Environmental impacts of offshore grids

Presentation at the workshop “Stakeholders’ perspectives on offshore grids and the marine environment“

Bergen, June 27-28, 2013

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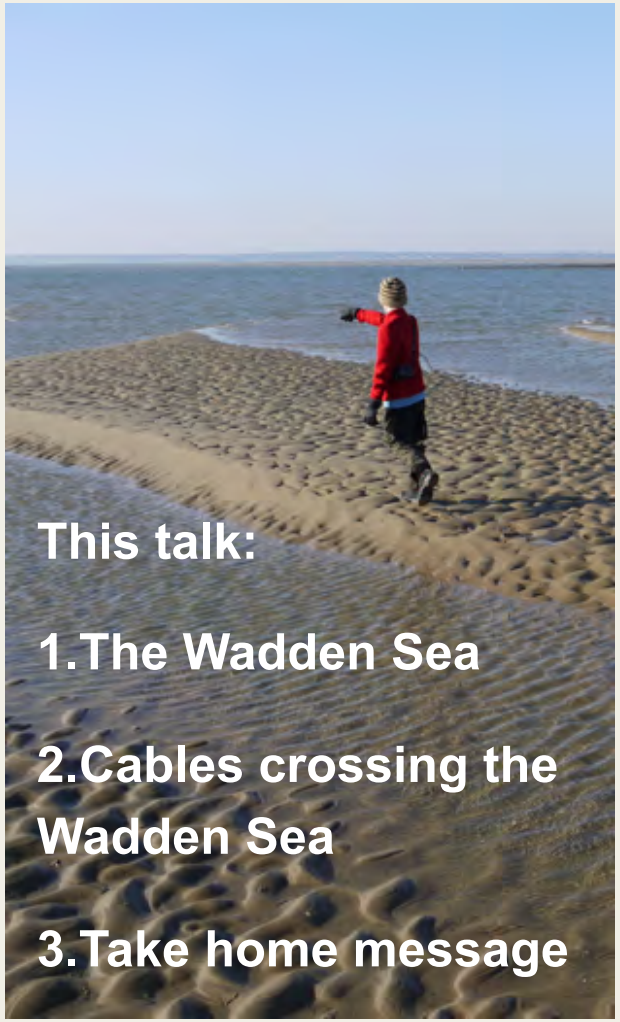
Introduction

This talk is not about environmental impacts of offshore grids and the marine environment in general!

The focus is on impact of the grid on the Wadden Sea – however, I am trying to give also more general comments.

The underlying question: What‘s about nature conservation when it comes to the energy turnaround („Energiewende“)? Are there in practice serious conflicts between conservation and climate protection? Is it possible to overcome these with synergies?



Part 1

The Wadden Sea

Map: CWSS


Foto: Martin Stock

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The values

10,000 km^2, 4,500 of these are tidal flats

400 km^2 saltmarshes

10-12 mio waterbirds (10% breeding)

