

Developing the second holistic assessment of ecosystem health in the Baltic Sea (HOLAS II) and HELCOM Data management plans

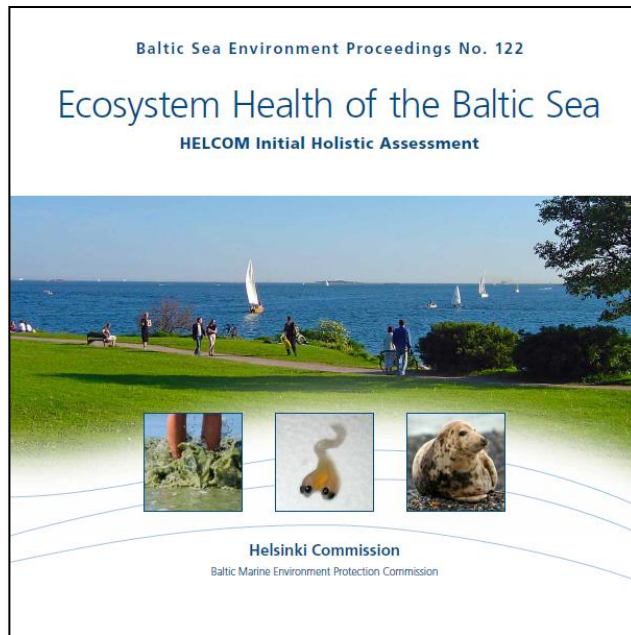
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First HELCOM holistic assessment (2010)



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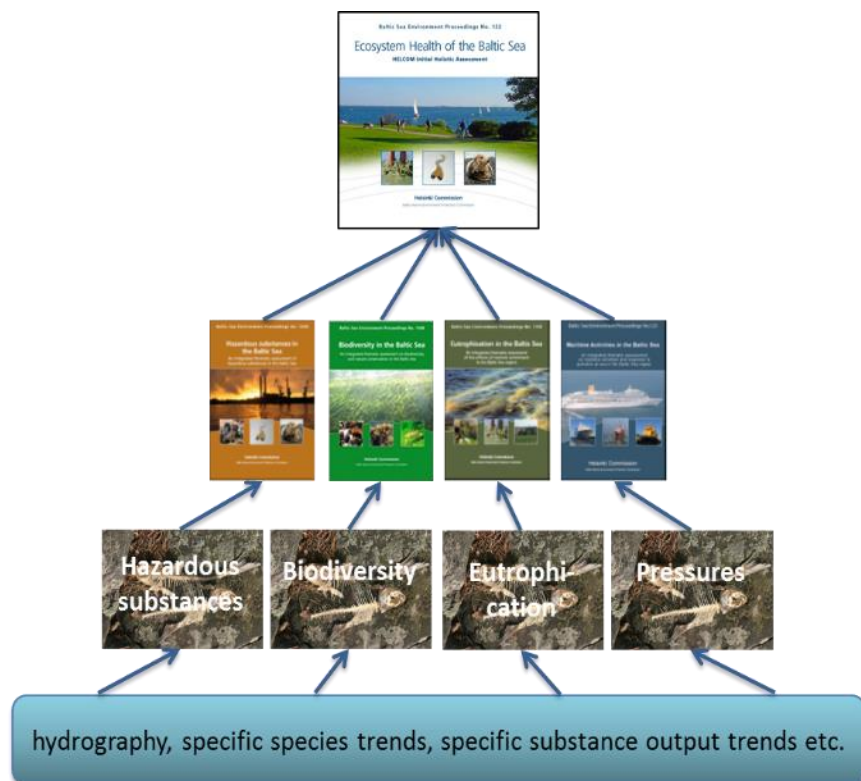
- Status
- Causes
- Solutions
- Costs and benefits
- Conclusions and perspectives



