



Kartverket

Marine Spatial Management Tool

ARHC9, 17-19 September 2019, Murmansk



Marine Spatial Planning

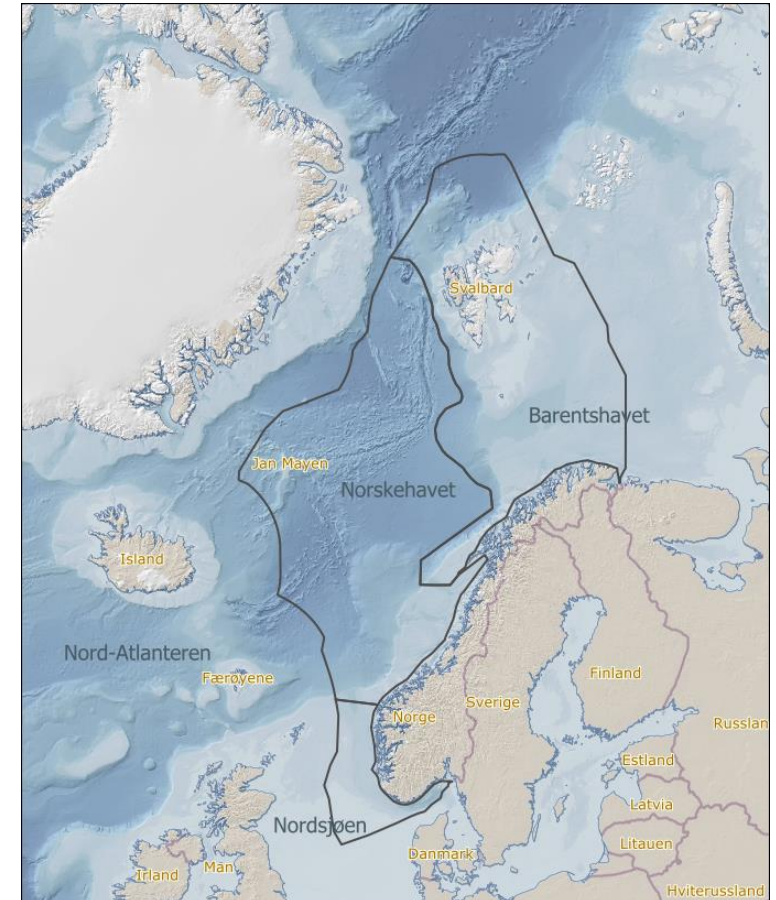
Support the marine spatial planning process with updated and reliable geospatial information

Marine management is important to Norway. We have extensive ocean areas – six times greater than our land area. These areas are very rich in resources. We also have many activities that affect the marine life.

The purpose of the management plans is to facilitate value creation while maintaining natural diversity. Sustainability.

The Ministry of Climate and Environment is responsible for the work with the management plans, and lead an intergovernmental Steering Committee that has representation from all the ministries that work with issues relating to the marine area.

The foundation is an extensive collaboration, both between expert groups and between ministries



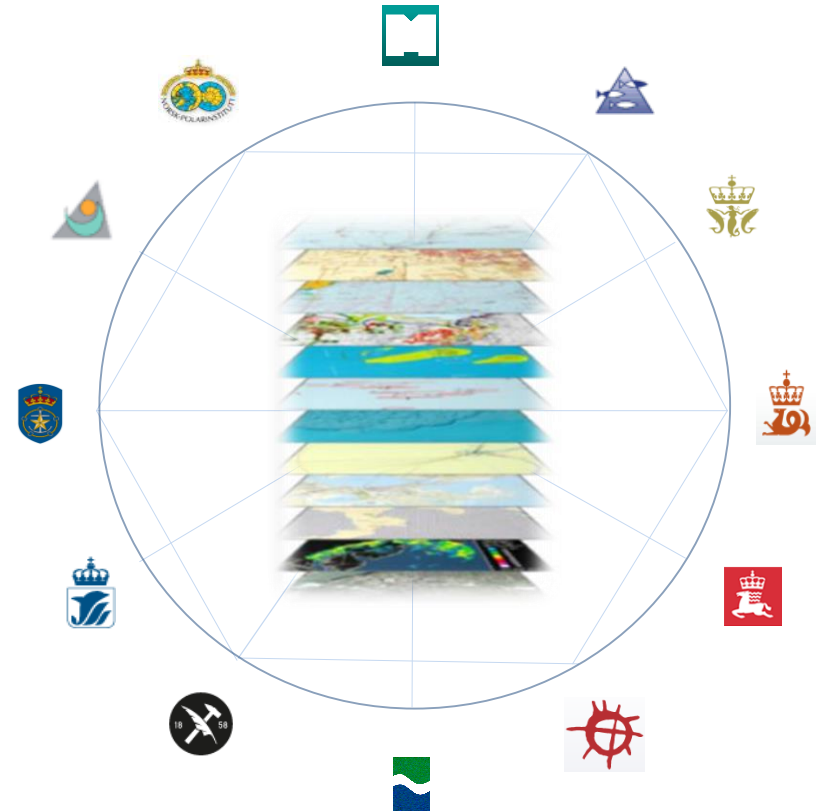
The Norwegian Government has developed integrated marine management plans for all Norwegian sea areas

MSP - Cross-sectoral cooperation

The Management Forum coordinates the work on the scientific basis of the management plans.

Members of the Management Forum:

- Norwegian Environment Agency
- Norwegian Mapping Authority
- Directorate of Fisheries
- Institute of Marine Research
- Norwegian Coastal Administration
- Norwegian Maritime Authority
- Norwegian Petroleum Directorate
- Petroleum Safety Authority
- Norwegian Radiation Protection Authority
- National Institute of Nutrition and Seafood Research
- Norwegian Polar Institute
- Norwegian Mapping Authority



Marine Spatial Management Tool

A cross-sectoral development project through an intergovernmental cooperation

A governmental initiative based on the need for a more coherent and uniform geospatial information content, suitable for underpinning tasks attached to marine spatial planning and marine management

- More effective updates of the management plans
- Better overview over political decisions and actions related to marine management
- Contribute to more transparency, openness and increased involvement from the stakeholders

