

Global Soil Week 2015: Soil and Sea in the Nexus

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Nitrogen: Strategies for resolving an urgent environmental problem

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Stickstoff: Lösungsstrategien für ein drängendes Umweltproblem

Sondergutachten

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NITROGEN: Strategies for resolving an urgent environmental problem

Summary
January 2015

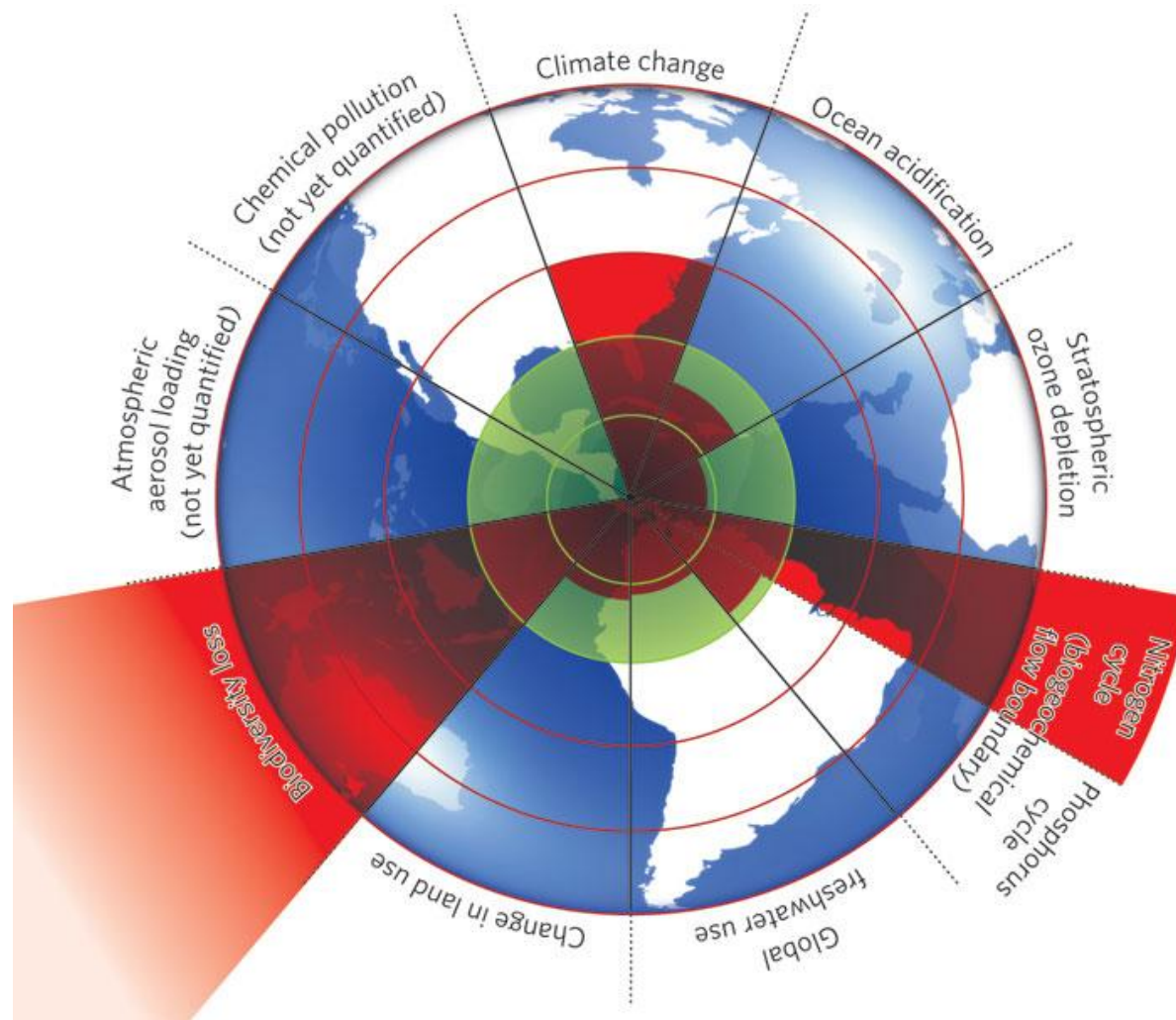


Photo: J. Kuntze (top left), Bernd J. Hoffmann (top middle), G. Kuntze (top right), D. J. Hoffmann (bottom left), M. Hoffmann (bottom middle), M. Hoffmann (bottom right)

