

The Nansen Legacy

- A joint Norwegian Arctic research project providing holistic, cross-disciplinary scientific knowledge of the climate and ecosystem of the northern Barents Sea in the past, present and future

The Barents Sea is an Atlantic Water gateway to the Arctic Basin, at the same time as it is at the receiving end of sea ice export from the Arctic Ocean. Large-scale patterns of Arctic climate change are largely present, or even enhanced, in the Barents Sea. In 2018, the new Norwegian project “Nansen Legacy” started, involving ten Norwegian research institutes/universities/private entities, which all have major activity and competence about the Arctic marine environment. The *Nansen Legacy* is the collective answer of the Norwegian research community to the outstanding changes witnessed in the Barents Sea and the Arctic as a whole. The *Nansen Legacy* constitutes a joint Norwegian research platform to address the following over-arching objectives over the coming six years:

1. Improve the scientific basis for sustainable management of natural resources beyond the present ice edge
2. Characterize the main human impacts, physical drivers, and intrinsic operation of the changing Barents Sea ecosystems – past, present, and future
3. Explore and exploit the prognostic mechanisms governing weather, climate and ecosystem, including predictive capabilities and constraining uncertainties
4. Optimize the use of emerging technologies, logistic capabilities, research recruitment and stakeholder interaction to explore and manage the emerging Arctic Ocean.

The *Nansen Legacy* will investigate crucial climate processes and changes going on and determining the environmental conditions in the northern Barents Sea, and the project will provide a 2020–2100 outlook for the expected state of climate, sea ice, and ecosystem, including near-term predictions. It will evaluate the sensitivity and functionality of early-warning indicators used to detect change in marine resources and their vulnerability to exploitation. Further, the project will largely improve polar weather forecasts for the safety of people and commercial operations. Another core legacy will be the recruitment and training of the next generation of trained cross-disciplinary researchers, with a unique national and international network. Overall, the *Nansen Legacy* will contribute to international research and a comprehensive pan-Arctic understanding.