Baltic Sea - Policies & Management

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Overview

1. Background
2. Baltic Sea management - Helcom
3. The European Marine Strategy
4. The Baltic Sea Action Plan
5. Baltic Sea – a story of success?
6. Summary

Helcom: http://stateofthebalticsea.helcom.fi/in-brief/our-baltic-sea/

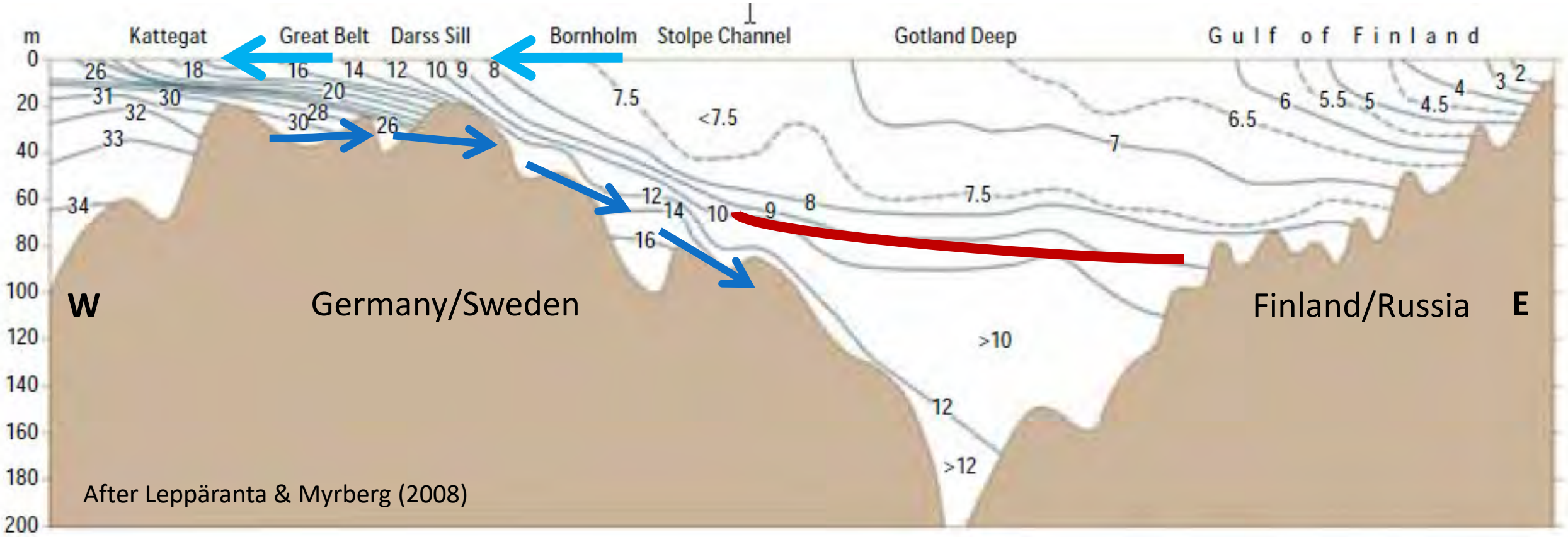
1. The Baltic Sea – background

It is bordered by 9 countries (Denmark, Sweden, Finland, Russia, Estonia, Latvia, Lithuania, Poland and Germany).

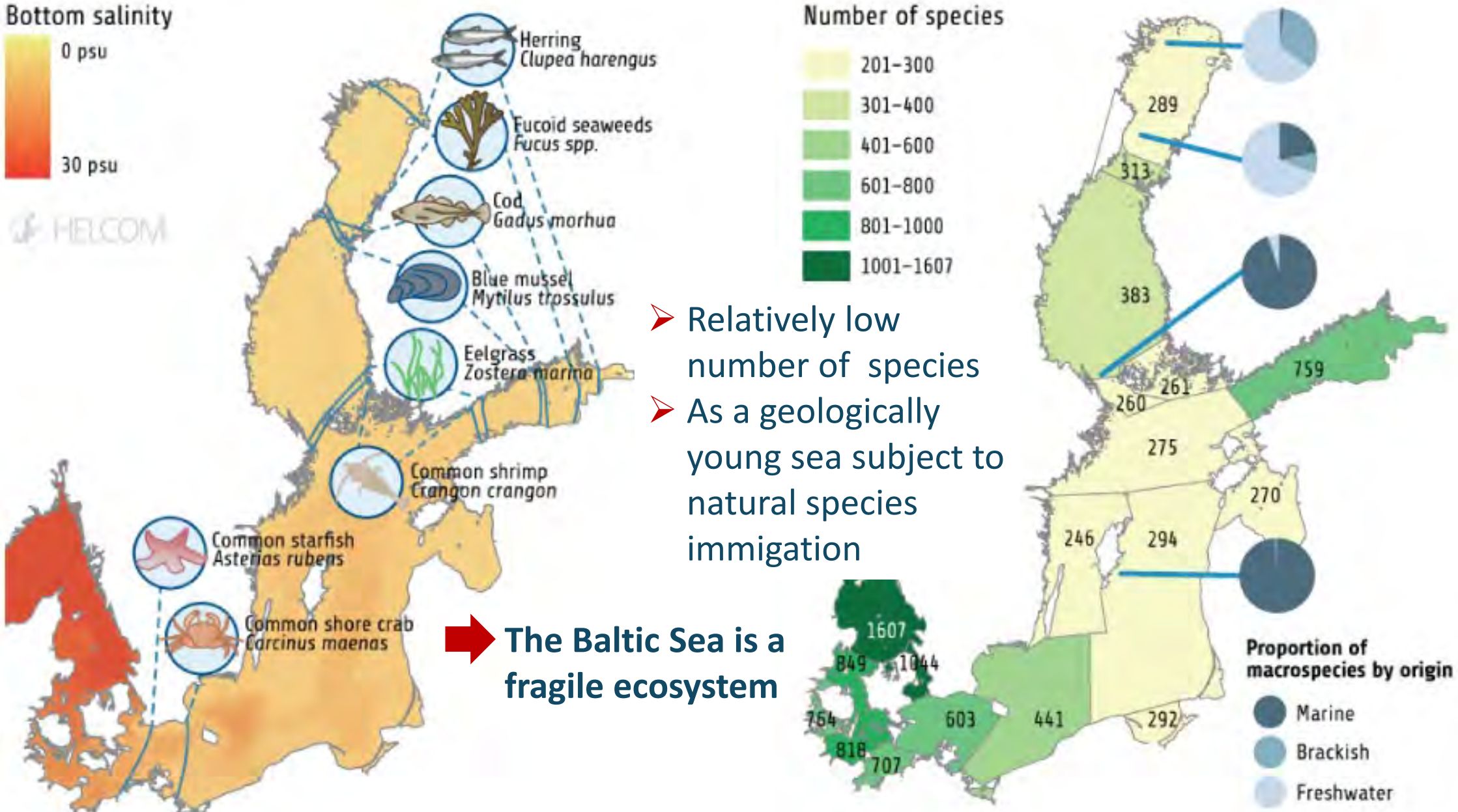
Area:	412 560 km²
Volume:	21 631 km³
Water residence time:	25-30 years
South-north-spread:	ca. 1300 km
West-east-spread:	ca. 1000 km
Average depth:	52 m
Maximum depth:	460 m
Catchment:	1 734 000 km²
Population:	85 millions

1. The Baltic Sea – one of the largest brackish systems

- More than 250 rivers discharge 660 km³ water per year to the Baltic Sea.
- Periodically, North Sea water with high salinity enters the Baltic Sea.
- Horizontal salinity gradients determine habitat and species distributions.
- Vertical salinity gradients hamper the water exchange and favor hypoxia.