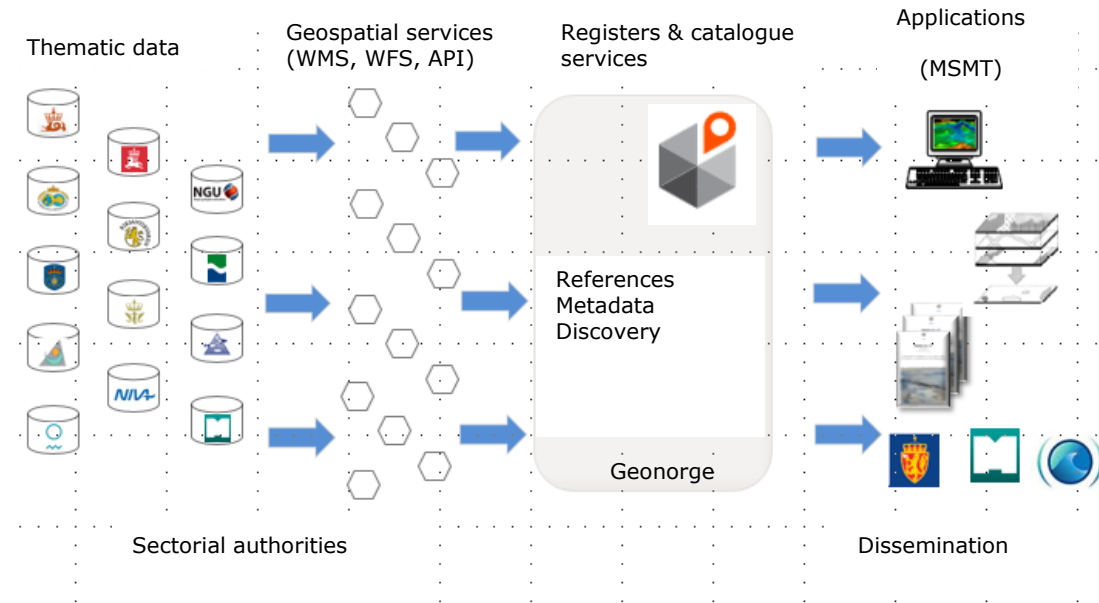


Marine Spatial Management Tool

Service based approach

Key elements:

- Thematic geospatial information services offered from relevant sectorial authorities
- Standardized network based services enabling real time use of geospatial data content in user client (e.g. MSMT)
- Standardized and harmonized data content and user adapted presentation rules, cartography and semantics
- Real time access to associated metadata through network based services consumable in user client



Marine Spatial Management Tool

Examples of building thematic map compositions

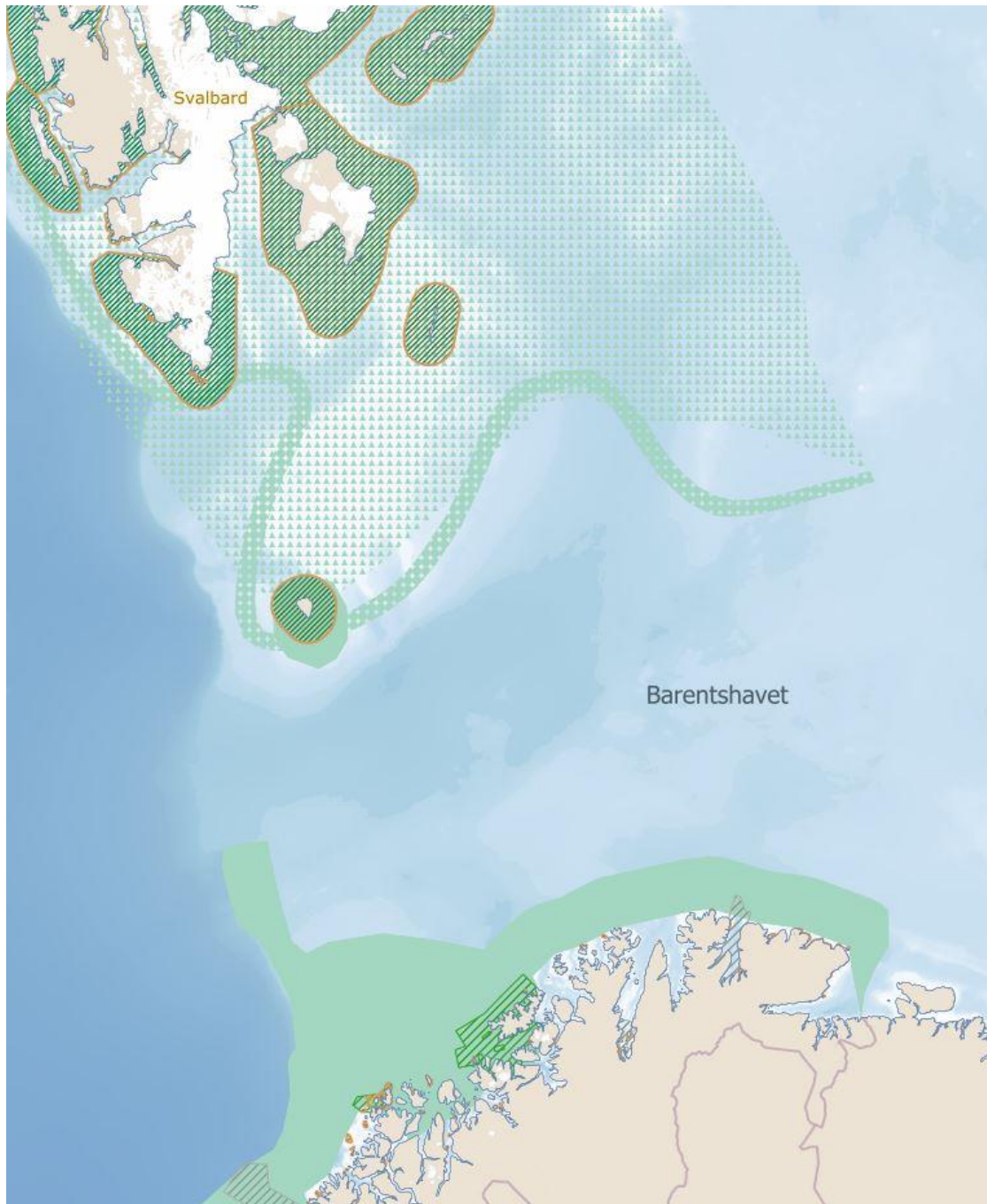
Status at the moment:

- 35 main categories of thematic data available through corresponding geospatial services
- 11 governmental agencies serving their respective thematic datasets and geospatial services



Base map (incl. depth areas)