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HELCOM cyclic assessments

2013 HELCOM Monitoring and Assessment Strategy
carried out in six-year monitoring and assessment cycles



Holistic Assessments

- periodical
- using assessment tools

Thematic Assessments

- periodical
- using assessment tools

Core indicators

- updated regularly
- measure distance to GES

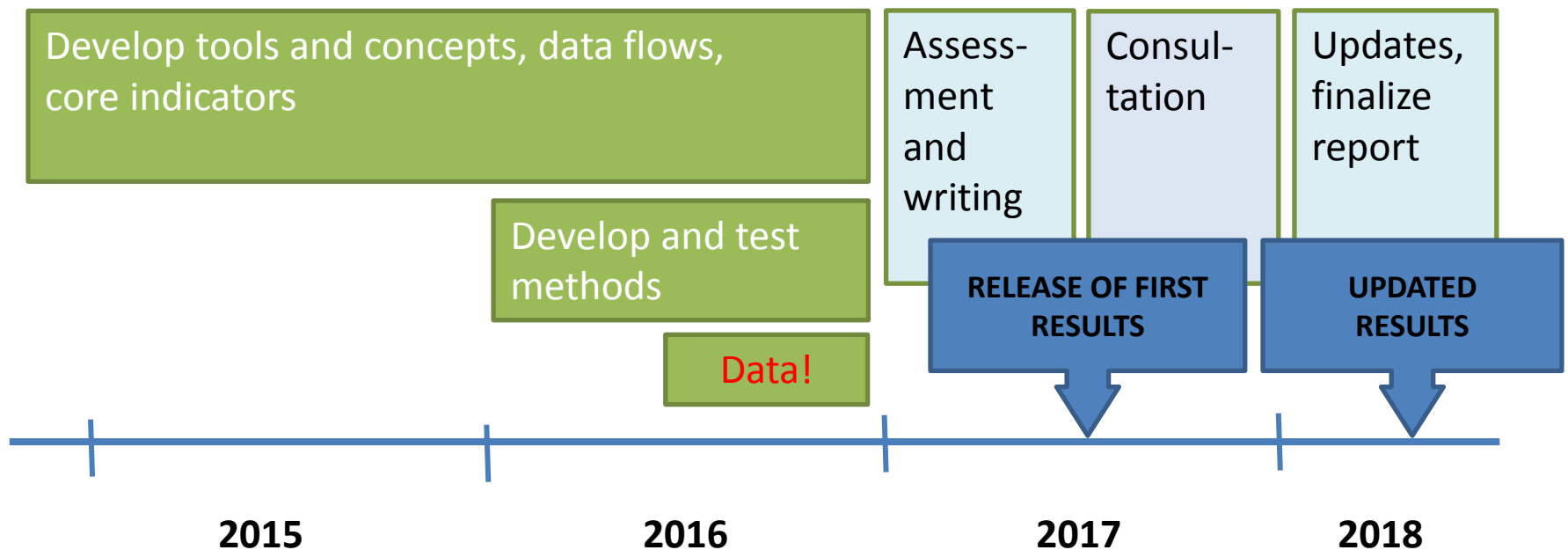
Supplementary Indicators & Supporting parameters