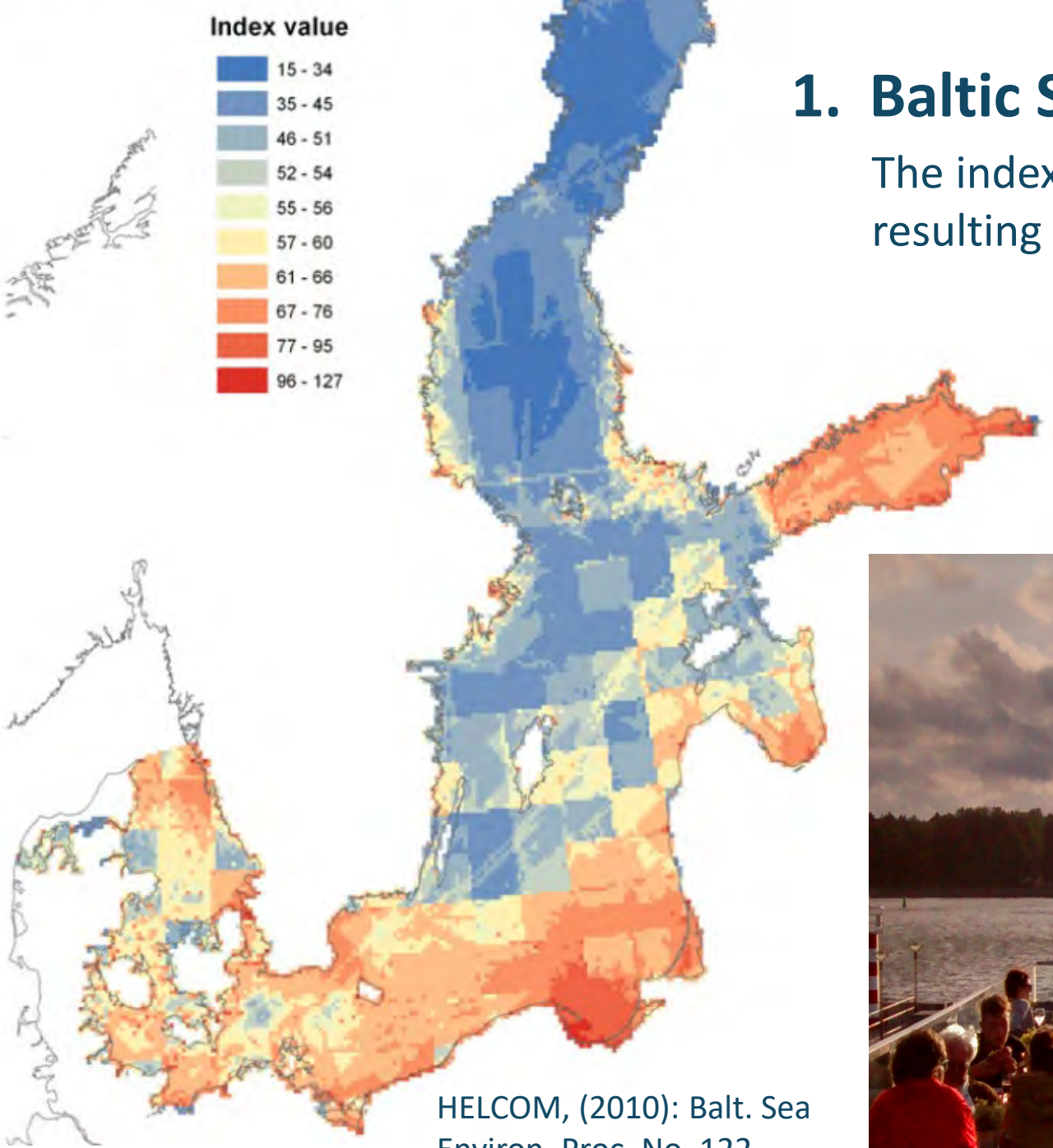
1. Distribution and number of species



- Relatively low number of species
- As a geologically young sea subject to natural species immigation

The Baltic Sea is a fragile ecosystem

HELCOM based on Fuhrman et al. (2014): : http://stateofthebalticsea.helcom.fi/



HELCOM, (2010): Balt. Sea Environ. Proc. No. 122

1. Baltic Sea Pressure Index

The index sums up 52 pressures resulting from human activities.

➡ **For centuries, the Baltic Sea is under heavy pressure.**

2. Helsinki Commission (HELCOM, 1974)

"The **Helsinki Commission, or HELCOM**, works to protect the marine environment of the Baltic Sea from all sources of pollution through intergovernmental co-operation between Denmark, Estonia, the European Community, Finland, Germany, Latvia, Lithuania, Poland, Russia and Sweden."

"HELCOM is the governing body of the "**Convention on the Protection of the Marine Environment of the Baltic Sea Area**" - more usually known as the Helsinki Convention".

"HELCOM's vision for the future is a **healthy Baltic Sea environment** with diverse biological components functioning in balance, resulting in a good ecological status and supporting a wide range of sustainable economic and social activities."

Baltic Sea management can be regarded as early best-practice example and model for other regional seas.