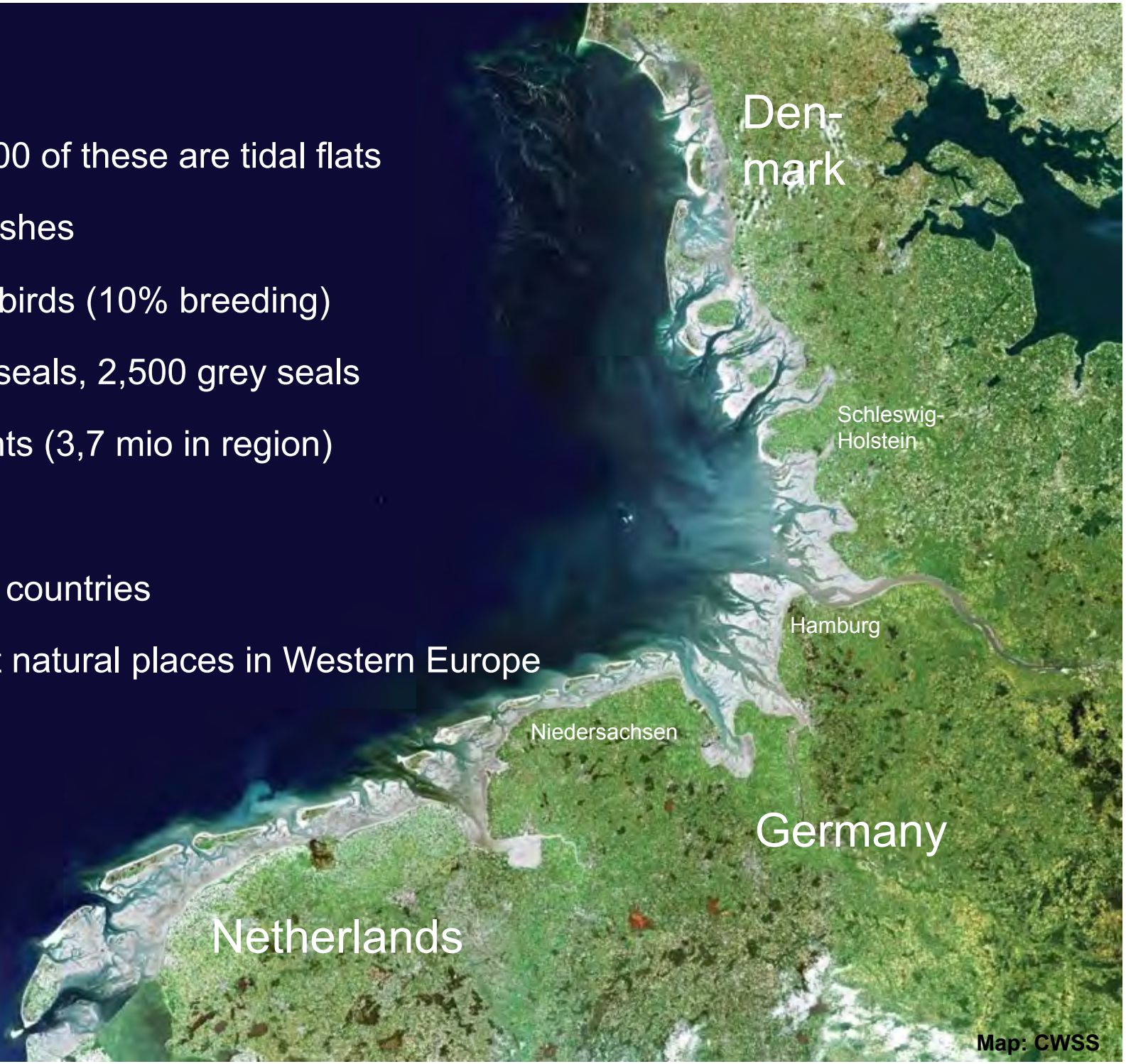
25,000 harbour seals, 2,500 grey seals

70,000 inhabitants (3,7 mio in region)

10 mio tourists

Shared by three countries

Among the most natural places in Western Europe



Map: CWSS

Milestones in protection

100 years ago: some small islands protected for seabird colonies

Major losses by embankments, then larger protected areas and proposals for National Parks

Danish-German-Dutch Cooperation for the Protection of the Wadden Sea beginning 1978/1982

