

## Project information

### Project title

Ocean Health in Transition (OHiT)

### Year

2017

### Project leader

Per Fauchald

Geographical localization of the research project in decimal degrees (max 5 per project, ex. 70,662°N and 23,707°E)

From 65°N, 12°E along the coast to 71°N, 31°E

### Participants

#### **Lead:**

- Per Fauchald ([per.fauchald@nina.no](mailto:per.fauchald@nina.no)), Norwegian Institute for Nature Research (NINA)

#### **Administrative responsible:**

- Cathrine Henaug ([cathrine.henaug@nina.no](mailto:cathrine.henaug@nina.no)).

#### **Partners:**

##### Institute for Marine Research:

- Erik Olsen
- Lis Lindal Jørgensen
- Gro van der Meeren
- Per Arneberg

##### NIVA:

- Hege Gundersen
- Trine Bekkby
- Hartvig Christie

##### NORUT:

- Jannike Falk-Andersson

##### NOFIMA

- Eirik Mikkelsen

##### UiT-Arctic University of Norway:

- Vera Helene Hausner
- Sigrid Engen
- Ann Eileen Lennert

##### International partners:

- Benjamin Halpern, NCEAS, University of California Santa Barbara
- Greg Brown, California Polytechnic University San Luis Obispo

### Flagship

MIKON

### Funding Source

Note that in 2017, OHiT was co-funded by the Fram Centre Incentive project Sustainable Blue Growth –a Coastal Barometer for Northern Norway.

