

# Overview of the sufficiency of measures (SOM) analysis

HELCOM BSAP UP workshop on eutrophication

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# Aims

- Review the SOM approach and main results of the analysis
- Provide supporting information for discussions in the workshop

# Outline

- Background
- SOM analysis overview
- Results for the input of nutrients

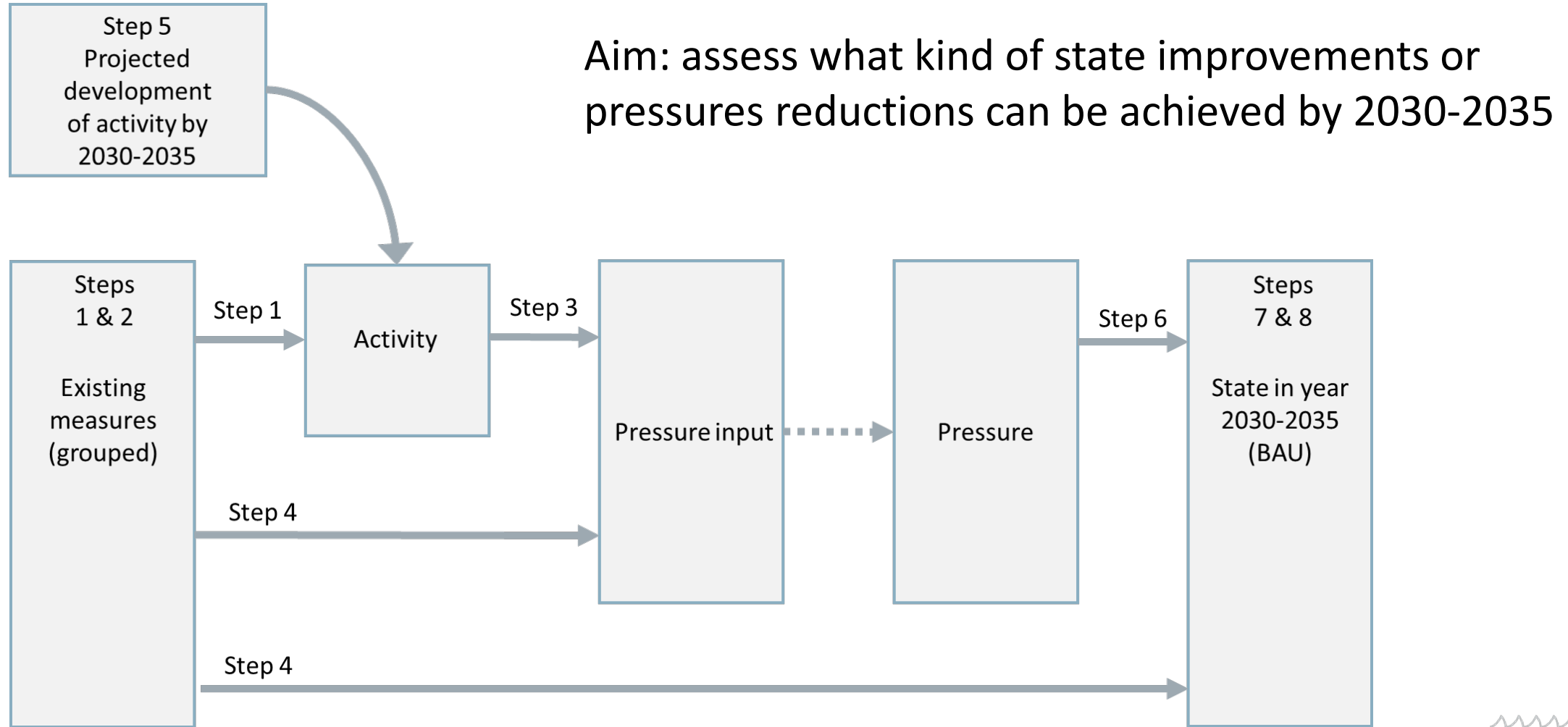


# Background

- Provides supporting information for evaluating proposed new actions
- First attempt to quantify the effects of existing measures on achieving objectives
- Combination of natural and social sciences approaches
- No final answers - should be considered in relation to other relevant results and assessments