http://www.helcom.fi/helcom/en_GB/aboutus

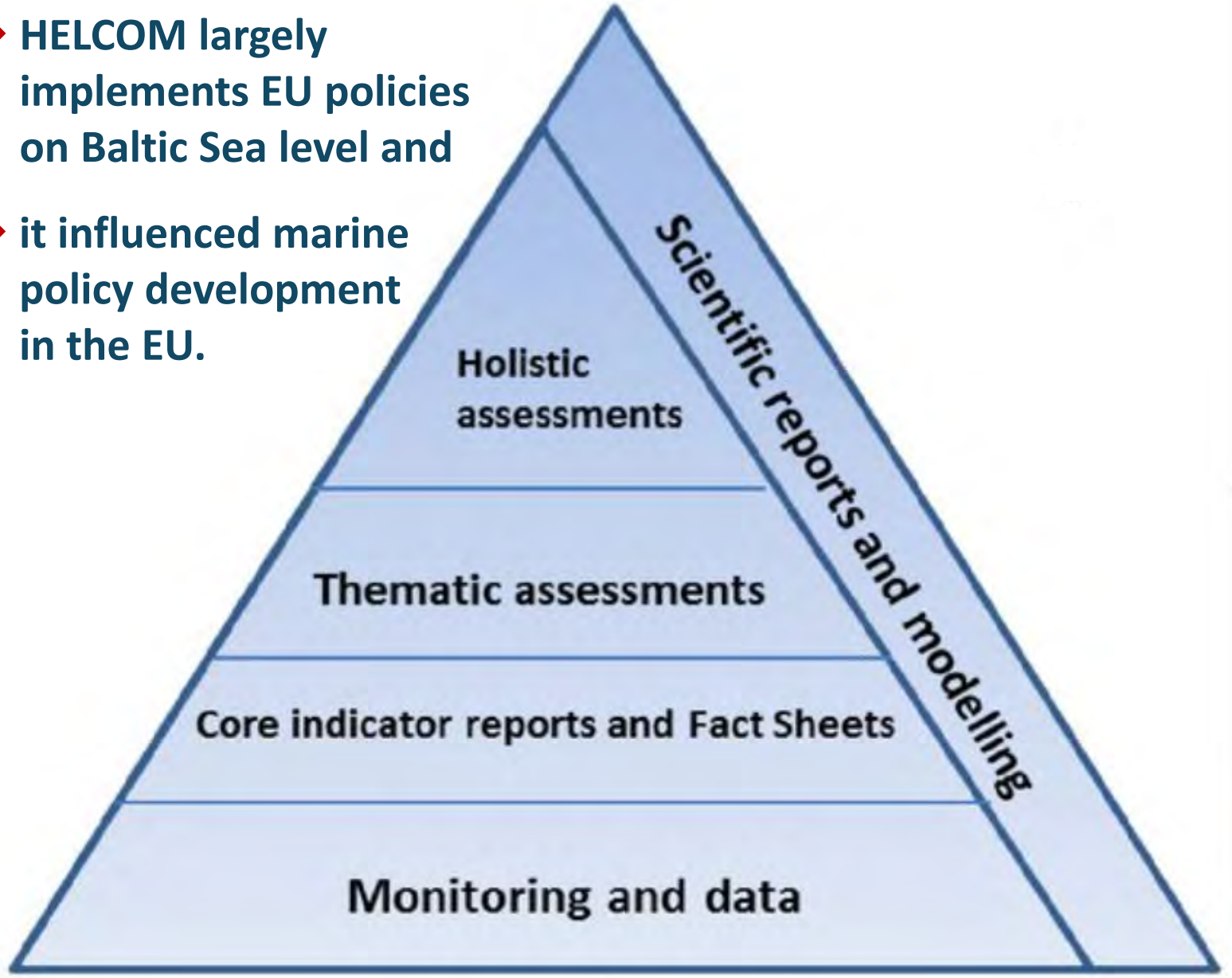
2. Helsinki Commission (HELCOM)

The Baltic environmental management body

https://helcom.fi/wp-content/uploads/2020/01/HELCOM-structure.png

2. HELCOM Monitoring and Assessment Strategy (2013)

- HELCOM largely implements EU policies on Baltic Sea level and
- it influenced marine policy development in the EU.



3. Policies: The Marine Strategy Framework Directive (MSFD)

- aims to “achieve **Good Environmental Status (GES)** of the European Unions marine waters and wants to protect the resource base upon which marine-related economic and social activities depend”,
- provides a **legislative framework** based on the ecosystem approach to the management of human activities,
- defines a **stepwise implementation** strategy and timetable and
- defines **11 qualitative descriptors** for the GES.

The MSFD strongly determines the HELCOM work and increased its importance.

https://ec.europa.eu/environment/marine/

3. Marine Strategy Framework Directive (MSFD)

11 descriptors describe what the environment will look like when GES has been achieved:

1. Biodiversity is maintained
2. Non-indigenous species do not adversely alter the ecosystem
3. The population of commercial fish species is healthy
4. Elements of food webs ensure long-term abundance and reproduction
5. Eutrophication is minimised
6. The sea floor integrity ensures functioning of the ecosystem
7. Permanent alteration of hydrographical conditions does not adversely affect the ecosystem
8. Concentrations of contaminants give no effects
9. Contaminants in seafood are below safe levels
10. Marine litter does not cause harm
11. Introduction of energy (including underwater noise) does not adversely affect the ecosystem

https://ec.europa.eu/environment/marine/

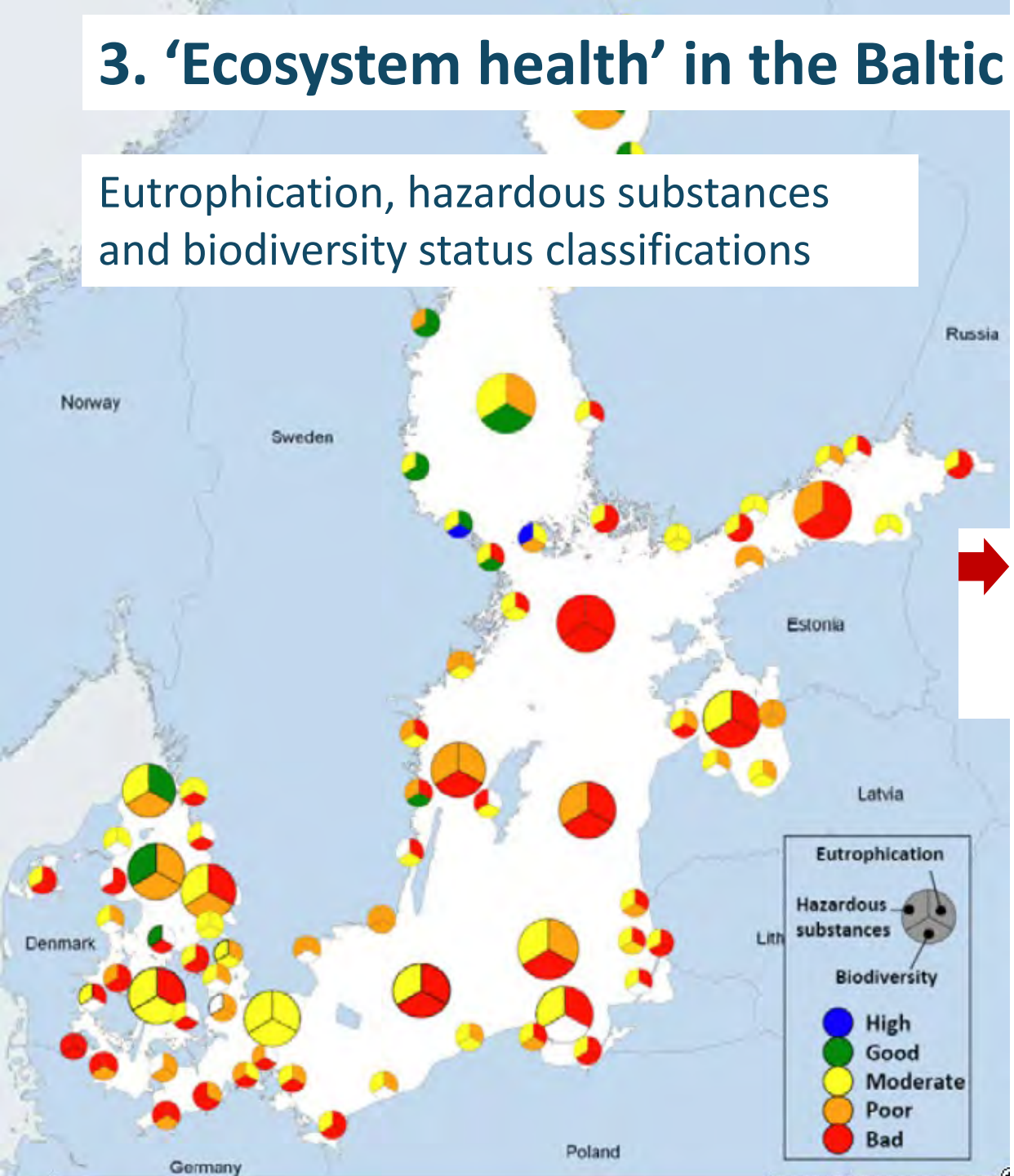
3. Marine Strategy Framework Directive (MSFD): Implementation steps