- Updated as needed
- Linked to specific core indicators

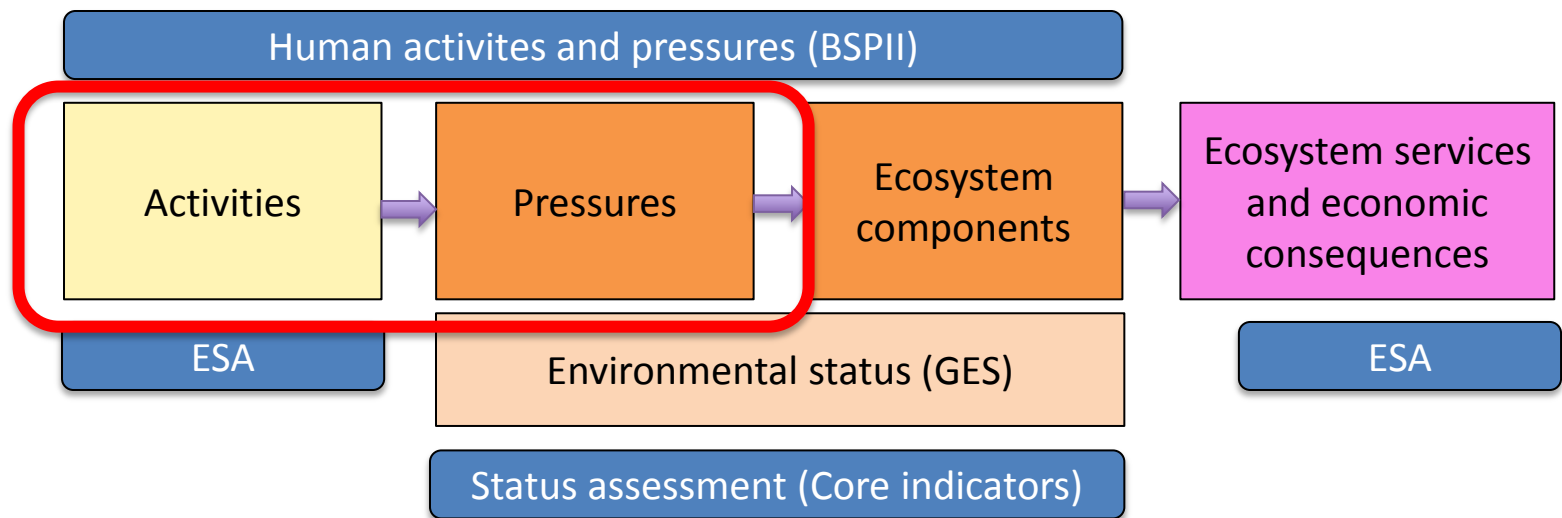


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Timeline for HOLAS II



Proposed holistic assessment framework



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Pressures and human activities

- Spatial distribution of pressures and activities
- Covering years between **2011-2016**
- Combine with ecosystem component data into an impact index
 - Cumulative Effects Assessment
 - Based on impact scores



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Human activities to be included

Theme of activity	Activity	Agreed datasets
Cultivation of living resources	Aquaculture - marine	Aquaculture, Shellfish mariculture
Production of energy	Renewable energy generation	Wind farms (operational and under construction), Fossil fuel energy production, Nuclear energy production
	Transmission of electricity and communications	Cables
Extraction of living resources	Fish and shellfish harvesting (professional, recreational)	Potting / creeling, Gillnet commercial fishery, Demersal long lining activity, Pelagic long lining activity, Bottom trawling activity, Surface and mid-water trawling, Demersal Danish seine, Demersal Scottish seine, Pelagic purse seining, Scallop and blue mussel dredging, Recreational fishery
	Marine plant harvesting	Maerl and Furcellaria harvesting
	Hunting and collecting for other purposes	Game hunting of seabirds, Predator control of seabirds, Hunting of seals
Extraction of non-living resources	Extraction of minerals	Extraction of sand and gravel
	Extraction of oil and gas	Oil platforms, Pipelines
Physical restructuring of coastline or seabed (water management)	Land claim (permanent changes)	Land claim
	Canalisation and other watercourse modifications	Canalisation, Culverting/trenching, Coastal dams
	Coastal defence and flood protection	Sea walls, Breakwaters, Groynes, Flood protection
	Restructuring of seabed morphology	Dredging
Tourism and leisure	Tourism and leisure infrastructure	Marinas and leisure harbours
	Tourism and leisure activities	Recreational boating and sports, Bathing sites, beaches
Transport	Transport infrastructure	Fishing harbours, Oil terminals, refineries, Harbours (and bunkering points at sea), Bridges
	Transport – shipping	Passenger shipping, Shipping (coastal), shipping density
Urban and industrial uses	Urban uses	Urban land use
	Waste treatment and disposal	Deposit of dredged material, Coastal waste water treatment plants
Security/defence	Military operations	Firing ranges for military exercises, Waste disposal (munitions)



