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Art of hosting approaches with greater participation of scientists can support robust solutions for increased societal resilience

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The unprecedented acceleration of human extractions of living and mineral resources particularly after WWII and their wasteful transformation in an expanding technosphere is now estimated to exceed living matter[1]. This fossil fuel driven acceleration has led to exceeding planetary boundaries in several dimensions [2], including the on-going mass extinction of species particularly in the warming and overfished ocean. Catch reconstructions since the beginnings of global statistics in 1950 are revealing the extent of unsustainable extractions from the ocean[3]. Two decisions at global negotiations in 2022, one on harmful fishing subsidies and the landmark target 3 on the protection of 30% of ocean and land by 2030, have potential to slow down the excesses and gradually rebuild fully functional ecosystems. How can scientists enhance their contribution towards shifting the emphasis to implementation? We know from cognitive science, e.g. that excessive car speed and other forms of sensory overload stress humans and reduce quality of life while also harming the environment[4]. Yet even in the face of evidence, it has often been impossible to act decisively on this evidence. Similarly, it has so far been difficult to overcome widespread cognitive dissonance about climate change and species extinctions in the ocean. Contrary to widely held beliefs, here it is postulated that different attitudes are not impervious to scientific information and learning. Historically these judgemental processes are not fixed, even when reinforced by social norms[5]. However, the accumulation of facts and their presentation in the scientific literature is not enough to bring about what may be considered desirable behavioural change. This is reflected in considerable effort put into policy briefs and other dissemination formats in recent years, including video and social media e.g. by the IPCC. Art of hosting and collective leadership are other proven approaches for building understanding and trust necessary to develop robust solutions through enabling collective action. In their various context-adapted formats they have been successfully deployed for joint learning and action in settings as diverse as largely illiterate small-scale fishing communities and government organisations. They could benefit research and academic institutions in their search for promoting more stakeholder engagement and fostering greater inter- and transdisciplinarity.

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[2] Steffen, E., Richardson, K., Rockstroem, J. *et al.* Planetary boundaries: Guiding human development on a changing planet. *Science* **347**(6223) (2015). DOI: 10.1126/science.1259855

[3] Pauly, D. & Zeller, D. Catch reconstructions reveal that global marine fisheries catches are

higher than reported and declining. *Nature Commun.* **7**, 10244 (2016). doi:
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[4] Knoflacher, H. *Zurück zur Mobilität! Anstöße zum Umdenken*. Ueberreuter, Wien (2013)

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