Member States must make an **assessment** of their marine waters:

- An **analysis** of the essential characteristics and **current environmental status** of those waters (physical, chemical and biological features);
- an **analysis of the predominant pressures and impacts**, including human, on the environmental status of those waters, covering the main cumulative effects and
- an **economic and social analysis** of the use of those waters and of the **cost of degradation** of the marine environment.

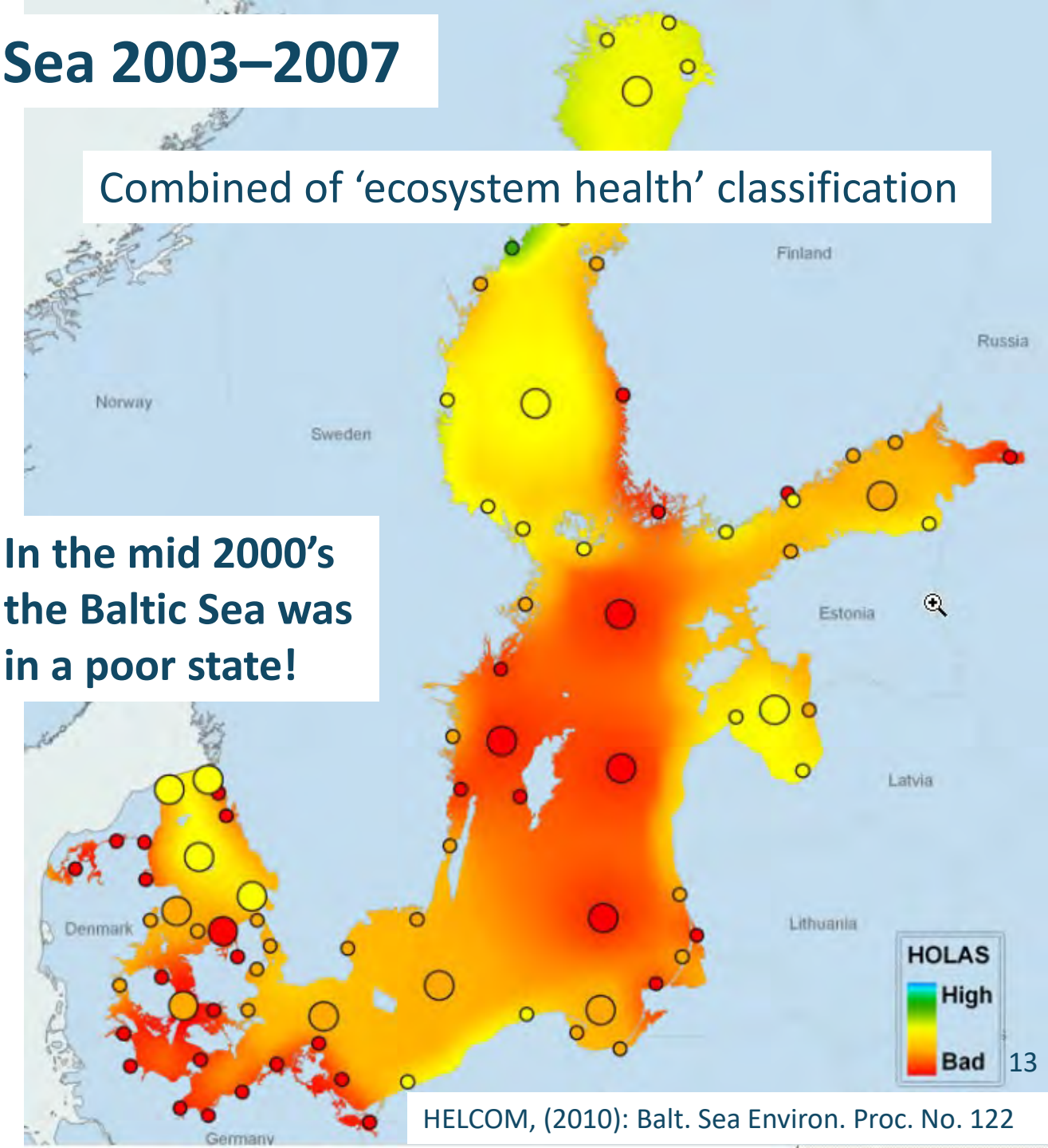
3. ‘Ecosystem health’ in the Baltic Sea 2003–2007

Eutrophication, hazardous substances and biodiversity status classifications



Combined of ‘ecosystem health’ classification

In the mid 2000’s the Baltic Sea was in a poor state!