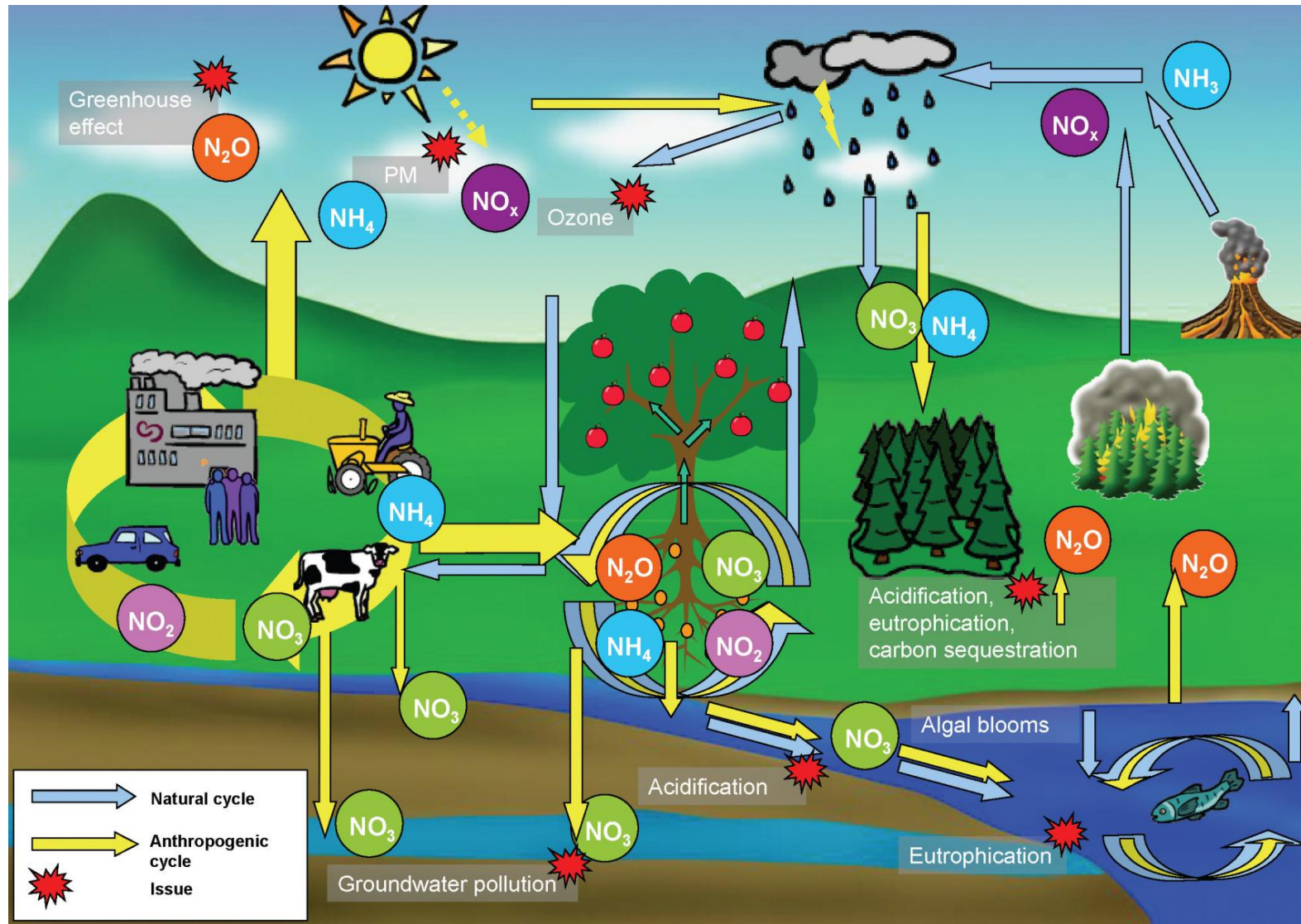
Planetary Boundaries



A safe operating space for humanity



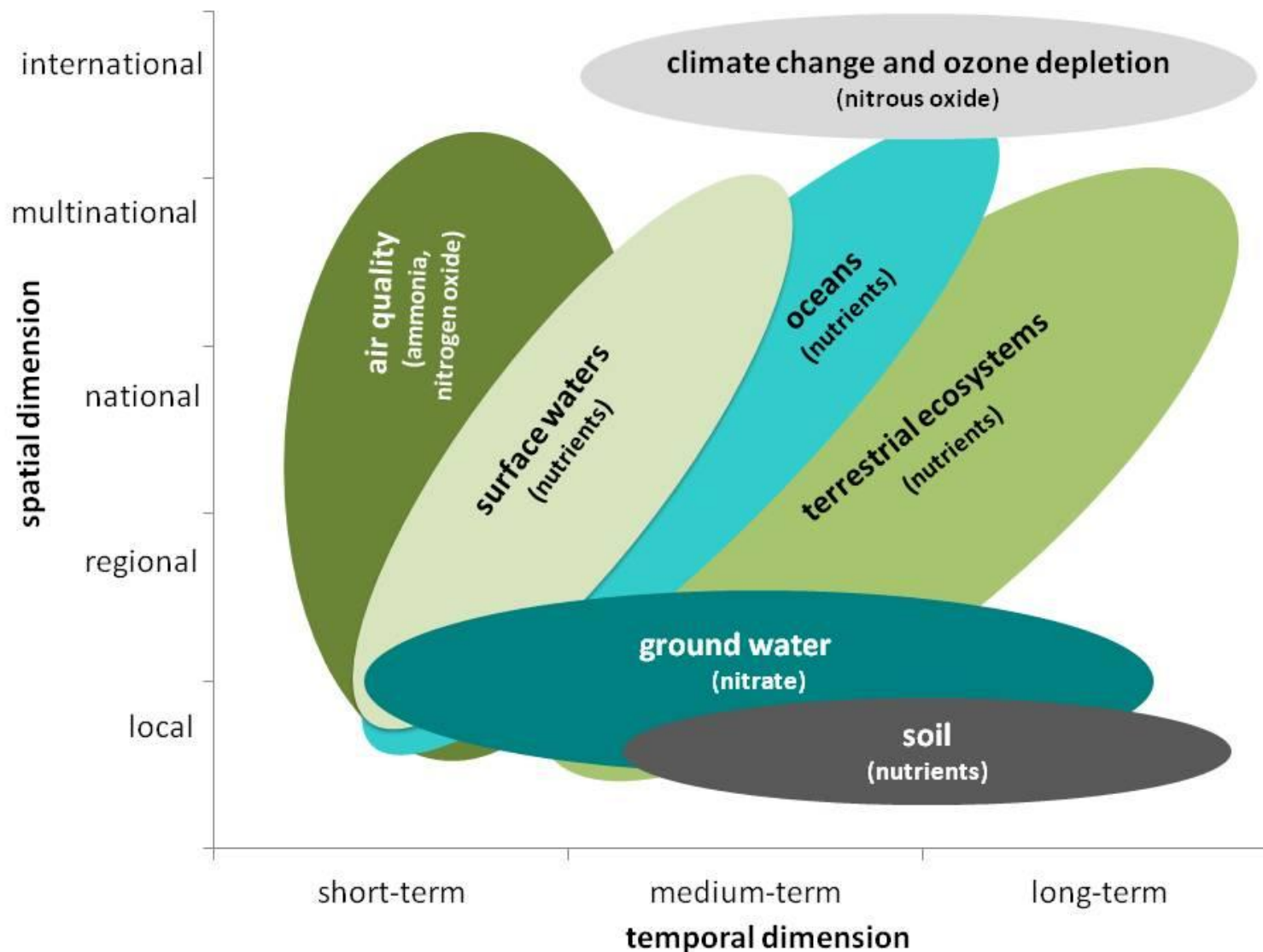