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Pressures to be included

Pressure theme	Pressures	Agreed datasets
Physical	Change of seabed substrate or morphology (~ physical loss)	Fishing, dredging, construction
	Disturbance or damage to seabed	Fishing, dredging, construction
	Extraction of seabed substrate	Sand, gravel or boulder extraction, dredging
Hydrological	Changes to hydrological conditions	Hydropower dams
Energy		
	Input of other forms of energy	Input of seismic waves (Seismic surveys), Change in water temperature
Substances	Input of hazardous substances (synthetic substances, non-synthetic substances, radionuclides)	Deposition of Cd, Hg, Pb, Dioxins/furans (PCDD/Fs), PCB-153, PAH, PBDE, PFOS Discharges of radioactive substances, Deposit of dredged material Dumped chemical munitions, Hazardous wrecks Oil slicks and spills, Polluting ship accidents Waterborne Cd, Hg, Ni, Pb, Ni, Nitrogen and Phosphorus Pharmaceuticals
	Input of litter (solid waste matter, including micro-size litter)	Beach litter, other forms of litter
	Input of nutrients	Aquaculture, Nitrogen deposition, Nitrogen emission from shipping, P and N discharges in sewage from passenger ships, Riverine nitrogen and phosphorous Direct discharges of N and P from the coast
Biological	Disturbance of species	Many included, e.g. Construction, Shipping
	Extraction of, or mortality/injury to, species, including target and non-targeted catches (by commercial and recreational fishing)	Extraction of target fish species (commercial landings)
	Input or spread of non-indigenous species	Spread of non-indigenous species



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Tentative ecosystem components

- Habitat forming species (Furcellaria, Zostera, Charophytes, Mytilus edulis, Fucus)
- Marine Natura2000 habitats
- Coastal fish, Commercial fish species
- Birds (wintering seabirds, breeding seabirds colonies, migration routes for birds)
- Marine mammals (distribution/density of seal populations, haul-out sides for seals, distribution/density of harbour porpoise)

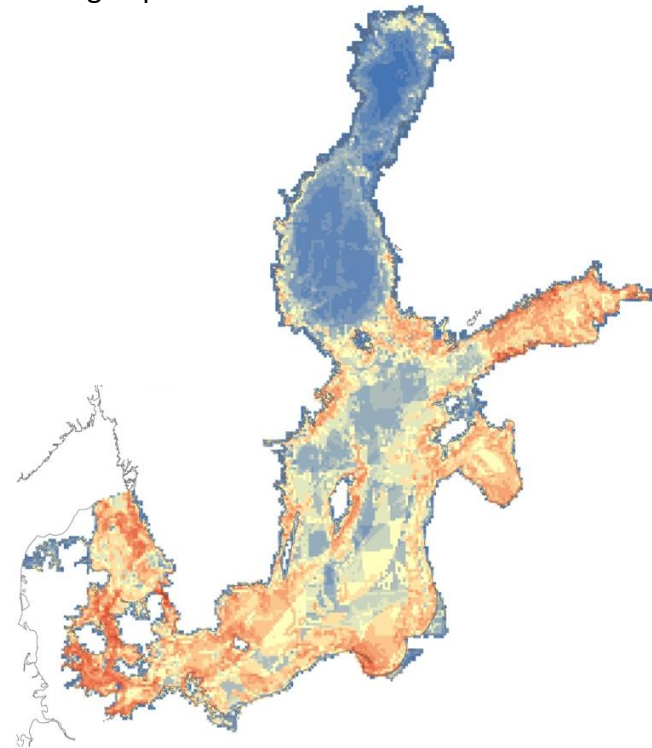


Development of the Baltic Sea Impact Index

1. Update and extend the collection of underlying **data sets**
 - Ecosystem components
 - Pressures/human activities
 - Improved spatial information
2. Improve the **impact scores**
 - Expert questionnaire
 - Literature support
3. Include uncertainty estimates