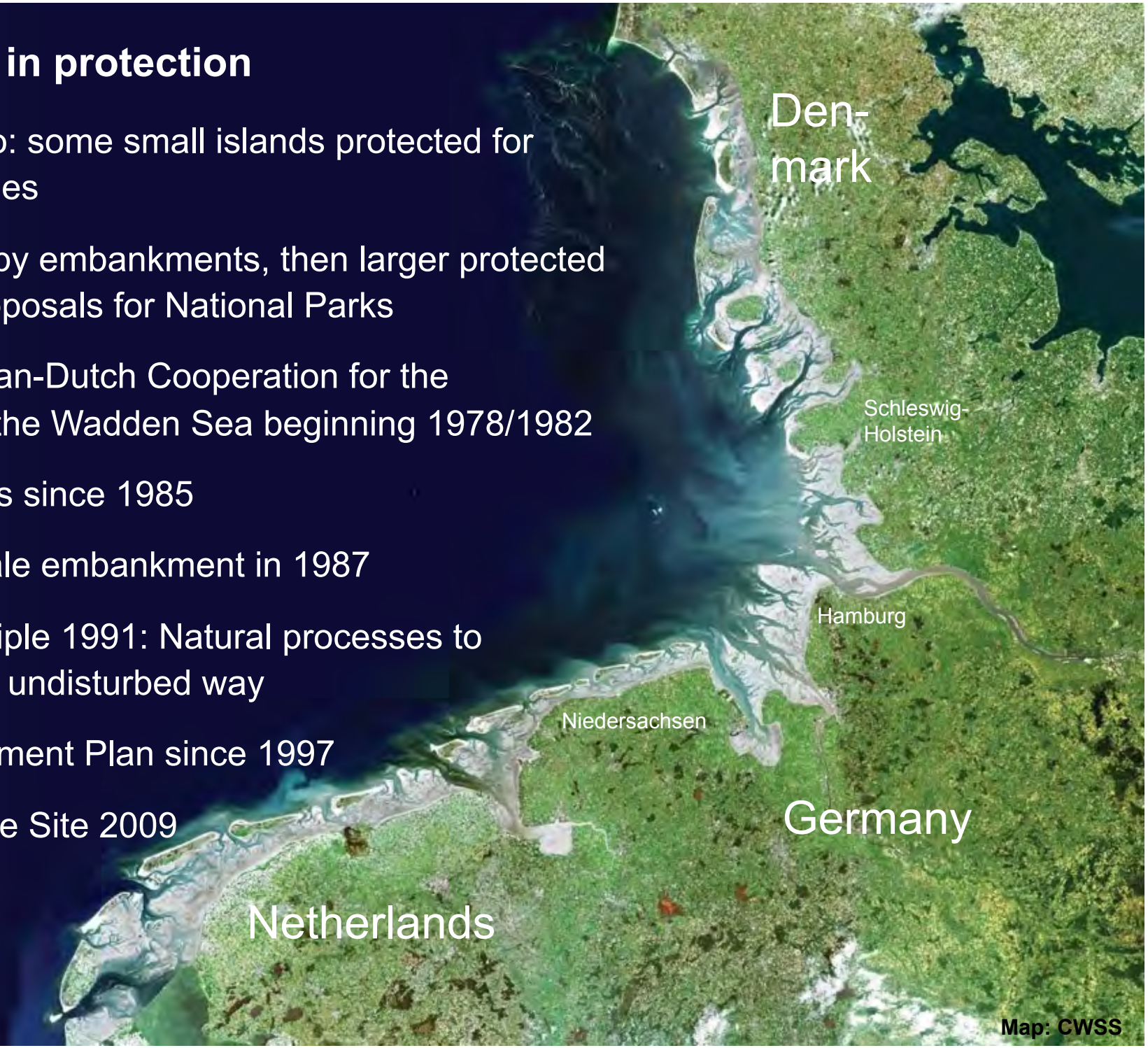
National Parks since 1985

Last large scale embankment in 1987

Guiding Principle 1991: Natural processes to proceed in an undisturbed way

Joint Management Plan since 1997

World Heritage Site 2009



Map: CWSS

Why UNESCO World Heritage Site?

Globally important („Outstanding Universal Value“) for:

1. Geological processes: very young and dynamic ecosystem

2. Ecologial processes: Productive inter-tidal ecosystem, many habitats, natural processes prevailing

3. Biodiversity: e.g. 10-12 mio waterbirds from half the Arctic

However, also a model for transboundary cooperation in conservation!

Map: CWSS

Issues despite protection

Shipping (accidents, deepening of estuaries)

Fisheries (not yet sustainable)

Alien species invading

Tourism (too much?)