The nitrogen cycle



Nitrogen components



An important issue with multiplex dimensions



Nitrogen pollutions

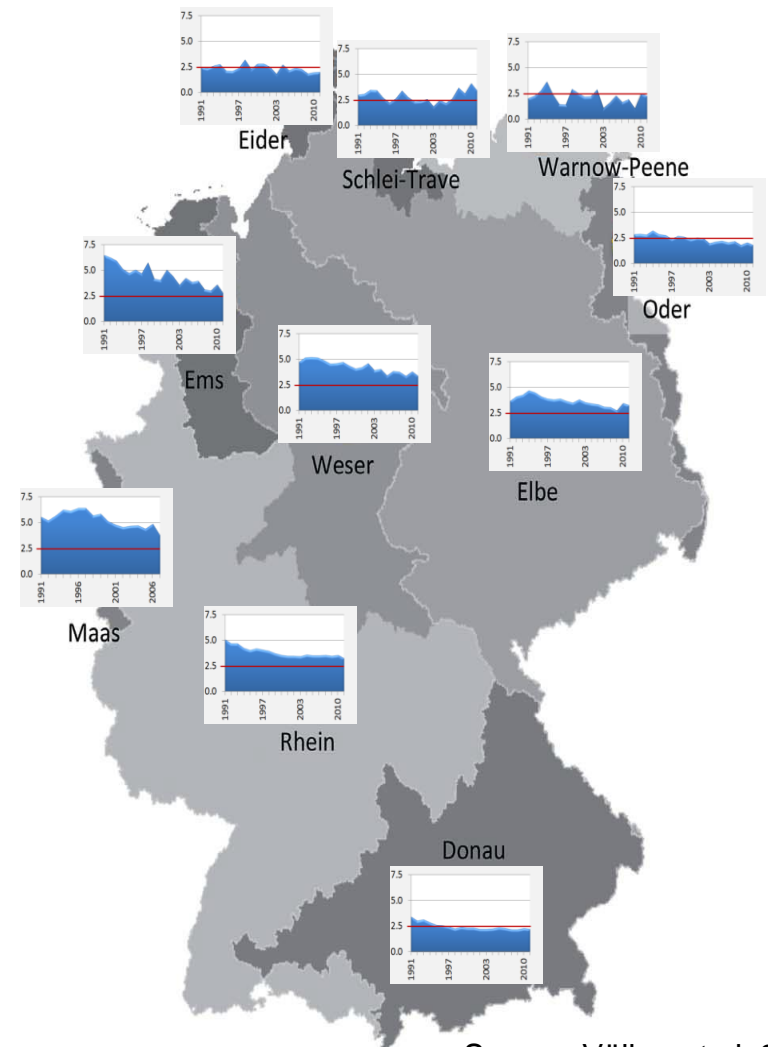


Main inputs via rivers

67 % of nitrogen enters the North Sea via rivers, the rest via the atmosphere.