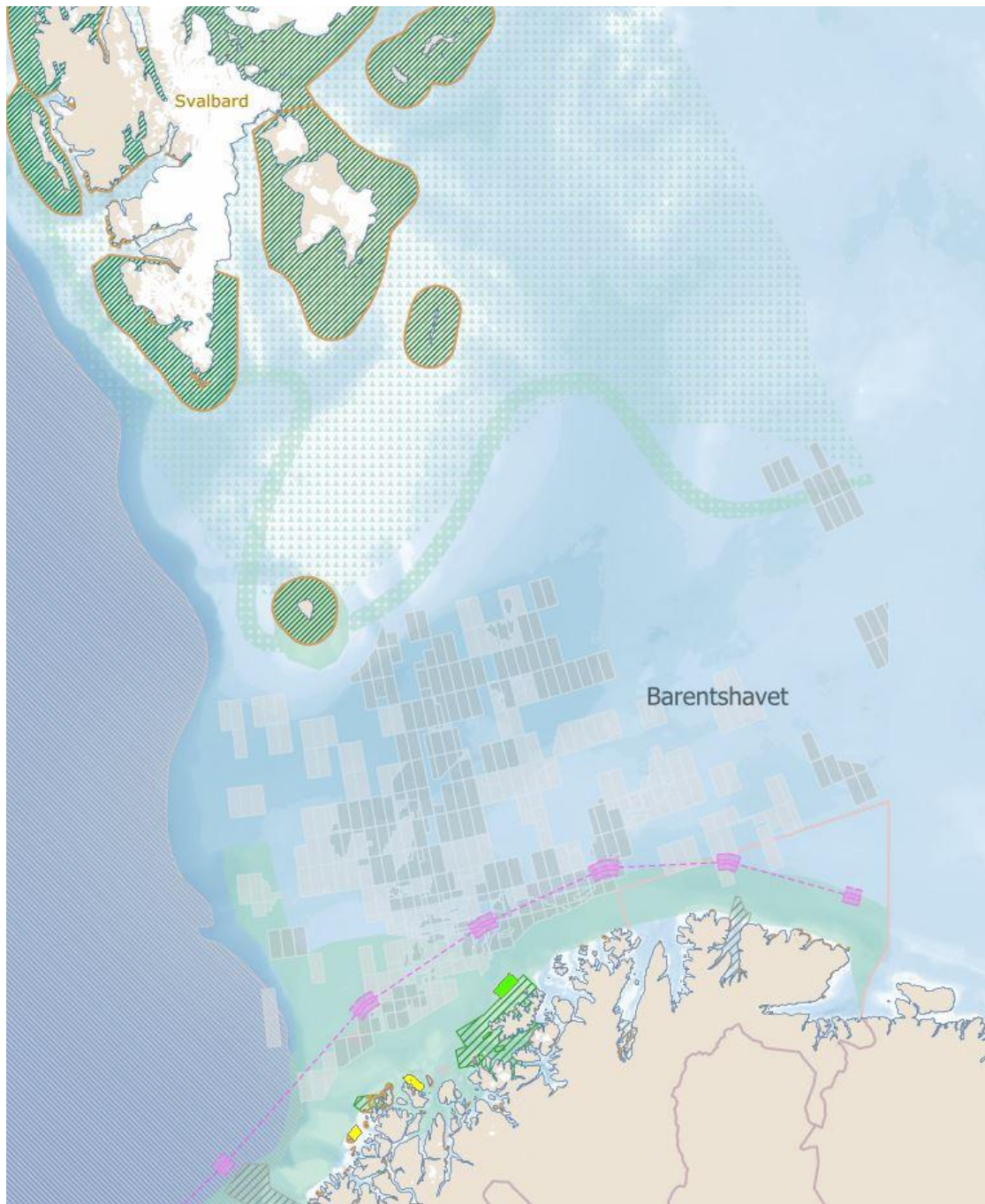


Base map (incl. depth areas)

+ Regulations

- **Marine Protected Areas**
- **Particularly vulnerable and valuable marine areas**



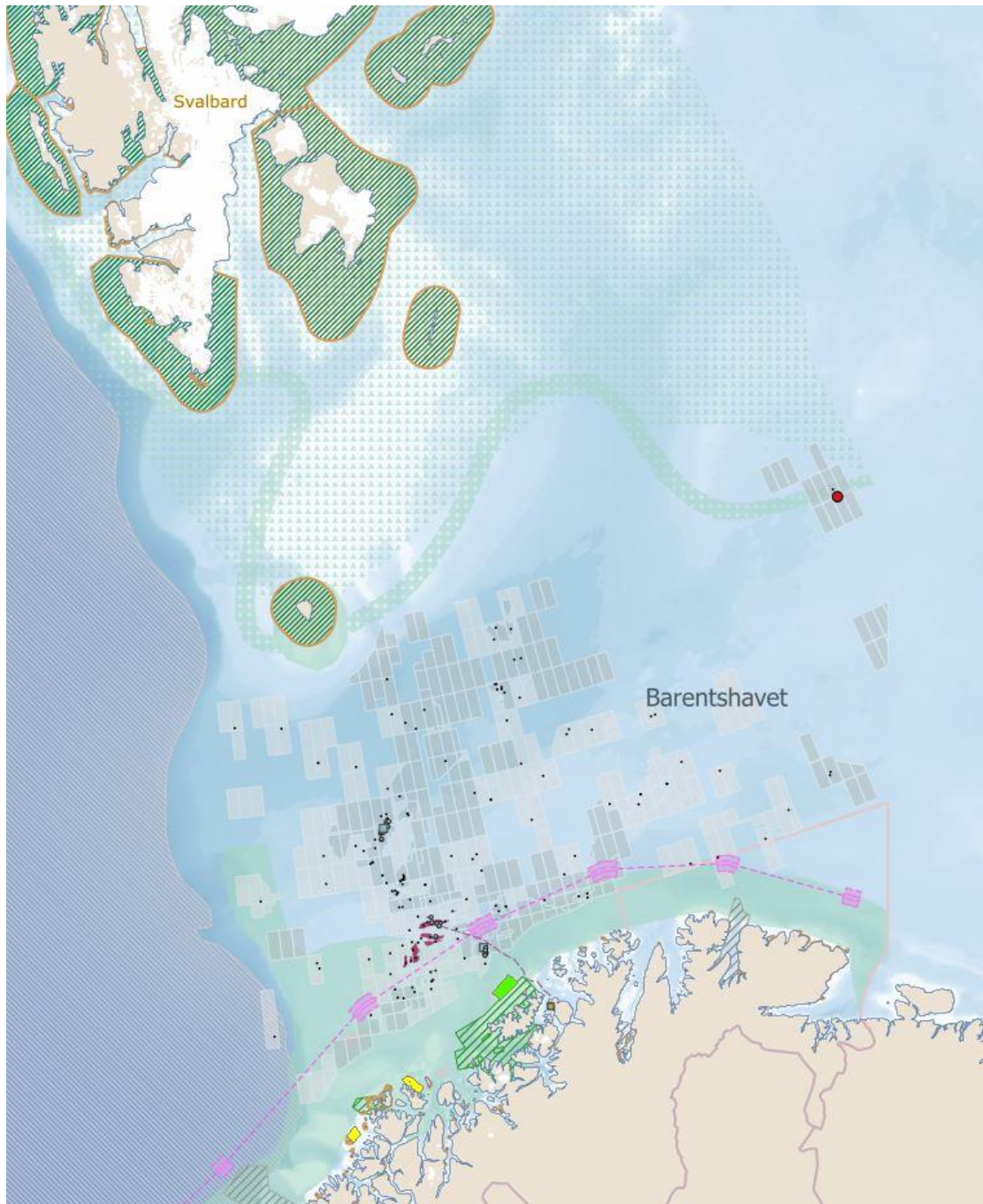


Base map (incl. depth areas)

+ Regulations

- **Marine Protected Areas**
- **Particularly vulnerable and valuable marine areas**
- **Fishery regulations**
- **Production licenses (petroleum)**
- **Offshore wind farm assessments**
- **Traffic Separation Scheme**