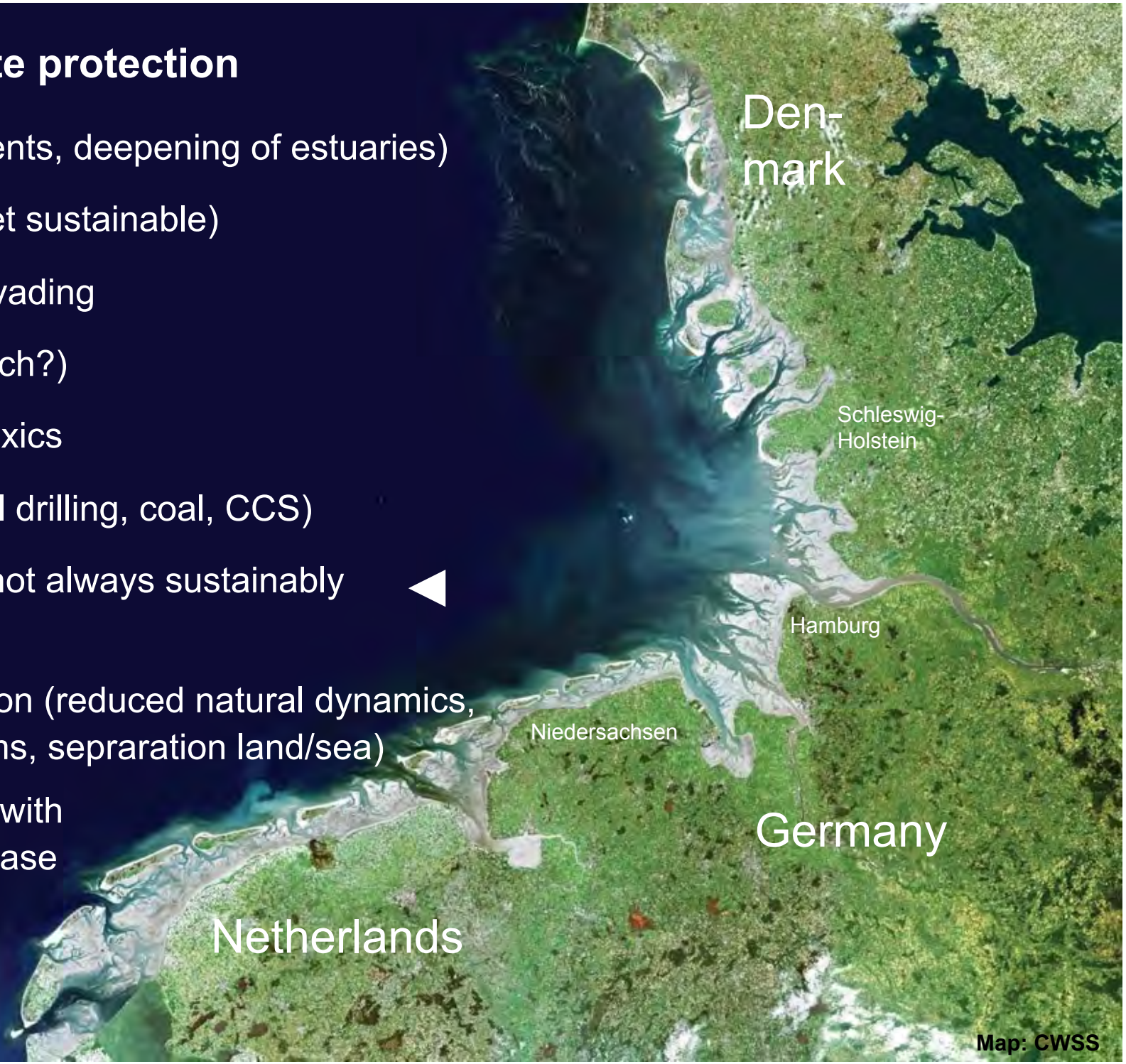
Nutrients and Toxics

Old Energies (oil drilling, coal, CCS)

New Energies (not always sustainably implemented)

Coastal Protection (reduced natural dynamics, hard edges, dams, sepraration land/sea)