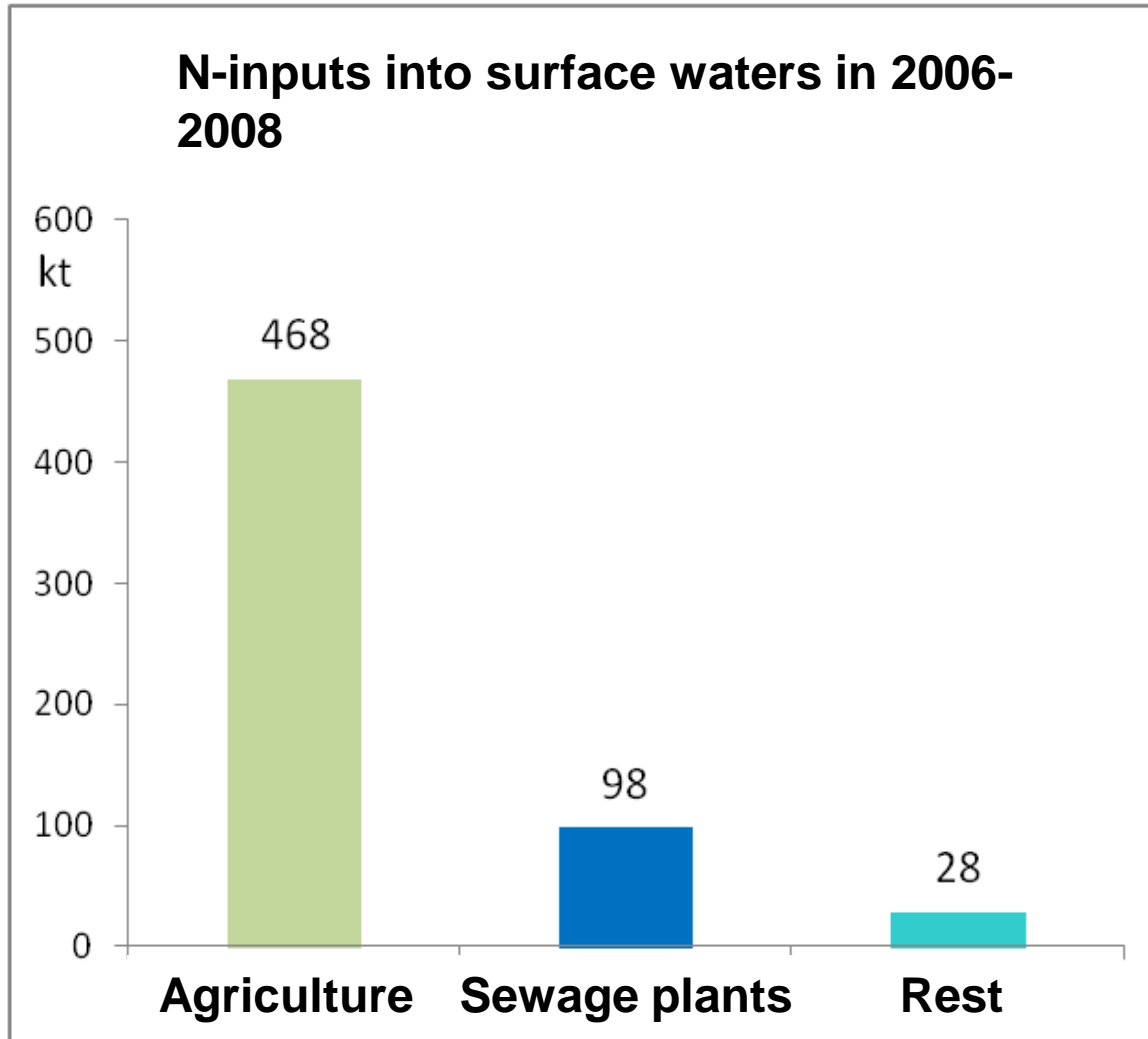
**Nitrogen gets into surface waters via:
groundwater, drainage,
surface runoff from
agricultural land and
erosion.**