Baltic Sea Impact Index

Pressure and ecosystem data combined using Impact scores



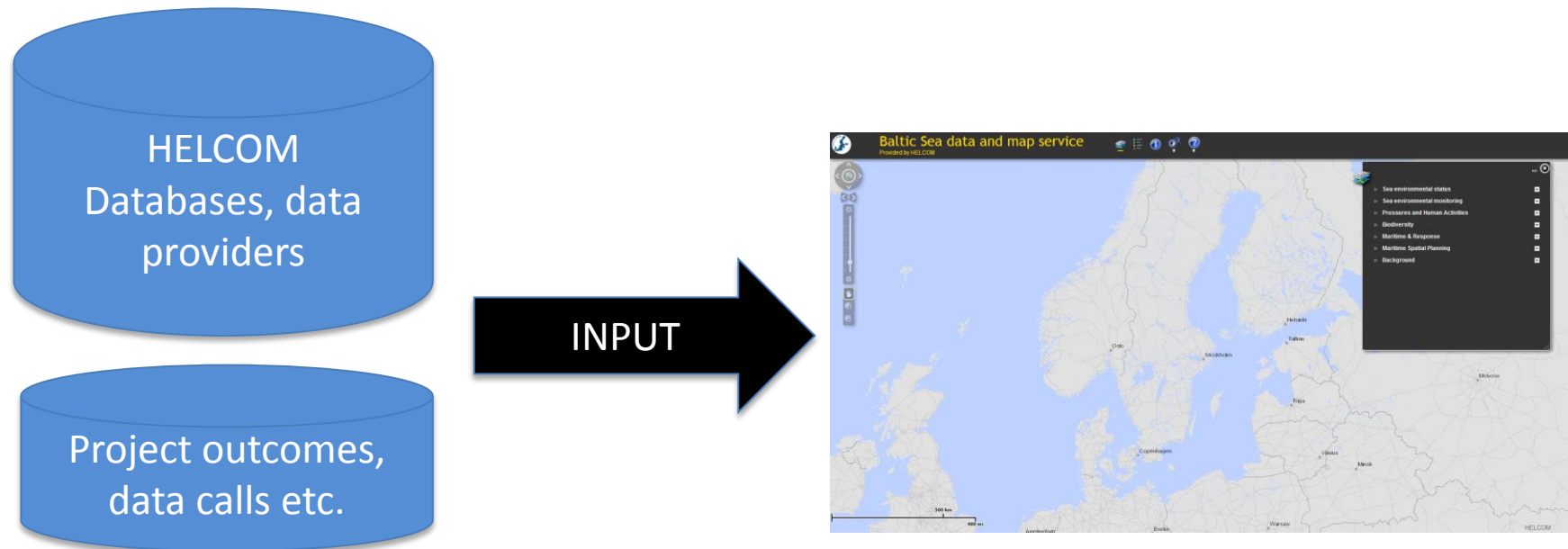
Korpinen et al 2012. Ecological Indicators 15:105-114.



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HELCOM Future plans in data management and data sharing

- Development of thematic databases and data arrangements
- Development of data access points (HELCOM Map and Data Service and database pages, e.g. [HELCOM MPAs](#))



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HELCOM Future plans in data management and data sharing

- Development of thematic databases and data arrangements:
 - **Traditional route:** Data is not available online by default or the online available data might not contain all parameters: reporting of data to HELCOM to a centralized database, where it will be made available via the HELCOM Map and Data service
 - **Future way:** Data is made accessible online by the data provider to a common SDI, when it can be visualized/harvested to any system capable of displaying it



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HELCOM Future plans in data management and data sharing

- Development of data access point (HELCOM Map and Data Service)
 - Map service to be able to handle both options
 - Distributed data hosting gives additional challenges:
 - Higher requirement regarding data harmonisation
 - Existing interfaces vs. Tailor made for a purpose
 - Languages
 - Continuity (service level agreements?)