# Main components of the SOM analysis



# Relationship between pressure inputs and pressures

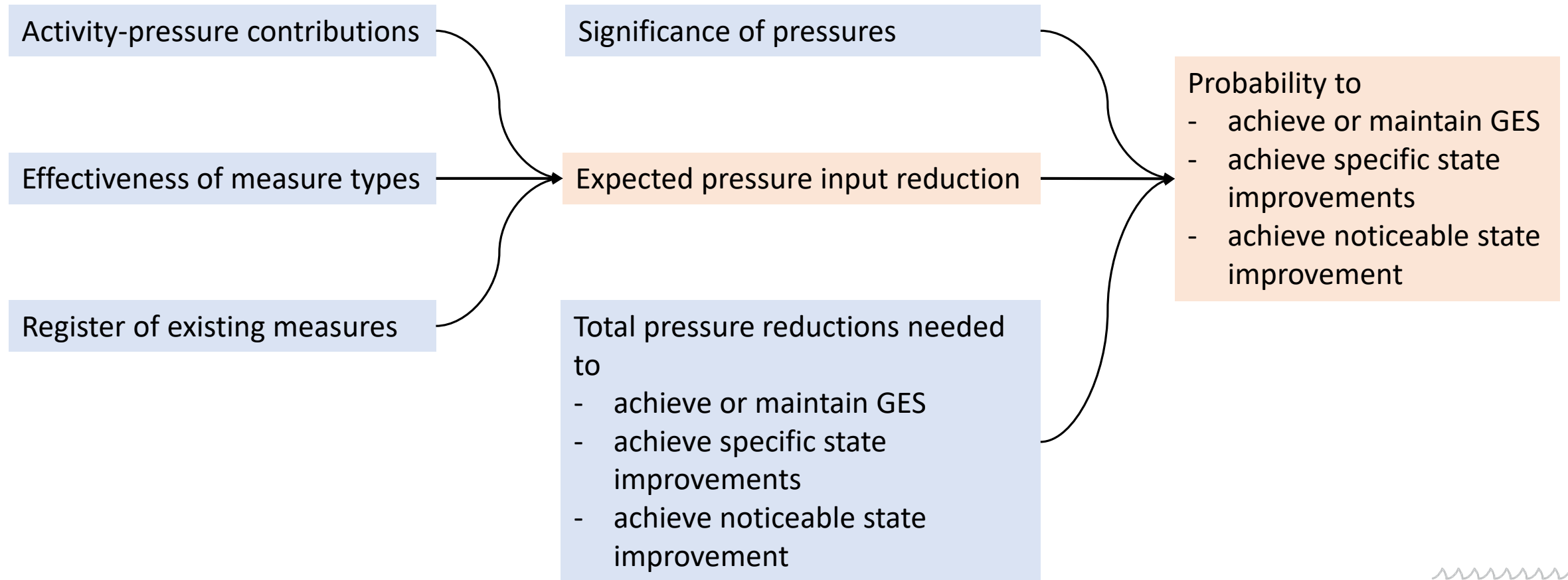
Pressure input	Relationship	Pressure
Bycatch of porpoise	Equivalent	Bycatch in fishing gears
Potential loss of seabed	Assumed equivalent	Physical loss of marine habitats
Input of continuous noise 63/125 Hz + Input of continuous noise 2 kHz	Assumed equivalent	Continuous underwater noise
Anthropogenic introductions of NIS	Link not quantified	Effects of non-indigenous species
Input of nutrients	Link not quantified	Effects of eutrophication
NA	No link	Human-induced food web imbalance
NA	No link	River, lake, or land habitat loss/degradation



Independent

Dependent on previous results

# Relationships between results



# Assumptions and features to keep in mind

- Only measures affecting pressures in 2016-2035 considered
- All existing measures assumed to be fully implemented
- Effectiveness of measure types used to approximate the effectiveness of existing measures
- When considering total pressure, all pressures are interchangeable
- Not able to account for the effect of reductions of all pressure inputs on state components (e.g. because no link between input of nutrients and effects of eutrophication)
- Only most likely scenario on development of human activities included
- Data mainly from expert elicitation
  - literature data on effectiveness of measures not yet included



# Results are preliminary – improvements in autumn 2020

- Input from SOM Topic Teams and SOM Platform, review by Working Groups
- Validation of input data by HELCOM Working and Expert Groups
- Minor changes to projected pressure reductions and state improvements
- Addition of alternative scenarios on development of human activities
- Substantial increase in results interpretation and contextualization
- Improved figures