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3. Baltic Sea - drivers & pressures

HELCOM

HELCOM (2018): Baltic Sea Envir. Proc. 155; http://stateofthebalticsea.helcom.fi/

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3. The costs of Baltic Sea degradation

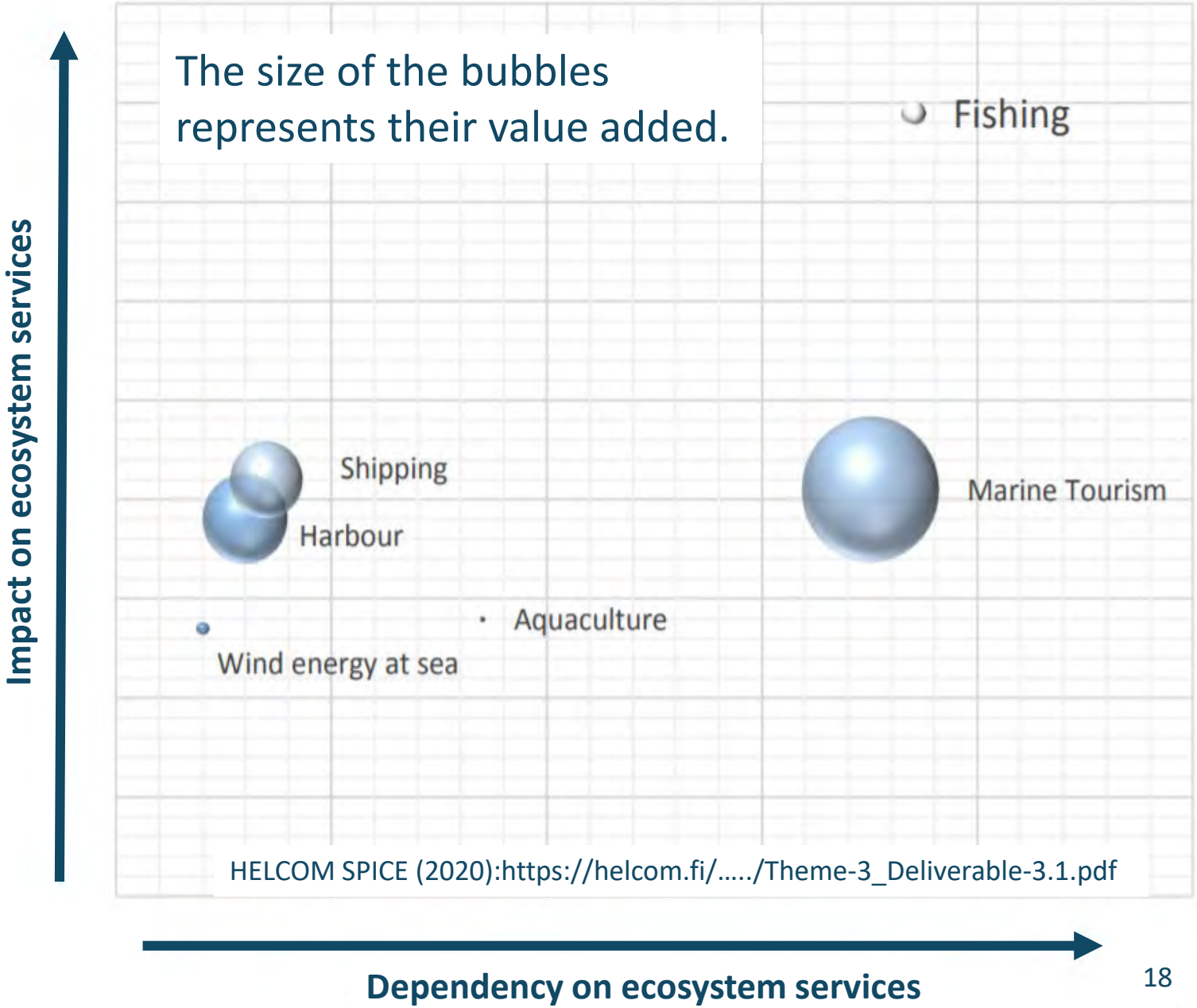
Costs and benefits of reducing annual nutrient loads to the Baltic Sea (in millions of euros per year)

Achieved nutrient reductions (per year)	Costs	Benefits	Net benefits	Reference
Cost-effective 50% reduction in total N and P loads	3,308	7,378	4,070	Turner et al. (1999)
Cost-effective 50% reduction in total N and P loads	3,308	3,356	48	Gren et al. (1997)
Cost-effective 50% reduction reduction of N and P loads	16,500	na	na	Ollikainen & Honkatukia (2001)
50% reduction of N and P	1,600	na	na	Wulff et al. (2001a)
Reductions of 100,000 N and 12,500 P	3,000	na	na	HELCOM & NEFCO (2007)

Helcom (2009): Eutrophication in the Baltic Sea. Baltic Sea Environment Proceedings No. 115A

3. Economic and social analysis - ecosystem services

- Ecosystem services are the benefits that people derive from ecosystems (MEA 2005).
- Human marine activities depend on and impact ecosystem services.
- The ecosystem service concept reflects the inter-relationship between economy and nature



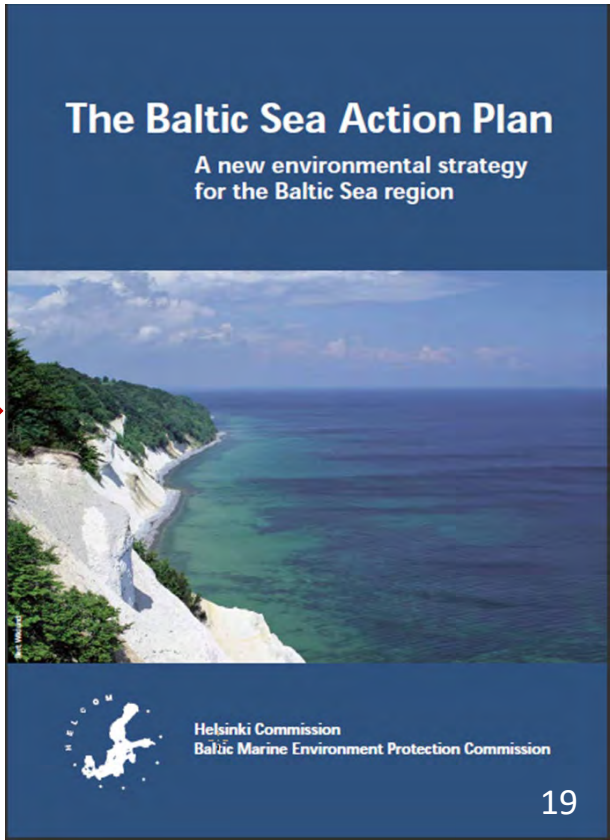
HELCOM SPICE (2020):https://helcom.fi/...../Theme-3_Deliverable-3.1.pdf

3. Marine Strategy Framework Directive (MSFD): Implementation steps

Programmes of measures:

- Member States had to **set up and implement programmes of measures** to achieve the good environmental status in their marine waters.
- The programme should **address each of the 11 MSFD descriptors.**