Base map (incl. depth areas)

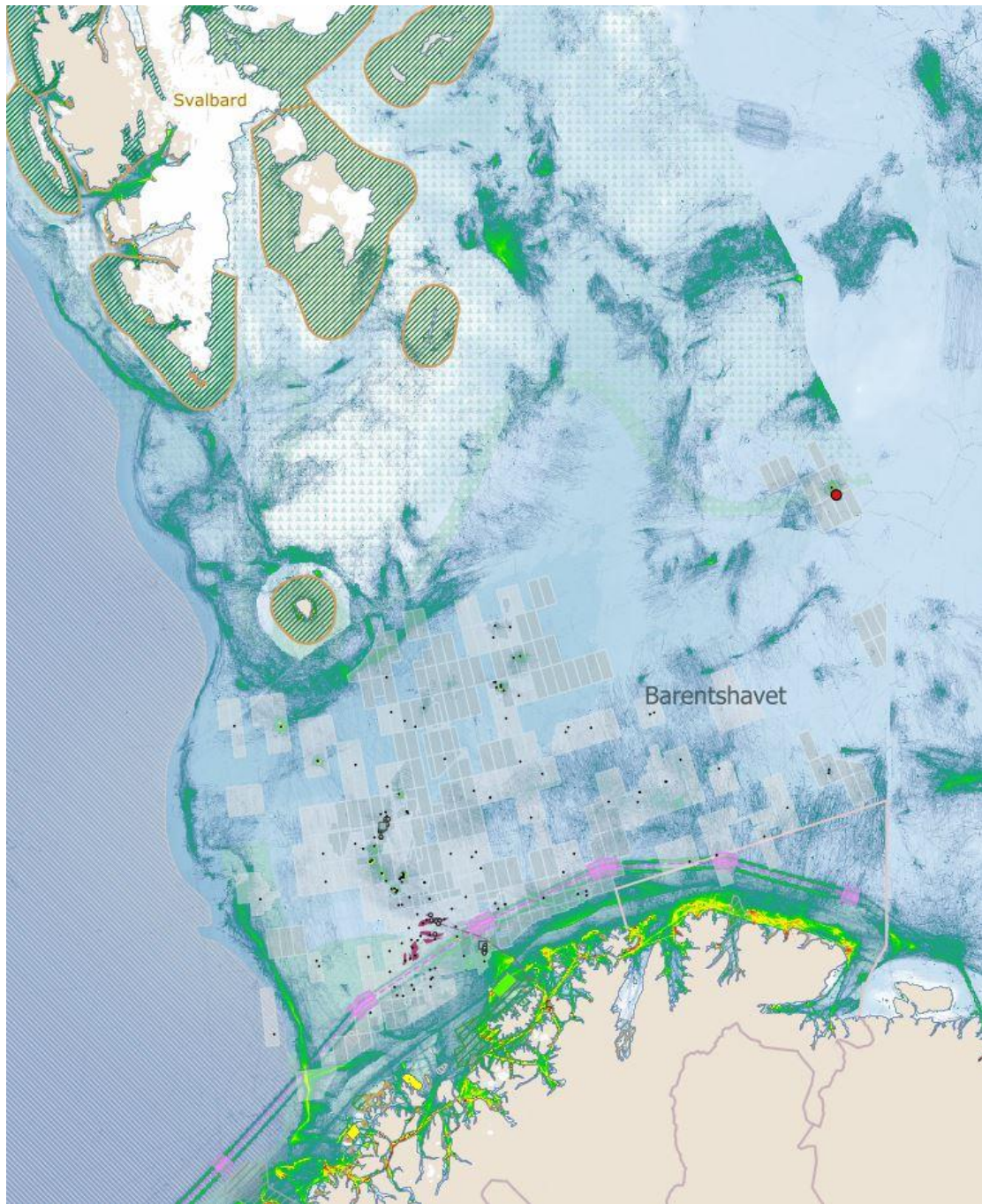
+ Regulations

- Marine Protected Areas
- Particularly vulnerable and valuable marine areas
- Fishery regulations
- Production licenses (petroleum)
- Offshore wind farm assessments
- Traffic Separation Scheme

+ Commercial activities

- Petroleum (facilities, cables, pipelines)





Base map (incl. depth areas)