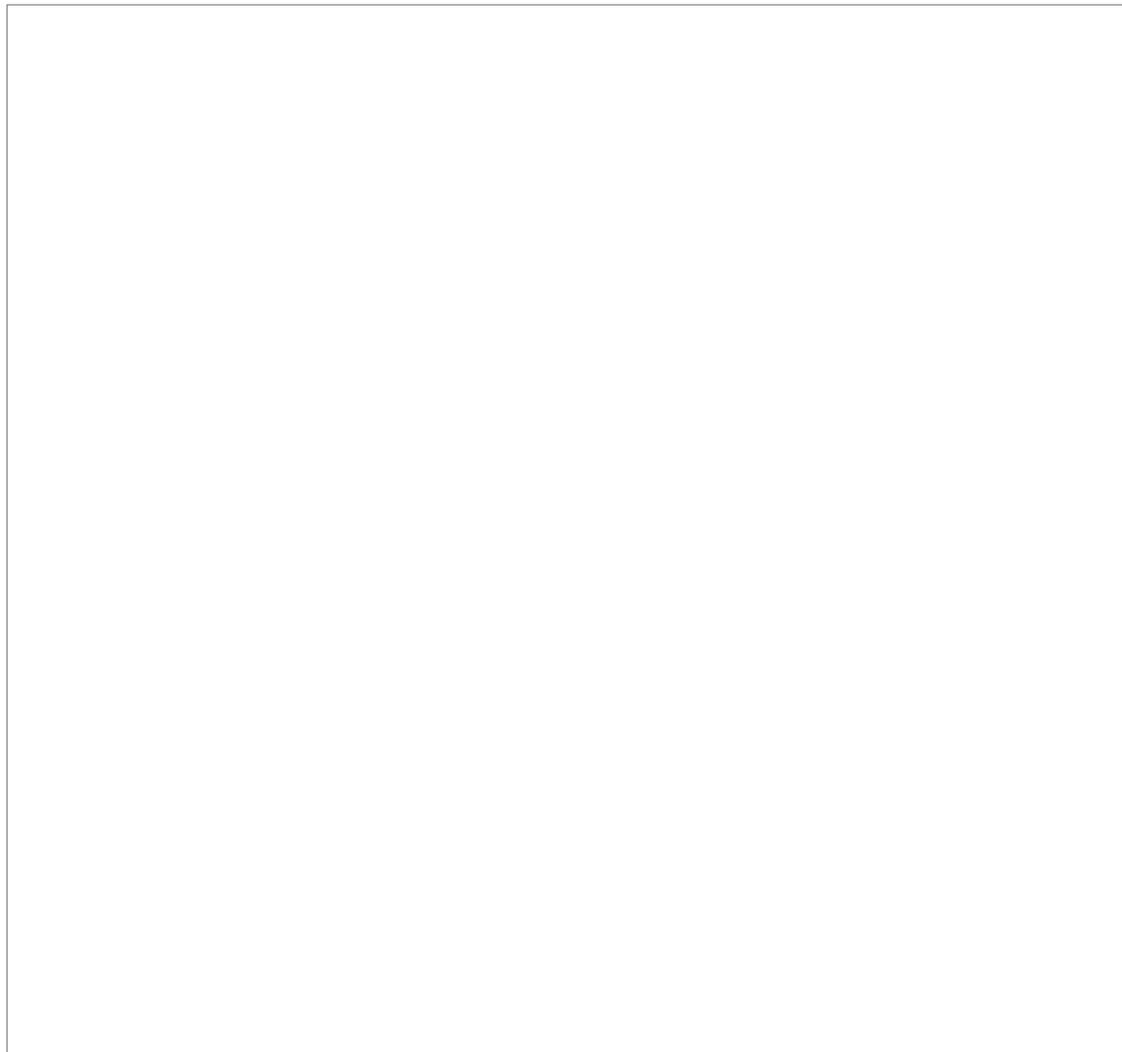
## Summary of Results

### *Summary:*

The growth in the blue economy is changing coastal ecosystems and communities. To guide ecosystem-based management, there is a need for developing measures of ocean health and analyze how industrial development is affecting sustainability goals. Our main task in 2017 has been the development of the Coastal Barometer. The Coastal Barometer consists of nine sustainability indicators for 81 coastal municipalities in Northern Norway. The nine indicators are based on the Ocean health Index and the UN Sustainability Goals including: Food provisioning; Small-scale fisheries; Natural Products; Carbon Storage; Sense of Place; Livelihood and Economies; Tourism and Recreation; Clean Waters and Biodiversity. Based on extensive datasets we have, during three workshops, formulated and computed draft versions of the indicators. The status of each indicator is outlined in the progress tables below.



To test how Public Participatory GIS (PPGIS) could be used in the Coastal Barometer, we conducted a pilot study on the Science days in Tromsø and Skjervøy in September. PPGIS will be used to engage the public on the Coastal Barometer web site, and the data from specific PPGIS surveys will be specifically applied for several of the indicators (see progress tables below).



Based on the work in OHiT, a proposal for a four-year research project was sent to the program Marinforsk in NRC.

*Highlights:*

1. OHiT is developing a Norwegian version of the Ocean Health Index. The set of indicators has been named *Kystbarometeret*
2. *Kystbarometeret* consists of indicators for nine sustainability goals, specifically formulated for a Norwegian context
3. Based on comprehensive datasets encompassing biodiversity, socio-economics, environment, fishery and aquaculture statistics, public participatory mapping, social media and news outlets, we have formulated draft versions of the sustainability indicators.
4. To involve local people in *Kystbarometeret*, we have conducted a pilot Public Participatory GIS (PPGIS) study. PPGIS will be used as data input for several of the indicators.
5. In parallel with the development of the indicators, we are developing the *Kystbarometer* web site which will become the major hub for communication and interaction with the public.

For the Management

- *Kystbarometeret* measures indicators for nine sustainability goals in 81 coastal municipalities in Northern Norway.
- The formulation of *Kystbarometeret* is based on the Ocean Health Index and the UN Sustainability Goals.
- *Kystbarometeret* utilizes extensive datasets on biodiversity, socio-economics, environment, fishery and aquaculture statistics, public participatory mapping, social media and news outlets.
- *Kystbarometeret* specifically addresses public participation in defining sustainability issues through internet mapping.
- *Kystbarometeret* might guide Marine Spatial Planning on the municipality, county and national levels.
- Quantitative analyzes of the indicators will provide new knowledge on how the development of marine industries in Northern Norway influence sustainable coastal development.
- The analyses will also provide new knowledge on the cumulative environmental impact of the marine industries in Northern Norway.

- Brown, G. & Hausner, V.H. (2017) An empirical analysis of cultural ecosystem values in coastal landscapes. *Ocean and Coastal Management* 142: 49-60.

#### Communicated Results

The Coastal Barometer will be highly relevant for environmental and economic policies, marine spatial planning, marine industries, management authorities, coastal municipalities and local people. The communication of results to a large variety of end-users is therefore vital for the project's impact and success. The Coastal Barometer web site will be the main hub for communication and dissemination. The site will host several tools for visualization of indicators as well as tools for user participation (e.g., PPGIS). It will also include a thorough presentation of the data and methods applied. The web site, including PPGIS applications and infographics, is developed in parallel with the indicators. Depending on continued funding, the web site will be launched by the end of 2018.

The impact of *Kystbarometeret* depends on legitimacy, transparency and scientific rigor. We have therefore adopted a prudent communication strategy awaiting quality assurance of our indicators through the review process of scientific publications and stakeholder involvement. *Kystbarometeret* has been presented on internal seminars at IMR and NINA.

#### Interdisciplinary Cooperation

The research questions addressed by OHIT demands a broad interdisciplinary approach. All members of the research team have experience from interdisciplinary research and represent a broad suite of competence in marine ecosystem-based management, resource economy, sustainability science, and marine and coastal ecology.

#### Budget in accordance to results

The funding from Fram Centre, including the Fram Incentive Project, has been the only external funding for OHIT. From the grants, we have built an interdisciplinary research team, compiled an extensive database, formulated indices of ocean health, developed a web-site for communication, conducted a pilot PPGIS study, and developed a research proposal for the Norwegian Research Council.

#### Could results from the project be subject for any commercial utilization

No

#### Conclusions

If OHIT is successful in obtaining additional external funding, the extended project will develop new interdisciplinary methods for analyzing social-ecological systems. The extended project will allow a comprehensive involvement of stakeholders as well as including the local peoples' values and preferences in the definition of ocean health. The project will provide new interdisciplinary knowledge on how the growth in the blue economy affects ocean health.

Without additional funding, OHIT will finish the development of a prototype for *Kystbarometeret*, and analyze the data in accordance with targeted questions related to sustainability and the development of marine industries.