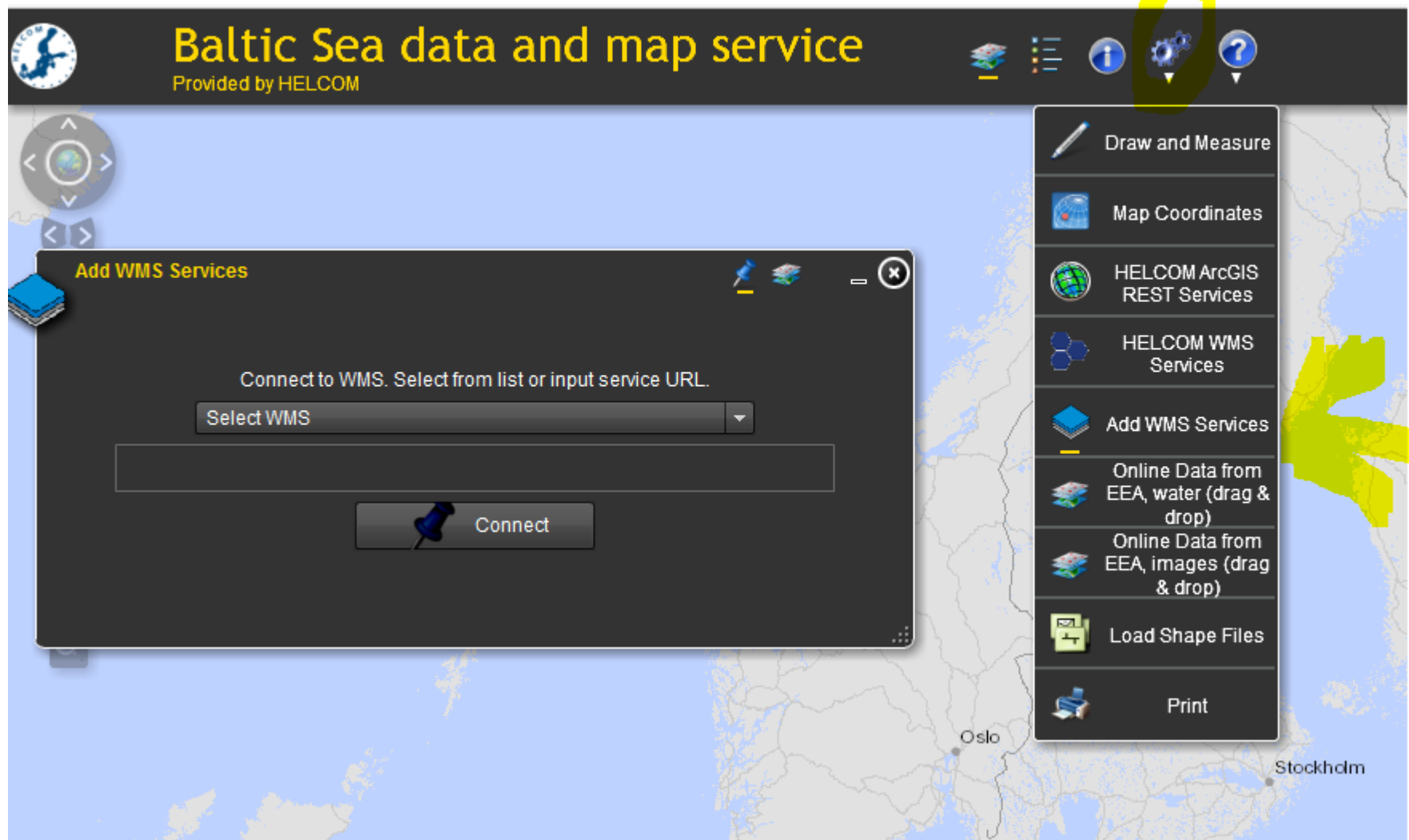


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HELCOM Future plans in data management and data sharing

- New projects:
 - BalticBOOST, TAPAS (Development of functionalities and thematic databases, Metadata catalogue)
 - BalticLINES, utilization of distributed data and SDI via web services (BSDI prototype)
- New features in HELCOM Map and data service:
 - Add WMS (to utilize existing SDIs, testing now)
- Development needed:
 - National SDIs
 - Add WFS
 - Metadata and downloading of external datasets

Example of utilisation of Baltic SDI: Adding external data source via WMS



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Add WMS Services

WMS URL: https://www.geoseaportal.de/wss/service/CONTIS_Facilities/guest?