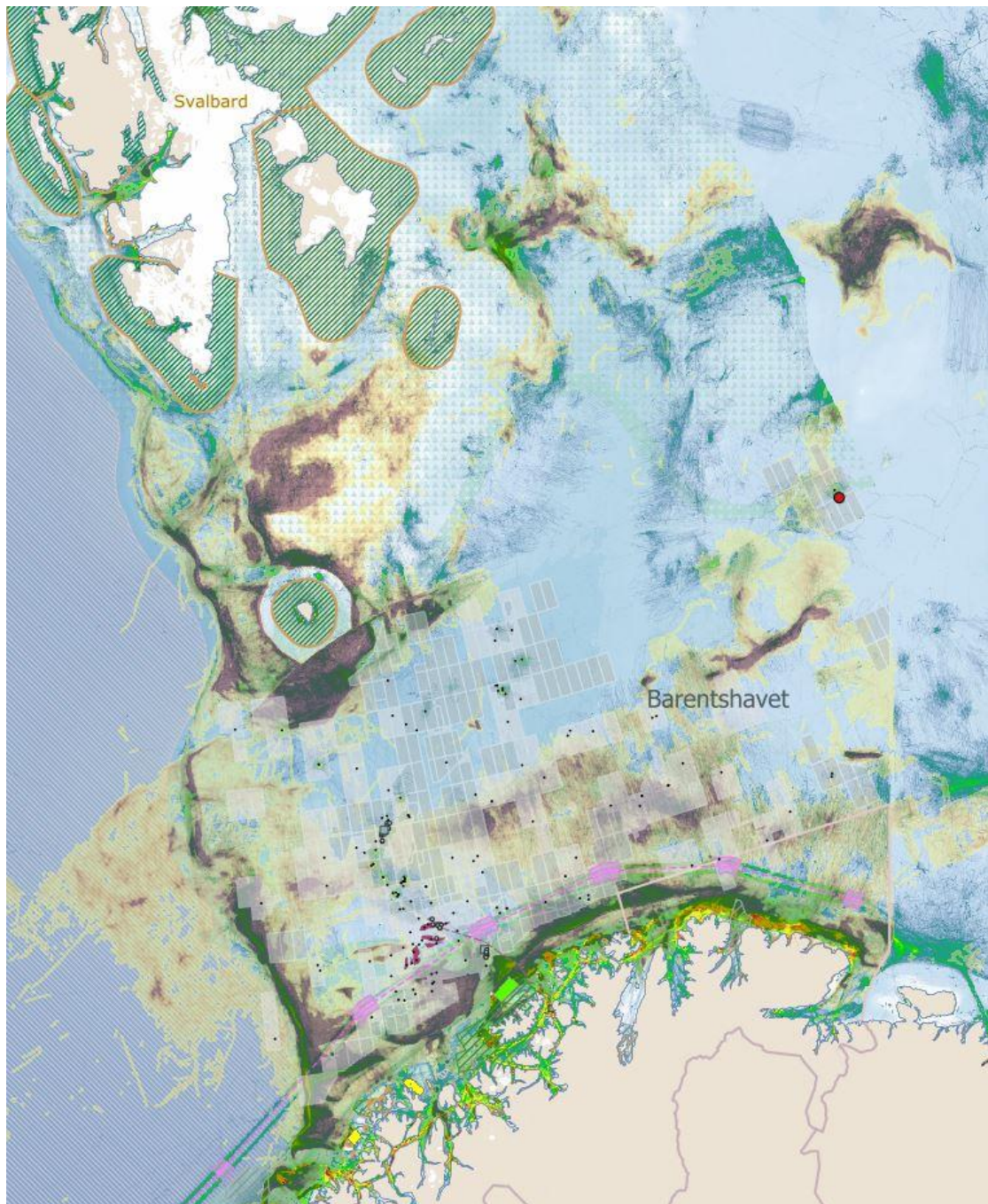
+ Regulations

- Marine Protected Areas
- Particularly vulnerable and valuable marine areas
- Fishery regulations
- Production licenses (petroleum)
- Offshore wind farm assessments
- Traffic Separation Scheme

+ Commercial activities

- Petroleum (facilities, cables, pipelines)
- Shipping (traffic density)





Base map (incl. depth areas)

+ Regulations

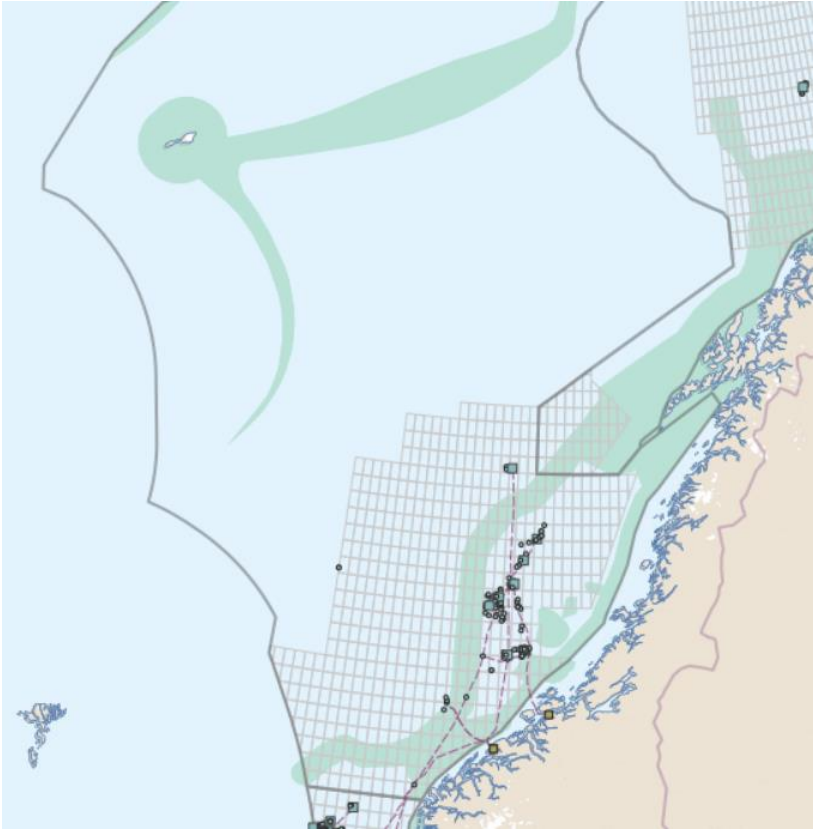
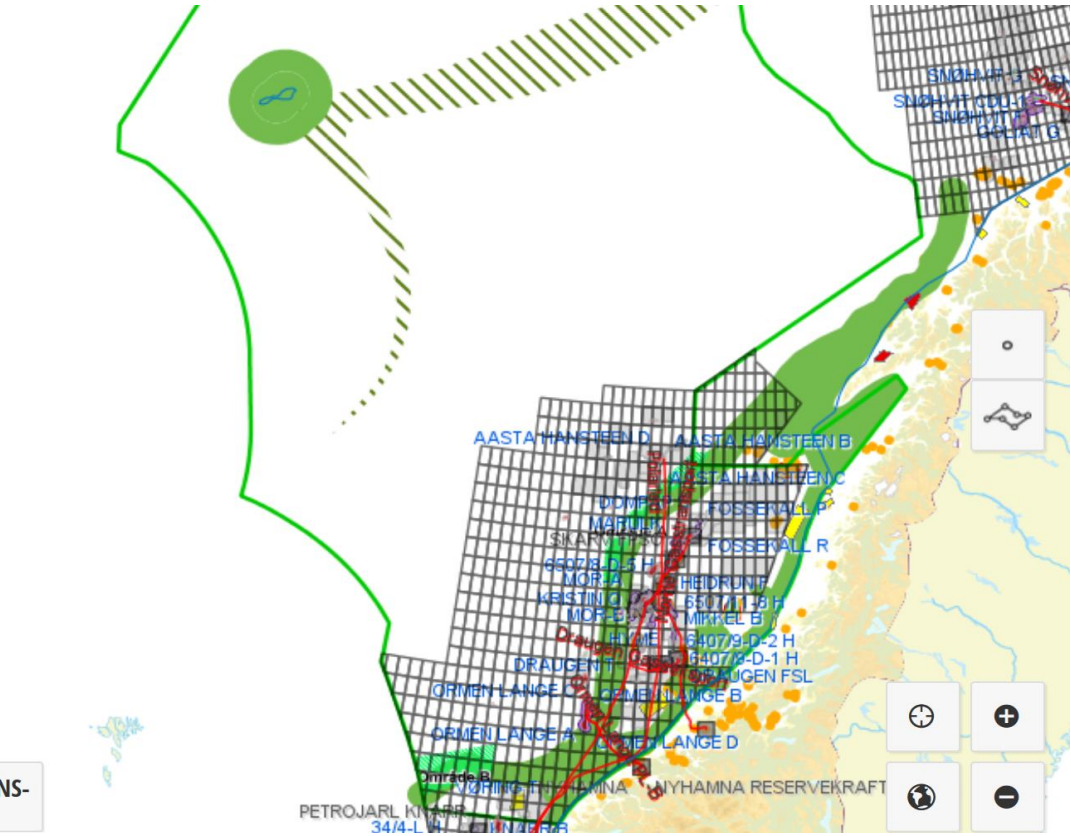
- Marine Protected Areas
- Particularly vulnerable and valuable marine areas
- Fishery regulations
- Production licenses (petroleum)
- Offshore wind farm assessments
- Traffic Separation Scheme

