Information about the German concept paper “Polar Regions in Transition”

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Presented by Germany

Introduction

The German Federal Ministry of Education and Research (BMBF) has commissioned a dedicated Advisory Board to develop a polar research concept paper within the frame of the research programme of the Federal Government of Germany “Mare:N – Coastal, Marine and Polar Research for Sustainability”. The concept paper “Polar Regions in Transition” will enable the Federal Government to address the respective future scientific needs in pending political processes and national, European and international frameworks. Based on the concept paper, a first call has been published in January 2022 (see below), followed by further national and international research calls over the next decade. While several scientific questions of the concept paper refer to both poles, the authors also published a chapter addressing *Antarctic Protection Concepts* and identified corresponding research and development needs.

Background

Good knowledge of the Antarctic ecosystems and its services is indispensable when preparing global reports with policy advice, for example within the framework of the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES) and the Decade of Ocean Science as well as the United Nations’ Global Ocean Assessment. An understanding of ecological processes is also important for Antarctic-specific recommendations for action under the Antarctic Treaty System with its Protocol on Environmental Protection and the Commission for the Conservation of Antarctic Marine Living Resources (CCAMLR).

Antarctica is regarded as an ecosystem of great scientific and aesthetic value that is predominantly unaffected by humans and has recently been increasingly exposed to anthropogenic – i. e. human-induced – changes. There is therefore a broad consensus that additional efforts are needed to keep the “human footprint” as small as possible. Safeguard measures need to take into account the current state of scientific knowledge.. They aim to preserve the biodiversity and ecosystem services, the atmosphere and the terrestrial, freshwater, glacier and marine environments of the Southern Polar Region from adverse anthropogenic influences and interventions. This is particularly important because of the uniqueness and high sensitivity of many organisms to environmental changes. Direct threats are mainly based on increasing exploitation by fisheries and tourism, which can lead to the destruction of habitats, pollution and the introduction of non-native species, including pathogens. Among the globally relevant ecosystem services, oxygen production, carbon dioxide uptake, nutrient recycling and food production are of particular importance for worldwide migratory whale and bird species. For these reasons, areas with high biological activity and biodiversity should be given special attention in the scientific validation of existing and new protection concepts. Natural resources such as krill and fish are used directly for human consumption only to a limited extent. They are otherwise used for animal feed production and in the production of health-related lifestyle products. There are only a few examples of the usability of genetic resources, for example in connection with cold resistance or in the pharmaceutical / medical field. Against this background, the internationally agreed goal of protecting 30 percent of the world’s oceans by 2030 is also to be implemented in the waters surrounding Antarctica. This has so far only been achieved for less than a third of the Southern Ocean. Nonetheless, the species conservation decided upon after the historic depletion of some Antarctic mammalian and fish stocks serves as a model for regulations in other oceans. With regard to the atmosphere, the first successes of research into the ozone layer in Antarctica and the Vienna Convention for the Protection of the Ozone Layer for its protection are emerging.

Guiding questions

The concept paper “Polar Regions in Transition” contains, *inter alia*, the following guiding questions:

* Which groups of organisms and habitats are of great importance for the Antarctic and global biosphere, but are sensitive to human impact and, thus, in particular need of protection?
* How can the effectiveness of protected areas and area-independent protection measures be optimised under the specific Antarctic conditions?
* What influence do pollution, non-native species and introduced diseases have on the well-being of Antarctic and Southern Ocean organisms, which are largely isolated from the rest of the world?
* How can the “human footprint”, especially of fisheries and tourism, on the sensitive Antarctic biosphere and its environment be reduced?
* How can an efficient network of protected areas be established from an ecological-strategic point of view?

Recommendations

The concept paper “Polar Regions in Transition” contains, *inter alia*, the following recommendations:

* The success of international regulations for the protection of the Antarctic and Southern Ocean environment and biosphere can only be assessed with an increased understanding of the ecological system. As a basis for this, long-term observations must ensure an analysis of human impact and interference on key organisms and ecological functions.
* The designation of new protected areas and the review of existing protected areas require a constant improvement in the knowledge of geographical priorities in terms of biodiversity, specific environmental conditions, ecosystem services and the occurrence of rare communities.
* In addition to general studies on biodiversity, the scientific relevance and effectiveness of various protective measures can be demonstrated and verified through the development of future scenarios in ecological and physical modelling approaches.
* Socio-scientific research could increase the acceptance of science-based policy decisions to protect Antarctica.

***Further information***

For detailed information about further research and development needs please follow the link:

<https://www.fona.de/medien/pdf/01_Konzeptpapier_MARE-N_Polarforschung_Kurz-EN_BF.pdf>

BMBF published a dedicated research call (https://www.bmbf.de/bmbf/shareddocs/bekanntmachungen/de/2022/01/2022-01-19-Bekanntmachung-MAREN.html) about the influence of global and regional stressors in the Polar Regions. The funding measure aims to identify the interaction of conflicting usage concepts and could also contributes to the evaluation of marine protected areas (MPA). Research consortia will be prioritised by end of 2022, with anticipated program start in 2023.