Climate change with associated increase in sea level rise

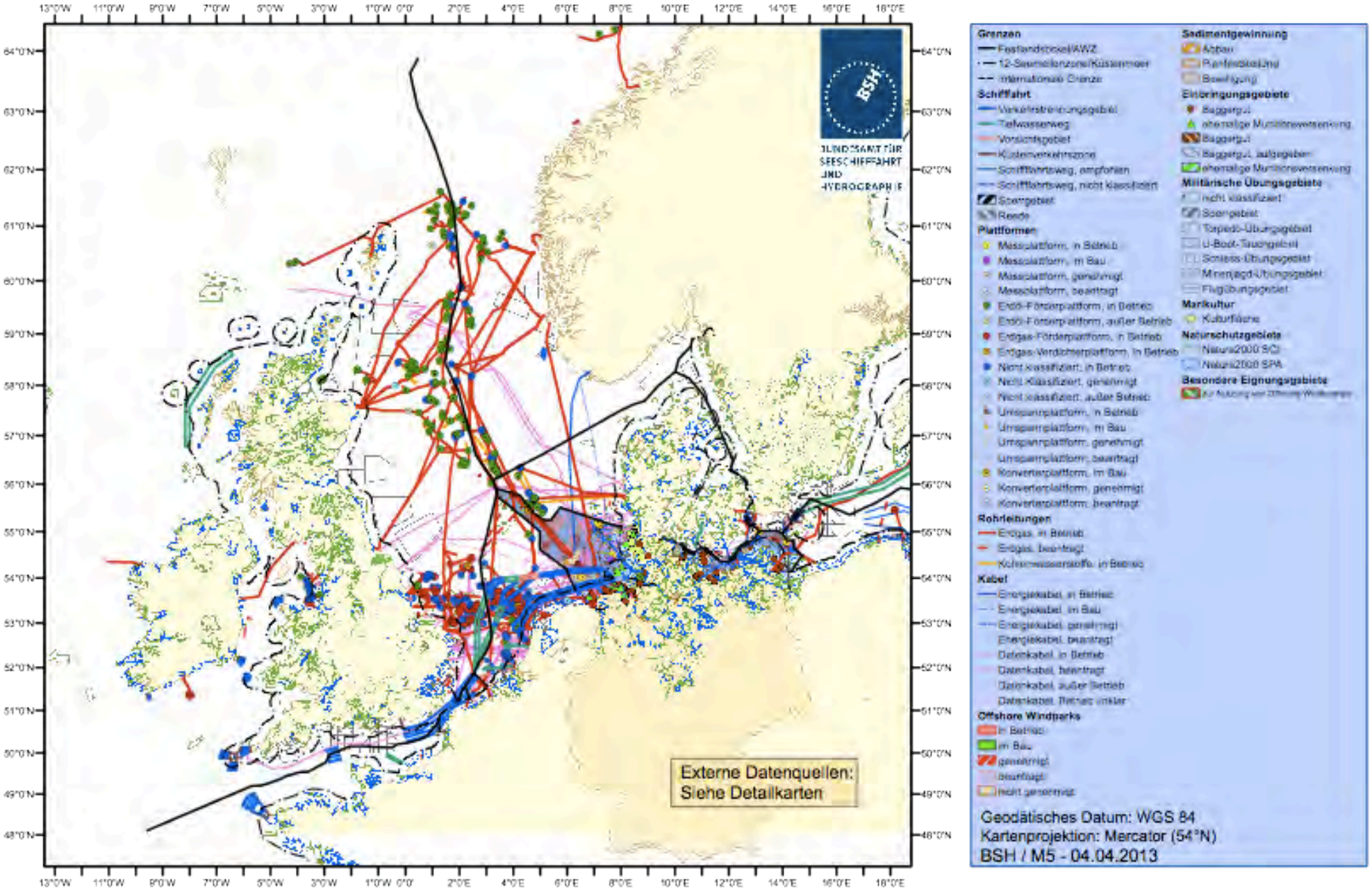


Map: CWSS

Part 2

Cables crossing the Wadden Sea

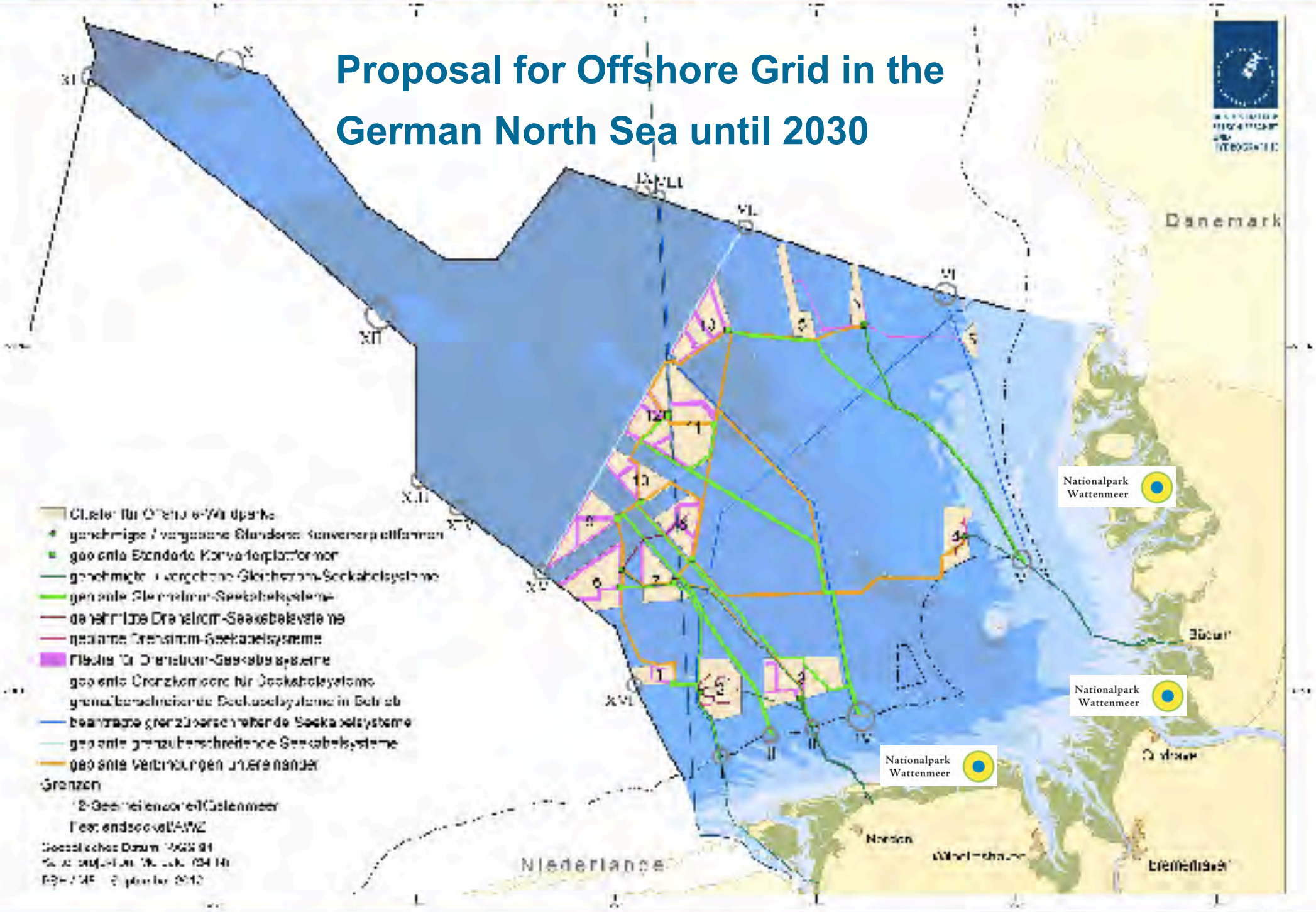
North Sea: Many uses



http://www.bsh.de/de/Meeresnutzung/Wirtschaft/CONTIS-Informationssystem/index.jsp

Planungshorizont 2030

Proposal for Offshore Grid in the German North Sea until 2030



Source: BSH

Many cables crossing the Wadden Sea

Previously just „small“ cables: Island supply, telecommunication

Large power cables to German offshore wind farms: More than 100 were estimated in the beginning (DC-technology not expected to be used at that time), at present number to be expected 30-40

Large power cables linking Norway and the southern North Sea coast: NorNed (finished, NL), Nord.Link (planned), NorGer (planned).