In the Baltic Sea

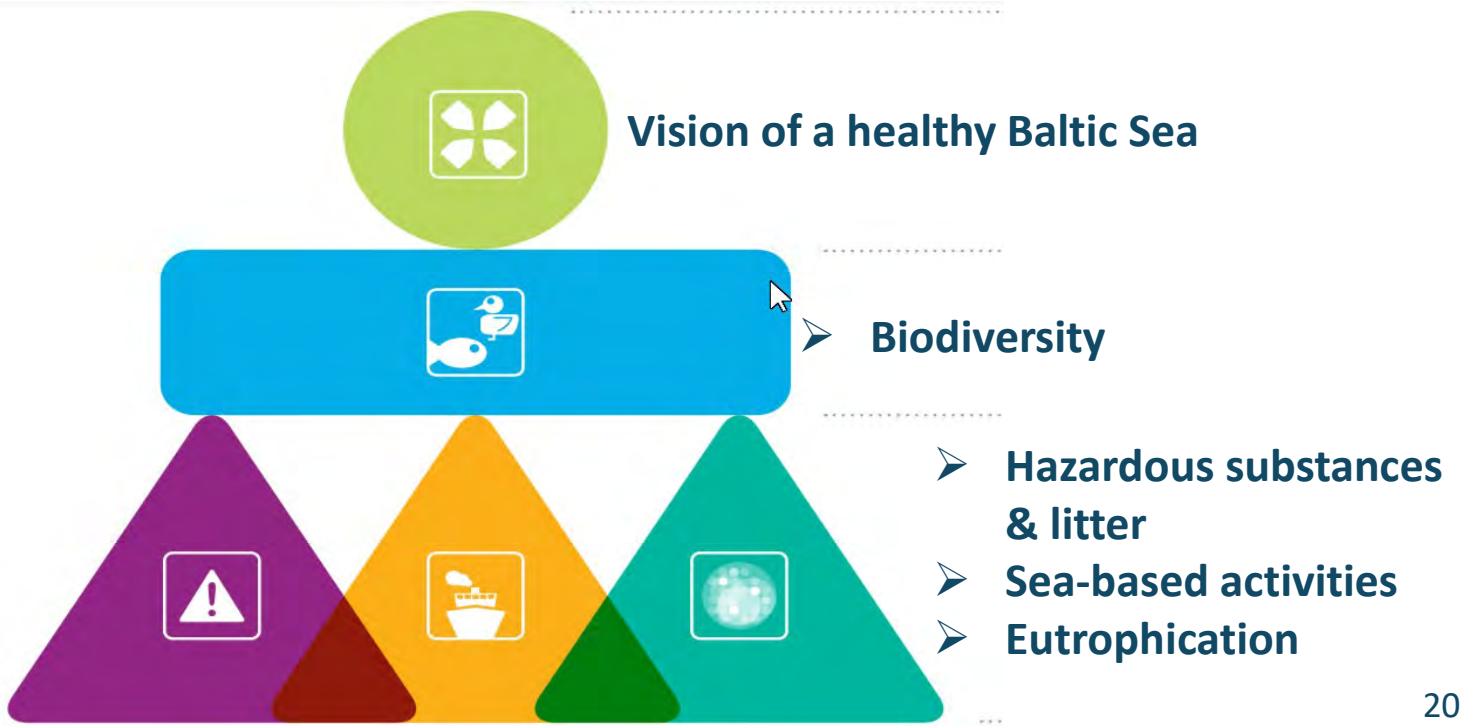


Helcom (2021): Baltic-Sea-Action-Plan-2021-update.pdf

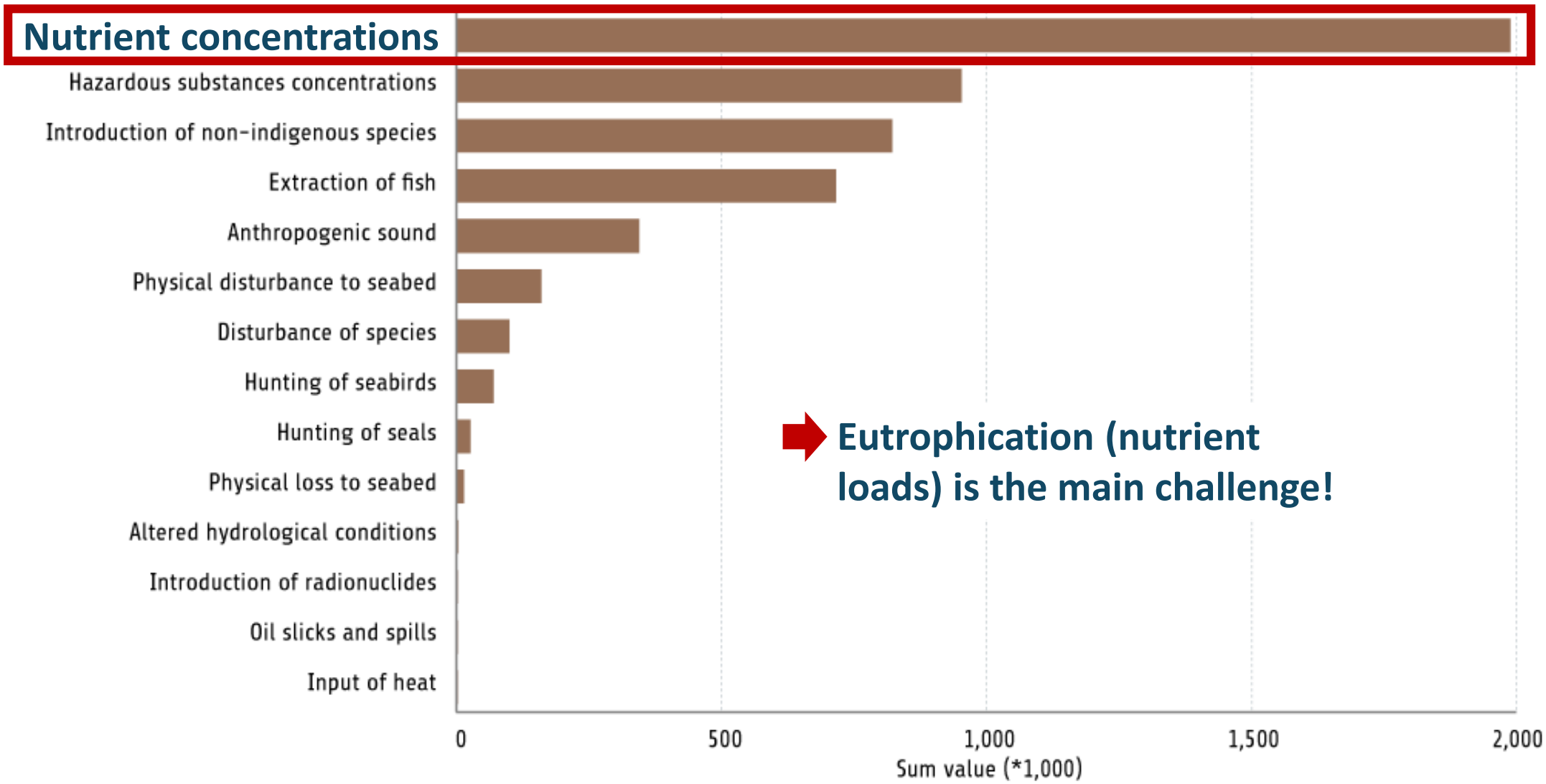
4. The Baltic Action Plan (2021 update)

Goal: A healthy and resilient Baltic Sea ecosystem

- A Baltic Sea unaffected by **eutrophication,**
- a Baltic Sea unaffected by **hazardous substances and litter** and
- environmentally **sustainable sea-based activities** (covering several MSFD Descriptors).