+ Commercial activities

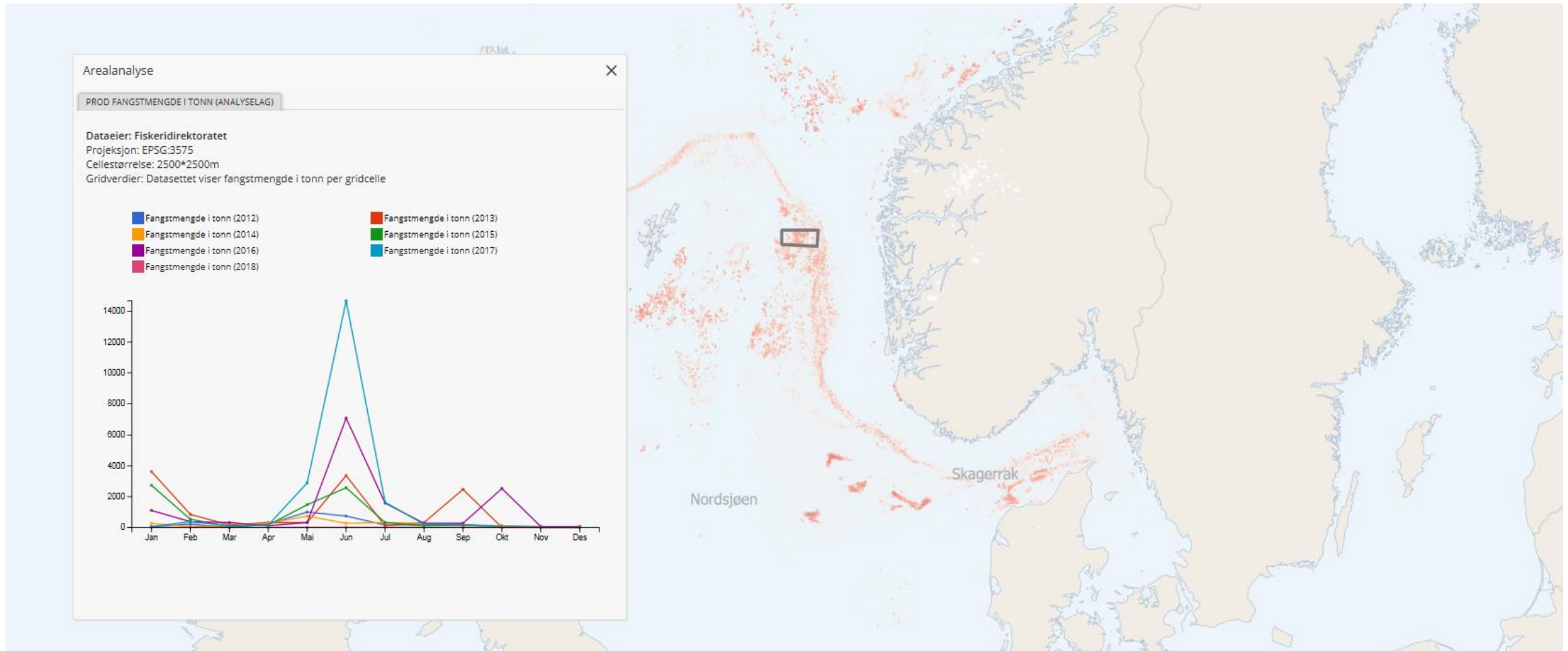
- Petroleum (facilities, cables, pipelines)
- Shipping (traffic density)
- Fisheries (density on operations)



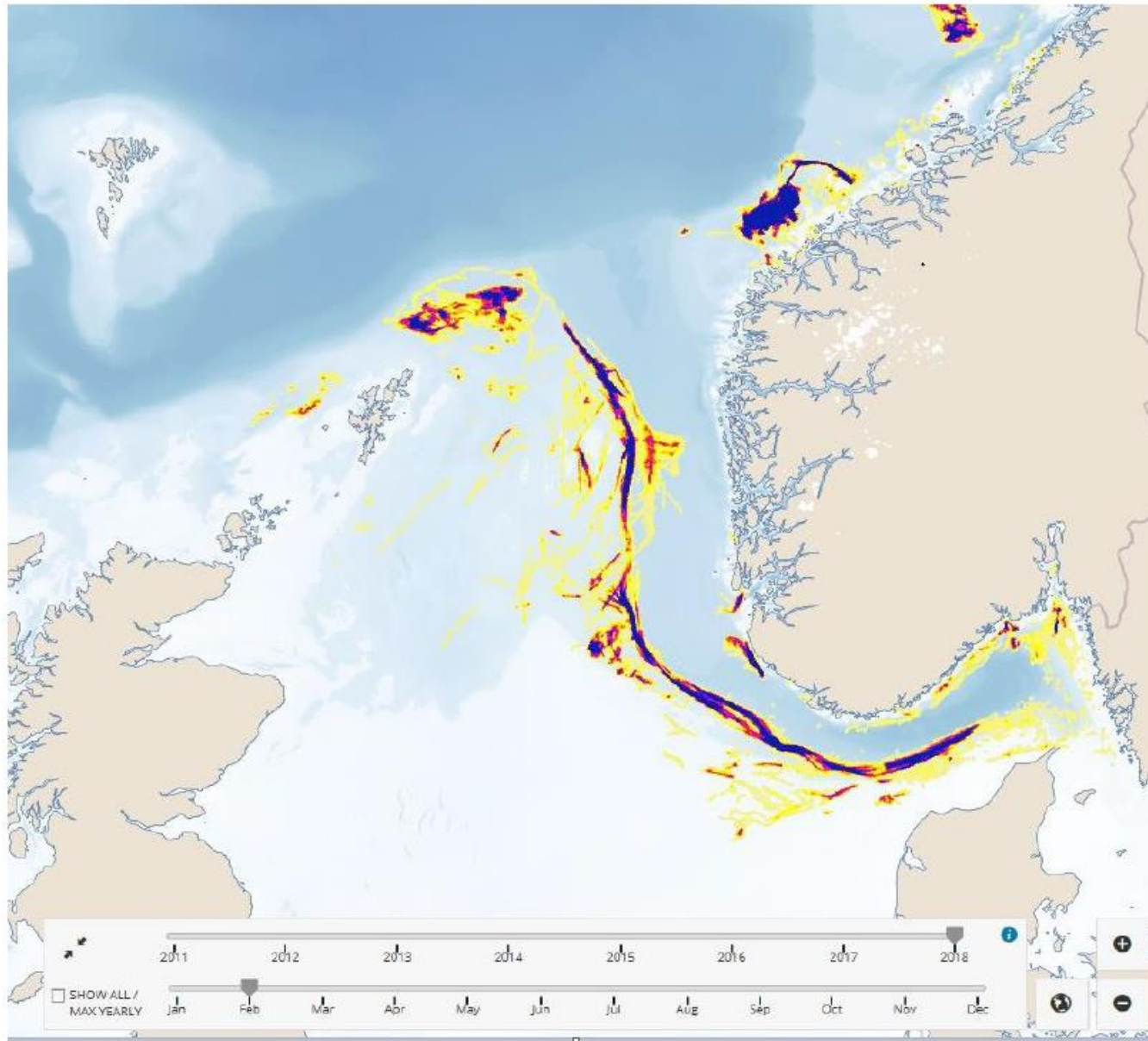
Harmonizing cartography



Geospatial statistics



Support time dimension



Attributes and linked data

The screenshot displays the FACTPAGES web application interface. On the left, a map of Norway shows a popup for a facility with the following details:

- Facilities**
- Type: SUBSEA STRUCTURE
- Oppstart: 2007/10/12 00:00
- Funksjon: T-CONNECTION
- Fakteside URL: [Link til fakteside](#)
- Fakskart URL: [Link til fakskart](#)
- Installasjonstype: Dunninginstallasjon
- Operatørselskap: Gassco AS

The main window shows a list of facilities with columns for Wellbore, Licence, BAA, Field, Discovery, Company, Survey, Facility, TUF, and Stratigraphy. The 'Facility' column is selected, showing a list of wellbore identifiers such as 1/2-1 IM Blane, 1/2-1 PE Blane, 10/1-CDP1, 15/12-C Rev, 15/12-D Rev, 15/12-E-1 H Gaupe, 15/5-A-5 H Giltne, 15/5-A-7 H Giltne, 15/5-B-1 H Giltne, 15/6-A-1 H Giltne, 15/6-A-2 H Giltne, 15/6-A-3 H Giltne, 15/6-A-4 H Giltne, 15/6-A-5 H Giltne, 15/6-A-6 H Giltne, 15/9-E H, 24/6-A-5 Alvheim, 24/6-B-5 Alvheim, 24/9-P-6 AH Volund, 24/9-P-7 VIPER, 24/9-P-8 KOBRA, 25/11-A-19 H BALDE, 25/11-A-20 H BALDE, 25/11-A-21 H BALDE, 25/11-A-22 H BALDE, 25/11-A-23 H BALDE, and 25/11-A-27 H BALDE.

The 'General information' popup for a selected facility provides the following data:

| General information | |
|------------------------|----------------------|
| Name | FLAG TCS |
| Nation | GRE |
| NPOID facility | 377 |
| Factmaps in new window | link |
| Kind | SUB |
| Phase | IN S |
| Functions | T-CON |
| Surface facility | N |
| Water depth [m] | 140 |
| Design lifetime [year] | 30 |
| Belongs to | TAM |
| Current operator | Gass |
| Startup date | 12.1 |
| NS degrees | 61° |
| EW degrees | 1° 4 |
| Geodetic datum | ED5 |
| UTM zone | 31 |
| NS UTM | 676 |
| EW UTM | 429 |

Metadata integration

The screenshot displays a GIS interface with a map of the North Atlantic region showing fish catch data as red dots. A 'Layer Manager' panel on the right lists layers: Reference data, Plans and regulations, Commercial activities, Fishery, and Fish catch. The 'Fish catch' layer is selected, and its metadata is displayed in a panel on the right. The metadata panel includes a description of the data source, a 'Show metadata' button, and a 'Marine basemap' checkbox. Below the metadata panel, there is a 'GEORGE' search bar and a 'Fangstmengde' (Catch) layer information section. This section includes a 'Tjeneste' (Service) table, a 'Bruksområde' (Usage) section, a 'Distribusjoner' (Distributions) section, and a 'Kontaktinformasjon' (Contact information) section. The 'Tjeneste' table has columns for TITTEL, TYPE, DATASET, APNE DATA, URL, VSI I KART, and FORMAT. The 'Bruksområde' section contains a URL: <https://kart.barentswatch.no/arealverktøy>. The 'Distribusjoner' section shows a table with columns for TITTEL, TYPE, DATASET, APNE DATA, URL, VSI I KART, and FORMAT. The 'Kontaktinformasjon' section includes a logo and contact details for Frances Touhse, kam@fiskeridir.no. The 'Distribusjon' section shows the format as 'png 7.0' and the distribution type as 'Webdte'. The 'Restriksjoner' section is also visible.

Layer Manager

- ALL LAYERS SORT LAYERS
- Reference data
- Plans and regulations
- Commercial activities
- Fishery
- Fish catch

Fish catch

Fish catch dataset is created from the Norwegian Directorate of Fisheries satellite tracking data, combined with landing and sale and the Register of Norwegian vessels. All catch from Norwegian vessels is included, as well as catch from foreign vessels which landed in Norway. Check the content tab for more information.

Opacity:

Show metadata

Marine basemap

Basemap

GEORGE

Georgje » Kartbasen » Fangstmengde

Fangstmengde

Tjeneste

| TITTEL | TYPE | DATASET | APNE DATA | URL | VSI I KART | FORMAT |
|--------------|--------|---------------------|-----------|---|------------|--------|
| Fangstmengde | Webdte | Fiskeridirektoratet | | https://kart.barentswatch.no/arealverktøy | | png |

Bruksområde

Fiskeridirektoratet fangst data er tilgjengelig:
<https://kart.barentswatch.no/arealverktøy>

Distribusjoner

Tjenesten

| TITTEL | TYPE | DATASET | APNE DATA | URL | VSI I KART | FORMAT |
|--------------|--------|---------------------|-----------|---|------------|--------|
| Fangstmengde | Webdte | Fiskeridirektoratet | | https://kart.barentswatch.no/arealverktøy | | png |