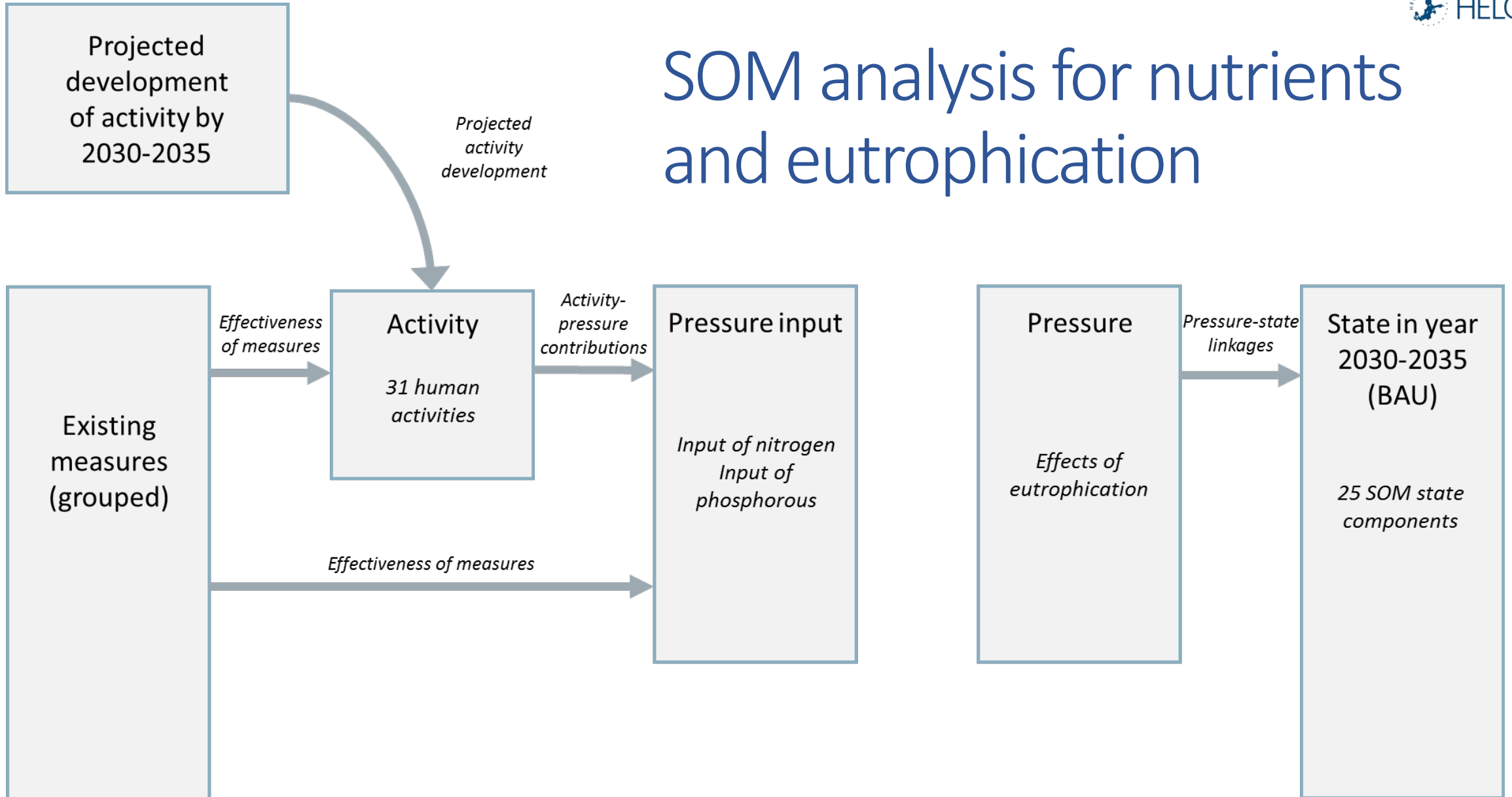




# Results of SOM analysis for nutrients and eutrophication



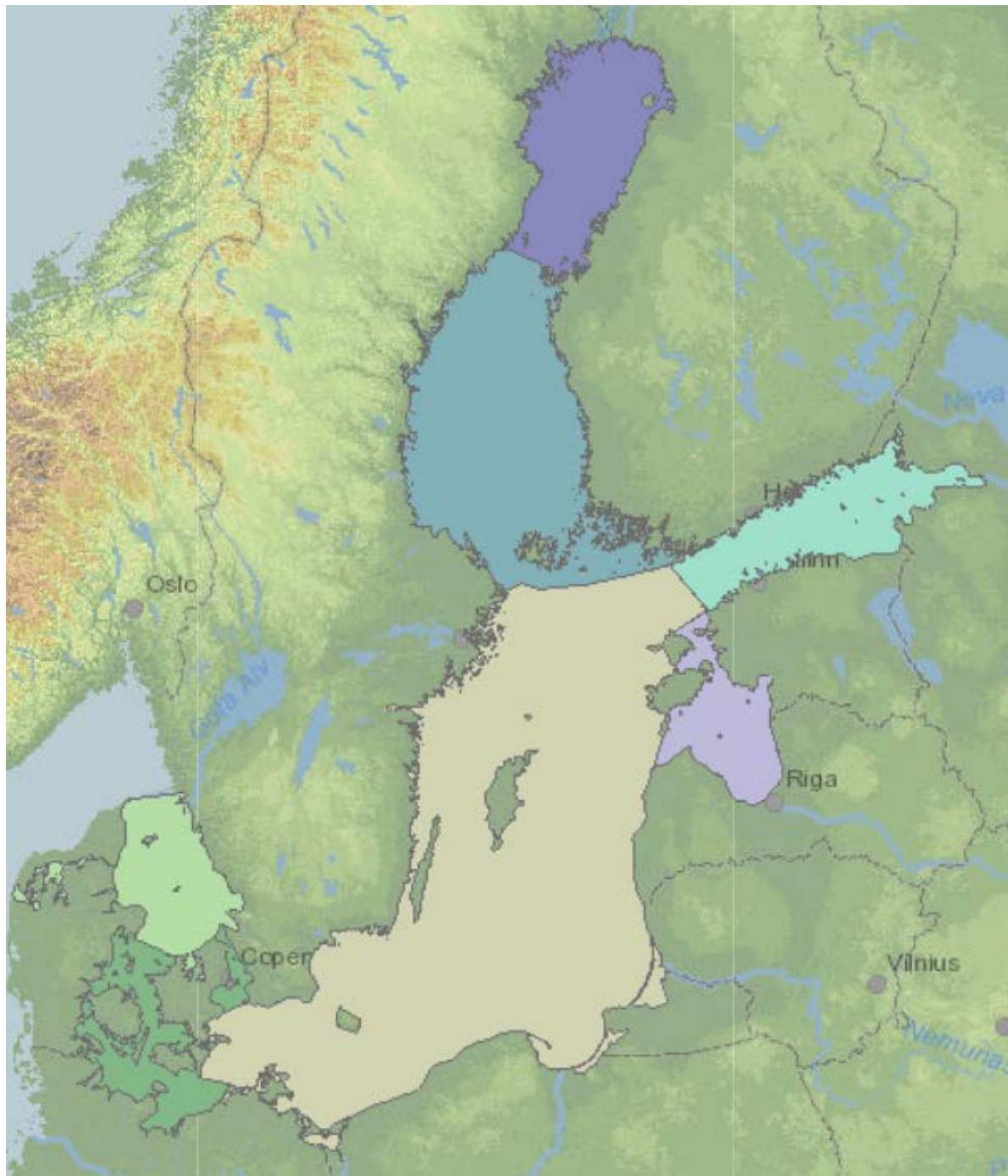
# SOM analysis for nutrients and eutrophication



# Data for nutrients and eutrophication

Data component	Origin of data	Spatial resolution
<b>Activity-pressure contributions</b>	HELCOM ACTION	7 sub-areas of the Baltic (PLC sub-areas)
<b>Existing measures</b>	Literature review, Contracting Parties	17 sub-basins
<b>Projected reductions in nutrient inputs</b>	EMEP (HELCOM ENIRENII), HELCOM PLC database (HELCOM ACTION), national estimates of agricultural reduction	7 sub-areas of the Baltic; national or sub-national agricultural estimates
<b>Development of human activities</b>	Literature review, existing data and projections	Whole Baltic Sea
<b>Pressure-state links</b>	NA	NA





# Focus of SOM assessment for nutrients and eutrophication

- Projected reductions in the
  - i. Input of nitrogen
  - ii. Input of phosphorous
- Comparison of projected reductions in the input of nutrients from existing measures in the SOM analysis with the HELCOM nutrient reduction targets



# Projected reductions in NITROGEN inputs

Area	Required reduction to meet MAI	Projected reduction by the SOM analysis
Kattegat	-	Moderate reduction (18 – 26 %)
Danish Straits	-	Moderate reduction (17 – 24%)