4. Baltic Sea pressures ranked by cumulative impact



Eutrophication (nutrient loads) is the main challenge!

http://stateofthebalticsea.helcom.fi/

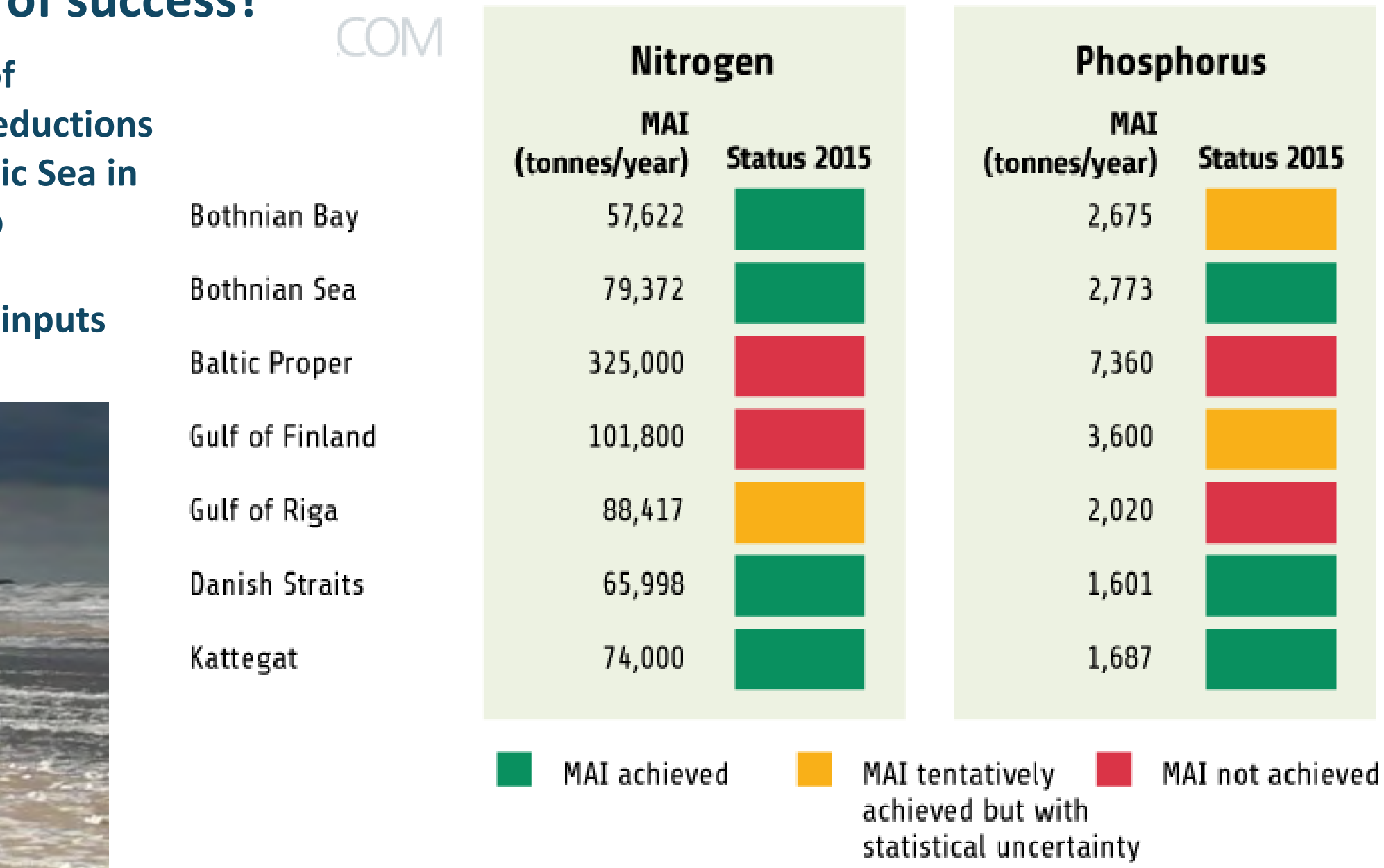
4. The Baltic Action Plan

Efforts to combat eutrophication via nutrient load reductions.

	Maximum allowable inputs (MAI)	
Baltic Sea sub-basin	**Total nitrogen (TN)** tonnes/year	**Total phosphorous (TP)** tonnes/year
Kattegat	74,000	1,687
Danish Straits	65,998	1,601
Baltic Proper	325,000	7,360
Bothnian Sea	79,372	2,773
Bothnian Bay	57,622	2,675
Gulf of Riga	88,417	2,020
Gulf of Finland	101,800	3,600
Baltic Sea	**792,209**	**21,716**

5. A story of success?

Progress of nutrient reductions in the Baltic Sea in relation to maximum allowable inputs (MAI)