Nitrate concentrations in surface waters between 1990 and 2011



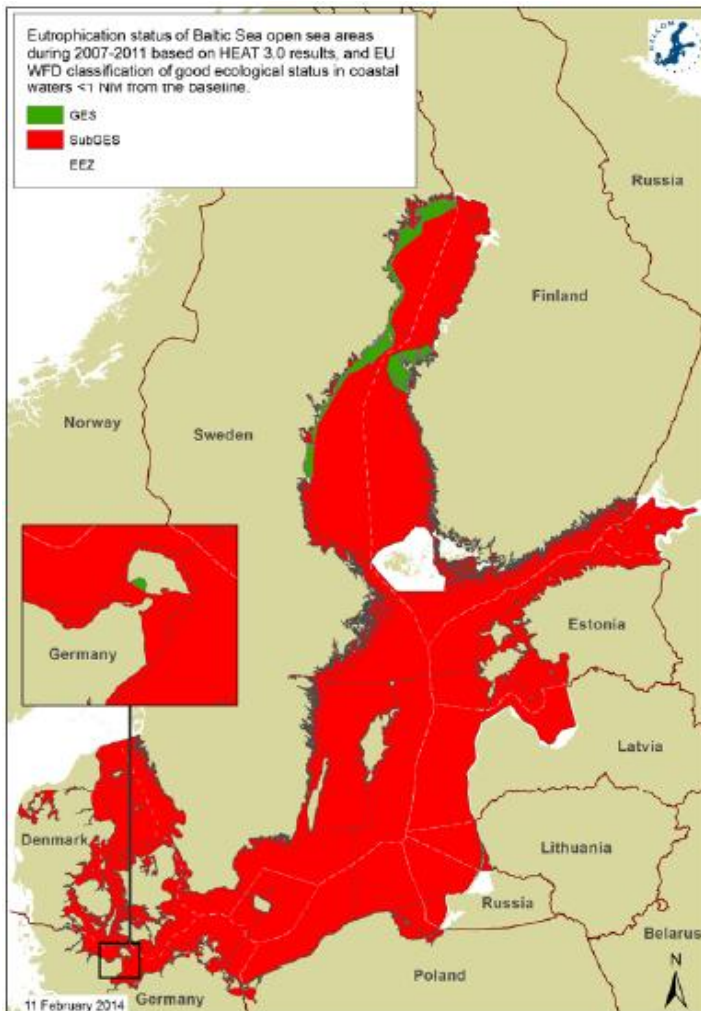
Agricultural pollution: Nitrogen

Surface waters in Germany



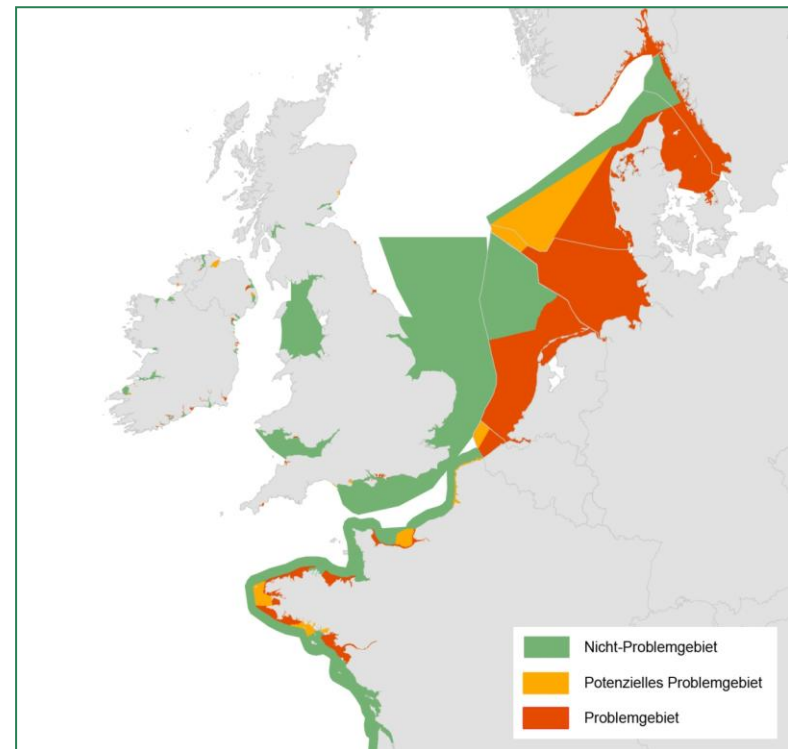
North and Baltic Sea

Eutrophication status of the Baltic Sea 2007-2011



Source: HELCOM 2014

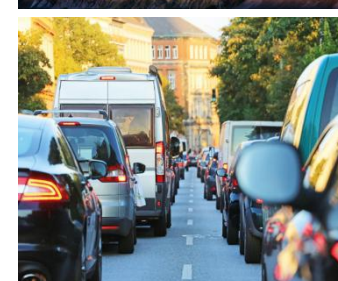
Eutrophication status of the North Sea



Source: OSPAR Commission 2009

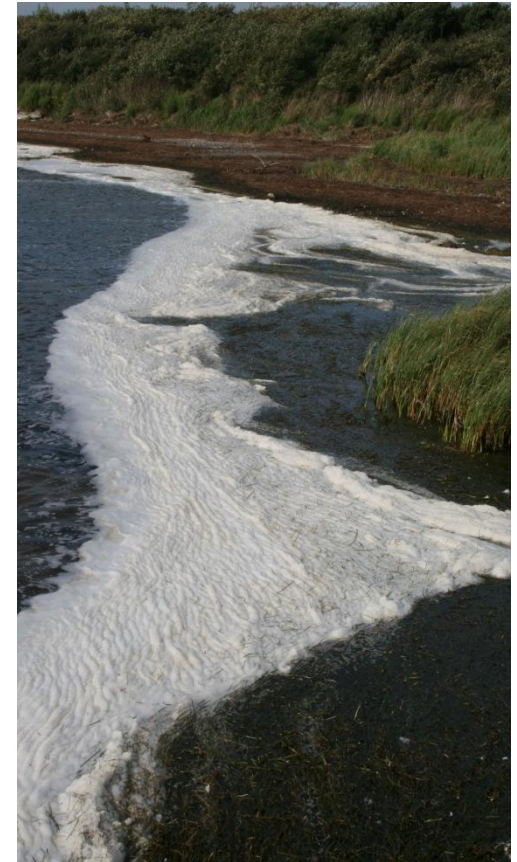
Areas of activity

- Clean air policies: draft of a NERC directive
- **Implementation of the WFD**
- Reform of the CAP
- **Reform of the Fertilizer Regulation**
- Raise a tax on nitrogen surplus
- Nature protection measures
- **Make biogas production environmentally sustainable**
- Change food consumption pattern
- Reshape the transportation sector
- Reduce power plant emissions
- ...



Water protection and agriculture

- Existing environmental quality objectives are ambitious; it is questionable if these objectives can be met
- Fertilizer regulation has to be improved
- Agri-environmental measures and advisory services are insufficient
- More compulsory measures are necessary (designation of water protection areas and riparian strips)



Reduce inputs from agriculture

■ Fertilizer regulation

- A central instrument in nitrogen policy
- Draft of a new regulation: improvement but not sufficient
 - Demanding a fertilizer plan from farmers
 - Applying the upper limit of manure application to all organic fertilizer
 - Requiring a farm gate balancing to calculate the nutrient surplus
- Improvement of the enforcement of the Fertilizer Regulation



For a more sustainable energy production from biogas

- **Stop the expansion of biogas production**
 - New biogas plant should mainly use agricultural residues and waste

- **Negative impacts of existing plants need to be reduced**
 - Incentives to make energy production more flexible
 - Digestates used in agriculture should be fully incorporated in fertilizer regulation



To develop a national nitrogen strategy

- **For a better horizontal and vertical integration**
- **For a better public awareness**
- **For a better communication of the problem**

An aerial photograph of a rocky coastline. The water is a vibrant green, likely due to a dense covering of seaweed or algae. White foam from breaking waves is visible, particularly on the left side of the image. The rocks are dark and jagged, partially submerged. The overall scene is dynamic and natural.

Many thanks for your attention!

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