Kontaktinformasjon

Metadetekontakt:
Frances.Touhse.kam@fiskeridir.no - Fiskeridirektoratet

Faglig kontakt:
Frances.Touhse.kam@fiskeridir.no - Fiskeridirektoratet

Teknisk kontakt:
Frances.Touhse.kam@fiskeridir.no - Fiskeridirektoratet

Distribusjon

Format:
- png 7.0

Distribusjonstypen: Webdte

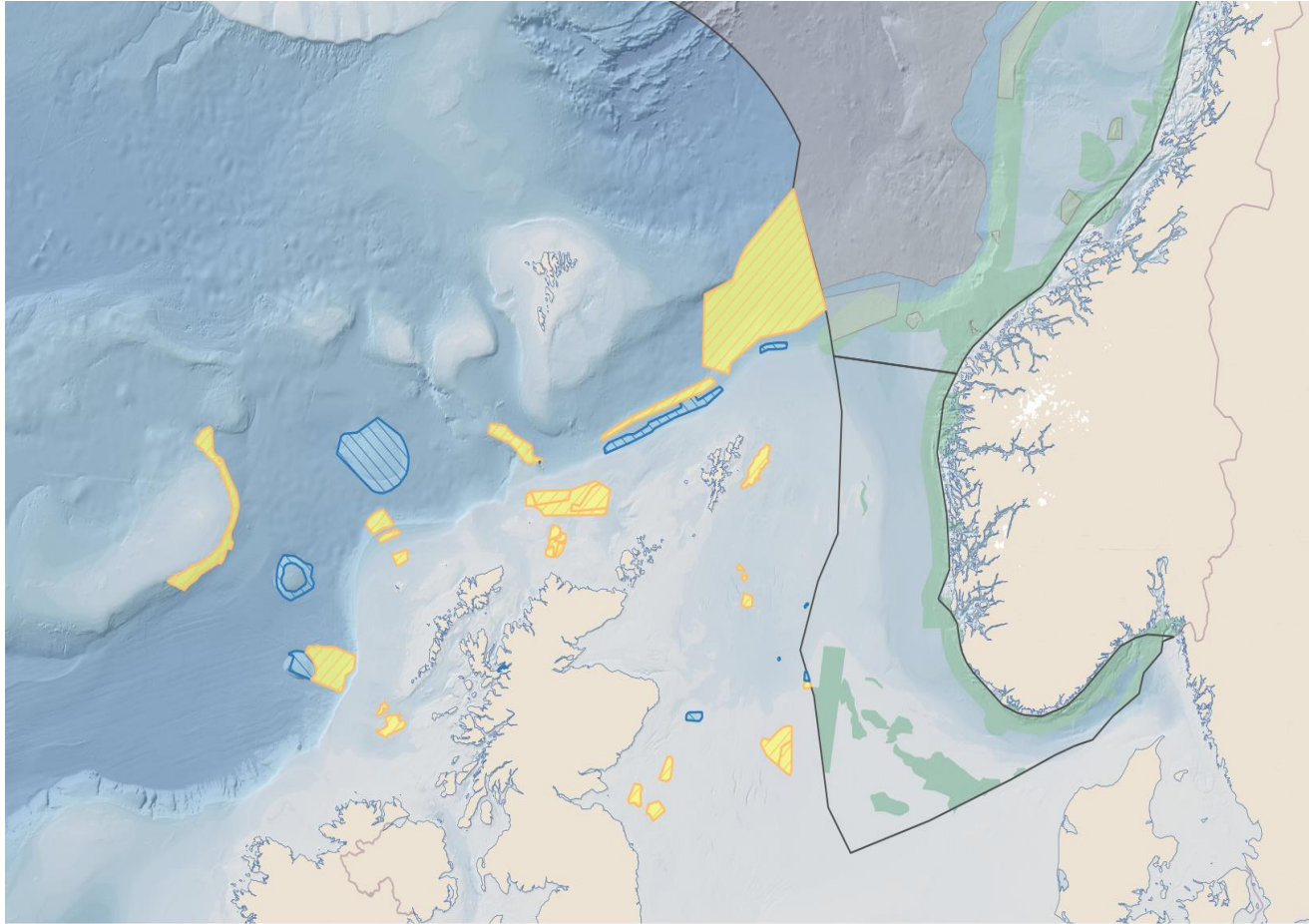
Get Capabilities URL: <https://kart.barentswatch.no/arealverktøy>

Restriksjoner

+ Detaljert informasjon



Re-use of national geospatial services in an international setting



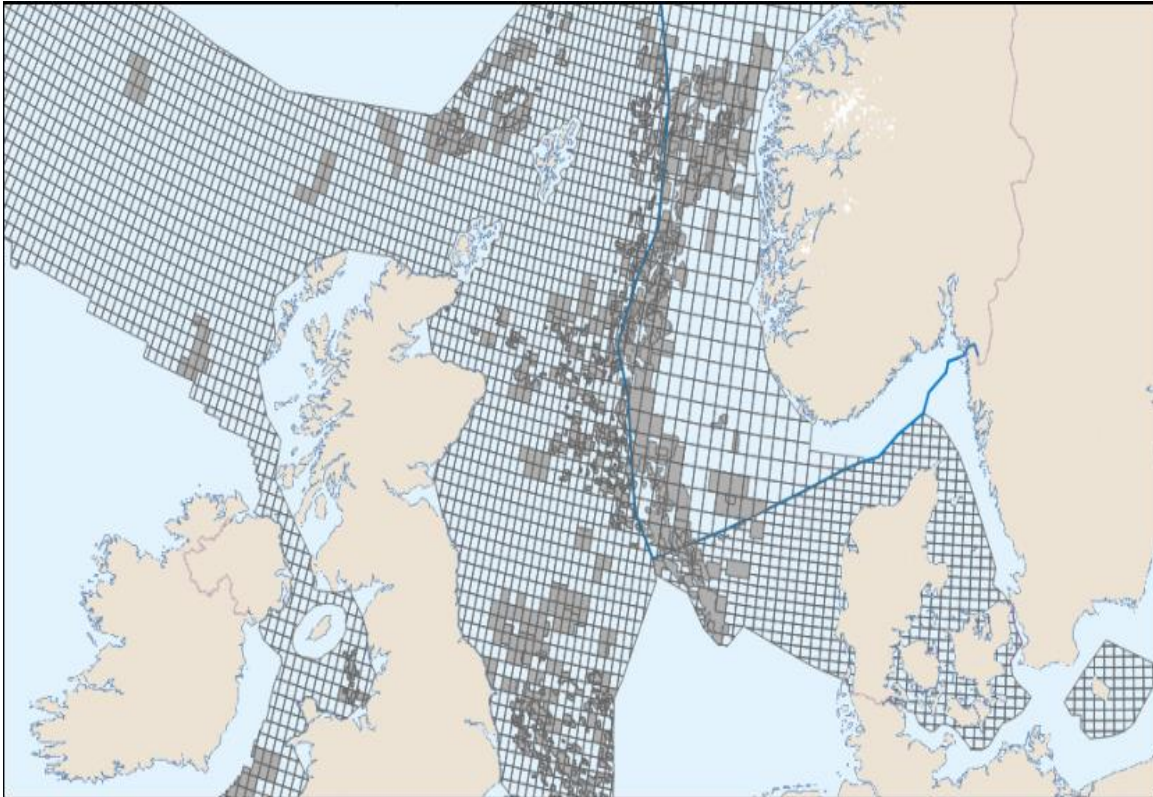
Examples from assembling marine regulations in UK and Norway

Standard OGC services ensures easy access and re-use of geospatial information

Near real-time use of geospatial data and services from each countries governmental agencies, ensures utilization of authoritative data

Cartographic challenges for further improvements to achieve unified presentations within common thematics, seamless across borders

Re-use of national geospatial services in an international setting



Assembling the licencing system in the North Sea continental shelf through national geospatial datasets (Norway, UK, Denmark)

Standard OGC services ensures easy access and re-use of geospatial information

Real time use of geospatial data and services from each countries governmental agencies, ensures utilization of authoritative data

Cartographic challenges for further improvements to achieve unified presentations within common thematics, seamless across borders

An underwater photograph showing sunlight filtering through the surface of the water, creating a bright, shimmering effect. The water is a deep blue color, and the light rays are clearly visible. The text "Thank you for your attention!" is centered in the middle of the image.

Thank you for your attention!