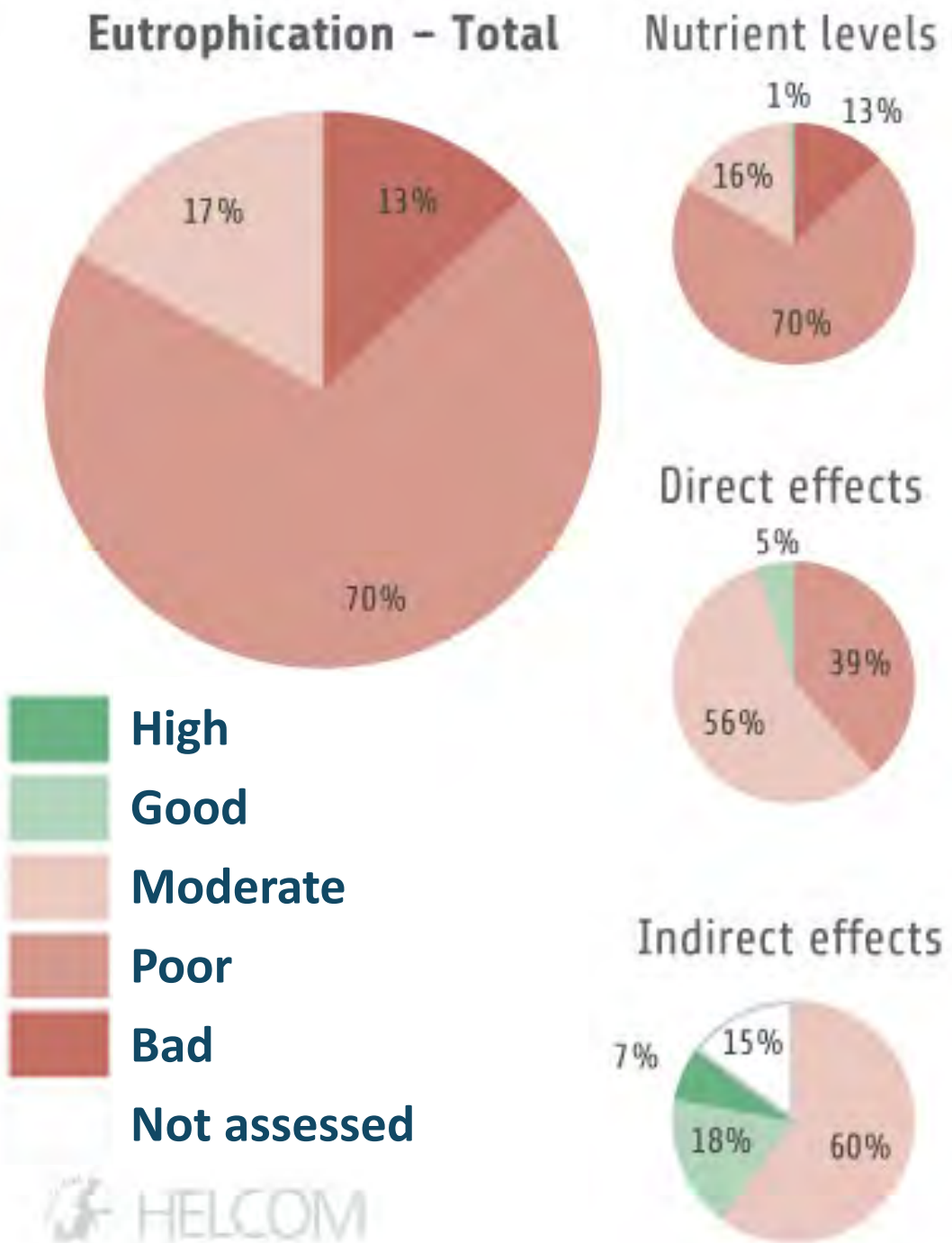


HELCOM (2018): Baltic Sea Envir. Proc. 155

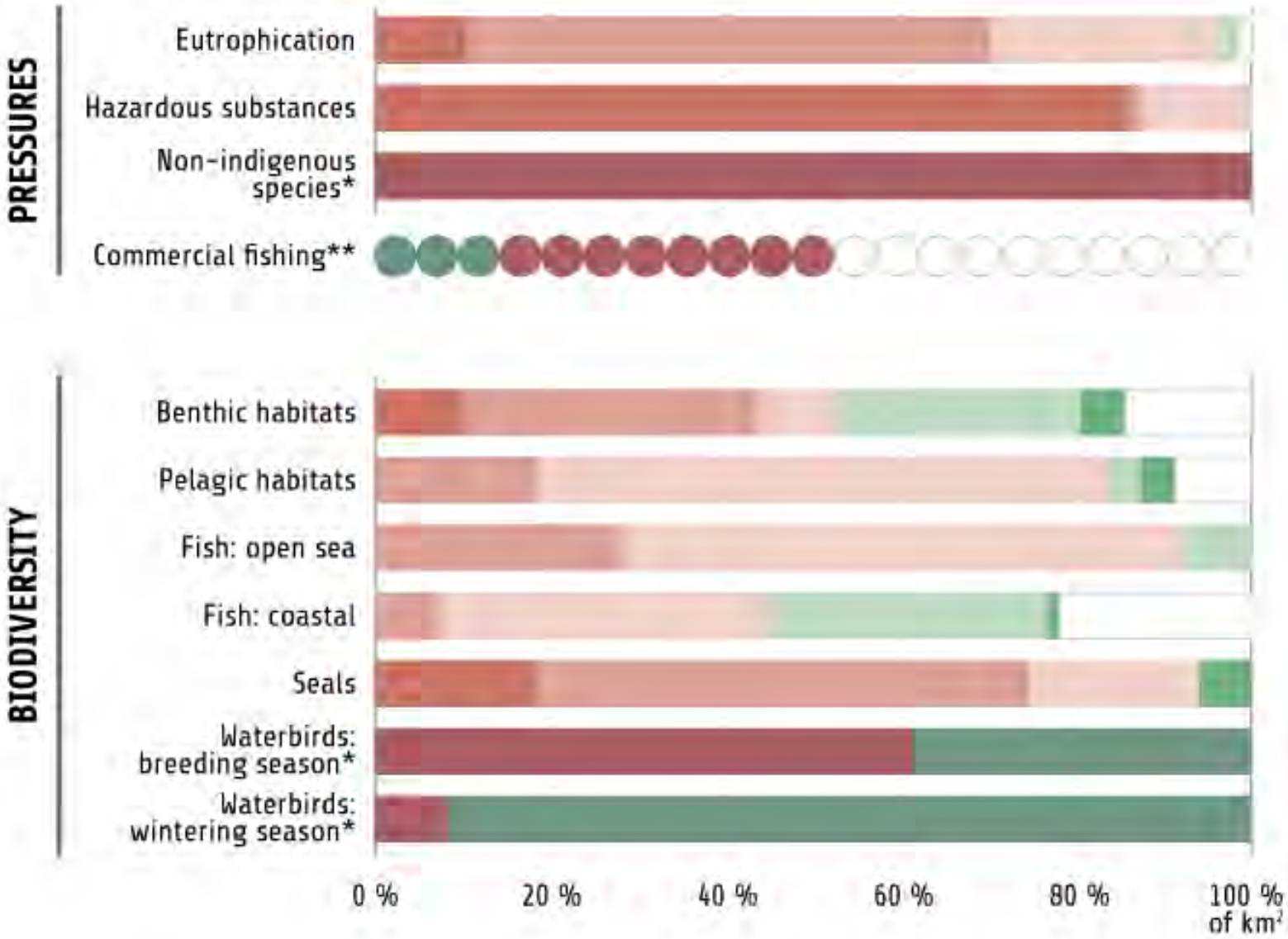
5. Baltic Sea state: Eutrophication

Proportion of open sea area within each of the five status categories of the integrated assessment of eutrophication (based on km^2).

HELCOM (2018): Baltic Sea Envir. Proc. 155
http://stateofthebalticsea.helcom.fi/



5. Baltic Sea state: impact on Biodiversity



INTEGRATED ASSESSMENTS

Not good | Good | Not assessed

***INDICATORS**

Good
Not good
Not assessed

****FISH STOCKS**

Good
Not good
Not assessed

The following pressures were assessed descriptively:

Marine litter
Underwater noise
Seabed loss and disturbance
Hunting of seals and waterbirds
Pharmaceuticals
Incidental bycatch in fishing gear

http://stateofthebalticsea.helcom.fi/

6. Summary

- The European Union coastal and marine policy is comprehensive and ambitious.
- Most important is the Marine Strategy Framework Directive.
- It provides defined implementation steps and a timetable.
- In the Baltic Sea, this policy is implemented through HELCOM.
- The resulting Baltic Sea Action Plan provides a comprehensive set of targets and measures towards „a healthy and resilient Baltic Sea ecosystem”.
- These policies clearly show positive effects in the Baltic (reduced pressures).
- However, the recovery of the Baltic Sea will take decades (improved state & impact).

Thank you for your attention!

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