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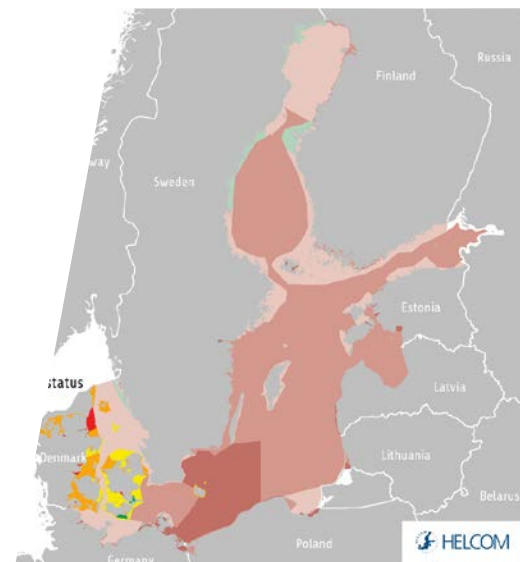
# Eutrophication - What are the main sources and impacts?



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# 1. At least 97% of the Baltic Sea suffers from eutrophication

leading to algal blooms, poor light conditions, oxygen depletion and a cascade of other ecosystem changes



HEAT integrated eutrophication assessment 2011-2016

SOURCE: <http://stateofthebalticsea.helcom.fi/>

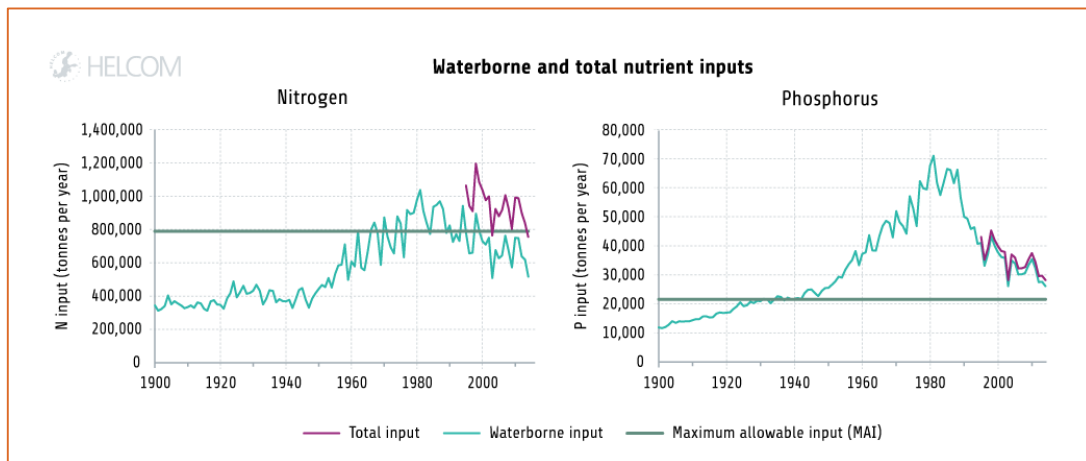
## The Baltic Sea Action Plan objective is a Baltic Sea unaffected by eutrophication

- ✓ Concentrations of nutrients close to natural levels
- ✓ Clear water
- ✓ Natural level of algal blooms
- ✓ Natural distribution and occurrence of plants and animals
- ✓ Natural oxygen levels



Photo: Susanna Qvarfordt

## 2. Reducing nutrient inputs have an effect - but it takes time! Continued implementation of actions is critical



Source: HELCOM 2018 (HOLAS II and PLC -6)

### Sources of inputs

- Waterborne inputs are mostly from **agriculture** and point sources such as **wastewaters**
- Airborne nitrogen inputs are mostly from agriculture, **transport** and **energy** sectors
- Direct inputs are dominated by WWTPs and **industry**, but also to some extent **aquaculture**

### Internal loading

- Significant resources of phosphorus have accumulated in the bottom sediments over time. **Phosphate** which is released during anoxic conditions contributes to the total phosphorus load.

### 3. Ecosystem effects – We need to consider the whole picture

Climate change increases the challenge:

Oxygen availability is influenced by temperature and weather/climate-related inflows from the North Sea

Food web instabilities enhance impacts

For example overfishing lead to cascading effects and reduces ecosystem resilience



Photo: Ulf Bergström

# THANK YOU



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