WMS title: BSH WMS CONTIS Facilities

WMS abstract: Die Daten umfassen die Nutzungen und Schutzgebiete in Nord- und Ostsee.

[Clear WMS list](#)

WMS layer list. Add or remove them in the map by selecting checkbox.

Offshore_Windfarms	<input checked="" type="checkbox"/>
Pipelines	<input checked="" type="checkbox"/>
High_Voltage_Cables	<input type="checkbox"/>
Cathode_Electrode	<input type="checkbox"/>
Data_Cables	<input type="checkbox"/>
Platforms	<input type="checkbox"/>

Legend

Pipelines

Pipelines

- Natural Gas (In Use)
- Natural Gas (Under Construction)
- - - Natural Gas (Approved)
- - - Natural Gas (Planned)
- - - Hydrocarbon (In Use)

- Planned
- Under Construction
- Approved
- In Use
- Denied

Maritime Spatial Planning

Background

Terrestrial

Marine

- HELCOM marine area
- COMBINE Baltic Sea subbasins (prior 2013)
- PLC Baltic Sea subbasins
- ☒ Exclusive Economic Zone





Add WMS Services

WMS URL: <http://paikkatieto.ymparisto.fi/arcgis/services/Velmukartta/Velmukartta/MapServer/WMSServer?request=GetCapabilities>
WMS title: Velmukartta
WMS abstract: Velmun karttapalvelun käyttöön luotu rajapintapalvelu.

[Clear WMS list](#)

WMS layer list. Add or remove them in the map by selecting checkbox.

- | | |
|---|-------------------------------------|
| Syvyysmalli | <input type="checkbox"/> |
| Avoimuusindeksi merenpohjalla | <input type="checkbox"/> |
| Avoimuusindeksi merenpinnalla | <input type="checkbox"/> |
| 1650 Kapeat murtovesilahdet | <input type="checkbox"/> |
| 1160 Laajat matalat lahdet | <input type="checkbox"/> |
| 1150 Laguunit | <input type="checkbox"/> |
| Näkösyyvyys | <input checked="" type="checkbox"/> |
| Suolaisuus pohjalla | <input type="checkbox"/> |
| Lämpötila pohjalla | <input type="checkbox"/> |
| Meriajokas, Zostera marina | <input type="checkbox"/> |
| Haura- ja hapsikkapohjat, Zannichellia ja Ruppia spp. | <input type="checkbox"/> |
| Ahvenvita, Potamogeton perfoliatus | <input type="checkbox"/> |
| Meri- ja hapsivita, Potamogeton filiformis ja Potamogeton | <input type="checkbox"/> |



Näkösyyvyys

- ▶ Sea environmental status
- ▶ Sea environmental monitoring
- ▼ Pressures and Human Activities
 - ▶ Pressures
 - ▼ Fisheries
 - ▶ Effort (2009-2013)
 - ▶ Intensity (2009-2013)
 - ▶ Commercial fisheries catch
 - ▶ Land-based pollution
- ▶ Biodiversity
- ▶ Maritime & Response
- ▶ Maritime Spatial Planning

300 km
200 mi



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HELCOM Future plans in data management and data sharing

– Summary:

- HOLAS II to gather and make openly available for view and download spatial data on human activities, pressures and ecosystem components, to be part of a SDI (available via services)
- Developments of "Baltic SDI" in terms of creating viewer for any spatial data available (e.g. HELCOM Map and Data Service)
- Future improvements via projects



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Baltic Marine Environment Protection Commission

6/22/2016
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