

How to save the oceans?

The value of transdisciplinary and collaborative ocean research

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The theme of this year's World Ocean Day emphasises the role of oceans for life and livelihoods on Earth. Ocean acidification, loss of sea ice, and retreating glaciers are prominent examples for the profound anthropogenic changes affecting the world's most sensitive ecosystems. However, too little attention is paid to their relevance for the world's population. Calls for individual action often go unheard. Governmental regulations such as the ban on throwaway plastics are only mini-steps for changing the prevailing resource-intensive behaviour. For managing the world's oceans more sustainably, one of the purposes of the World Oceans Day and the related campaigns is "to mobilize and unite the world's population". To achieve this goal, researchers, who ideally inform policy making, need to make causalities and responsibilities more explicit to impede shirking by governments. The effects of the changing oceans, however, differ among localities. It is crucial for research to translate and earmark the relevance of findings also for societies and individuals living afar and to those for whom these changes often seem too abstract and distant.

Why, for example, should someone in Germany care about houses collapsing into the Arctic Ocean? The simple answer: Because coastal erosion is a global phenomenon that also affects Germany. It is more visible in the Arctic already because the Arctic is warming at least twice as fast as other regions; the groundbreaking judgement by Germany's Federal Constitutional Court reconfirmed Germany's responsibility to limit CO2 emissions and made considering future generations a legal requirement. To understand how coastal erosion is affecting the life and livelihoods of coastal communities and beyond at present, it is important to understand coastal erosion as a systemic problem. In the past, coastal erosion in the Arctic has been studied in a siloed way. Still, most research on the changing oceans is conducted in the field of natural sciences and from quite narrow perspectives. While sustainable development and climate change are encouraging more social sciences research, in both fields mostly researchers from afar conduct research on these regions, their ecosystems and peoples. To generate and translate comprehensive findings, to avoid silo-approaches and to identify opportunities for collaborative actions, researchers should commit to more transdisciplinary research, specifically with coastal communities, including indigenous rights holders.

The UN Decade of Ocean Science for Sustainable Development will run from 2021 to 2030. This proclamation should be used to foster transdisciplinary research, the inclusion of place-based knowledge and collaborative knowledge agendas to "connect ocean science with the needs of society". However, research agendas are determined by capacities and

by funding opportunities, which are often structured by global knowledge hierarchies and power relations. Networks of universities and research institutes such as the University of the Arctic and fellowship programmes for early career researchers contribute to the production, sharing, and pooling of knowledges and thus also to capacity building. Knowledge networks that bring together the people living, learning, teaching and researching in, on, and beyond coastal communities should also be supported by legal frameworks. One example is the Agreement on Science Cooperation in the Arctic, regulating access to data, places, and information and the sharing of infrastructure. As the International Arctic Science Committee's 2020 state of Arctic science report stresses, however, the implementation of the agreement needs funding and personnel, which is still lacking. Likewise project durations should be extended as transdisciplinary research "needs more time to mature than standard disciplinary projects".

While we all should "roll up our sleeves for the environment", as demanded at the World Ocean Week 2020, researchers should do this jointly rather than separately. For this, more opportunities for exchange across all geographic, societal, and disciplinary levels are needed. Recent advances in communications technology enable more inclusive events, as participants no longer need to travel to contribute to discussions. An increasing number of online-events alone, however, will not save our oceans. Information should not only be shared, but also compiled, analysed, and evaluated collaboratively. This requires time and resources. Structures that encourage an exchange of diverse views and support the creation of collaborative knowledges are crucial to better understand the complex impacts of the changing oceans. In practice, this means that more transdisciplinary research is decisive, ideally on the basis of binding global governance mechanisms for research cooperation and more investment in transdisciplinary education at all levels.

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