Cables crossing the Wadden Sea: Why a Problem?

Large scale construction works

Wilderness such as large parts of the Wadden Sea is the most valuable nature we have, such areas should not be disrupted by technical installations

Heating of mudflats, possible causing a change of species community along the cables

Repeated construction works when cables are damaged or natural dynamics expose them from the ground

Reality tends to be much more complicated than planners anticipate when applying for permission: Cables get damaged, drillings do not work as planned, extra damage on the mudflats, spill of chemicals, bad weather, ... Much of this happens within protected areas!

Bad example: These cables should remain buried in the ground. But the Wadden Sea is a dynamic habitat (the protection goal actually is to allow nature to proceed in its natural dynamics as much as possible)!


Bad example: This breeding colony of terns was detected after a pipe (needed for crossing the dike with a cable) was placed very close to them

The Cables: Policy of Wadden Sea countries

Wadden Sea Plan 2010 (11th Trilateral Governmental Conference on the Protection of the Wadden Sea):

„To concentrate cable crossings through the Wadden Sea within a minimum of cable corridors and a minimum of cables, using the best available techniques, e.g. cables with highest capacity available, and avoiding salt marshes crossing as far as possible, and to communicate regularly on this item in order to use synergies.“

And, remember the general rule:

„The Guiding Principle of the trilateral Wadden Sea policy is to achieve, as far as possible, a natural and sustainable ecosystem in which natural processes proceed in an undisturbed way.“

What should be the conditions for cables crossing the Wadden Sea?

Prove of overriding public interest (not trivial: must really be for Energiewende!)

Avoiding impact (cable to be avoided, e.g. by bundling, route selection, connection to offshore grid or an offshore wind cluster?)

Minimising impact (e.g. burying depth, the least damaging route, time of construction, method of construction, no coverage with stones in soft habitats, modern equipment, cooperative construction companies, full use of previous experiences, comprehensive „ökologische Baubegleitung“)

True compensation (long-term impact on protected areas requires long-term compensation, i.e. reduction of other impacts, reversing human influences in certain habitats, funding of such measures by trust fund capital or by an appropriate share of profits gained by the cable)

Limits of growth: There is a point when no more cables can be allowed!

The Wadden Sea model

Avoid black-white thinking and develop the Wadden Sea Region as a true model:

