for participating and sharing your thoughts, knowledge, and ideas. If you have any feedback on the results, we would kindly ask you to provide it until the 3rd of February. For the feedback or in case you would like to stay in contact or have follow-up questions, please write an email to:

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