Baltic Proper	25%	Moderate reduction (14 – 22%)
Gulf of Riga	6%	Low reduction (8 – 17%)
Gulf of Finland	11%	Low reduction (9 – 15%)
Bothnian Sea	-	Moderate reduction (21 – 26%)
Bothnian Bay	1%	Moderate reduction (21 – 27%)

# Projected reductions in PHOSPHORUS inputs

Area	Required reduction to meet MAI	Projected reduction by the SOM analysis
Kattegat	-	Low reduction (7 – 13 %)
Danish Straits	-	Low reduction (8 – 12%)
Baltic Proper	49%	Moderate reduction (14 – 20%)
Gulf of Riga	23%	Low reduction (7 – 12%)
Gulf of Finland	36%	Moderate reduction (22 – 27%)
Bothnian Sea	-	Low reduction (5 – 11%)
Bothnian Bay	2%	Low reduction (4 – 10%)

# Most important activities to the input of nutrients

Input of nitrogen	Input of phosphorus
Agriculture	Agriculture
Wastewater	Wastewater
Transboundary	Atmospheric deposition OR Transboundary





# Topic-specific issues

- No link is quantified between the input of nutrients and the effects of eutrophication
- Extensive use of data developed in HELCOM projects and processes
- National estimates of agricultural reduction provided by national modeling or expert opinion
  - No estimates from Russia – inputs assumed constant
- Data on scattered dwellings not available – inputs assumed constant
- No effectiveness of measure types estimates available