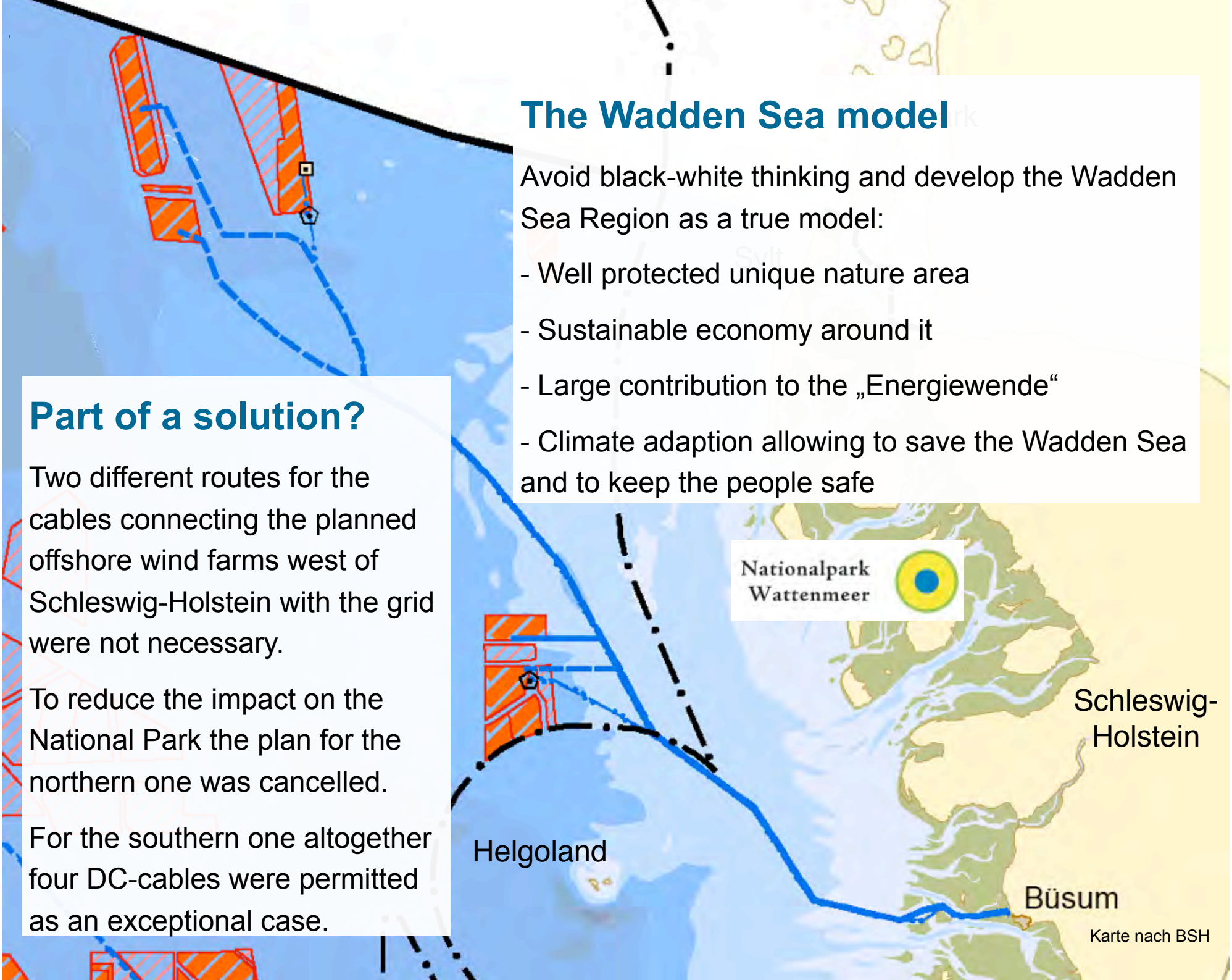
- Well protected unique nature area
- Sustainable economy around it
- Large contribution to the „Energiewende“
- Climate adaption allowing to save the Wadden Sea and to keep the people safe

Part of a solution?

Two different routes for the cables connecting the planned offshore wind farms west of Schleswig-Holstein with the grid were not necessary.

To reduce the impact on the National Park the plan for the northern one was cancelled.

For the southern one altogether four DC-cables were permitted as an exceptional case.



Part 3

Take Home Message

10 take home messages to reduce environmental impacts of offshore grids

1. Reduce number of cables: Better few with high capacity instead of many with small capacity, and preferably link interconnectors to the offshore grid

2. Reduce number of routes: bundling

3. Improve technology: Focus on HVDC and further development of this technology, e.g. multi access point

4. Minimize impact to the largest extent

5. Avoid protected areas

6. True compensation: If the use protected areas cannot be avoided, pay a fair share of the cable profit to finance protection work and services of the area

7. Reduce the need for offshore grids: Wind farms onshore are much cheaper (at least in Germany) and have more potential to create welfare for rural communities

8. Take away old stuff from sea ground: After end of cables life renaturalize

9. Dialogue processes: Should focus on the really important issues, and other solutions than those originally planned must be possible

10. Limits of Growth: Accept, that renewables (here: cables) also have an impact – minimize this, and accept that there must be also limits of growth for this (starts to become relevant in parts of Germany) and also no go-areas


Thank you for
your attention!
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