Energy Production and Nature Conservation in the Wadden Sea Region and the Wadden Sea: Future Perspectives

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Provocative question: Is nature conservation still important when it comes to the „Energiewende“? Are there too many conflicts between conservation and climate protection?

No. Conservation needs to be higher on the agenda than ever before. And conflicts can be solved. I hope this talk can contribute to this.
**Introducing the Wadden Sea…**

- 10,000 km², 4,500 of these are tidal flats
- 400 km² saltmarshes
- 10-12 million waterbirds
- 25,000 harbour seals, 2,500 grey seals
- 70,000 inhabitants (3.7 million in region)
- 10 mio tourists
- Among the most natural places in Western Europe

**Globally important ("Outstanding Universal Value") for…**

- Geological processes: very young and dynamic ecosystem
- Ecological processes: Productive inter-tidal ecosystem, many habitats, natural processes prevailing
- Biodiversity: e.g. the waterbirds

However, also as a model for transboundary cooperation on the protection of a joint nature area!

Therefore…

- Wadden Sea protected in all 3 countries
- National Parks in large parts of the area
- 2009 inscribed as World Heritage Site
“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.”

Vast challenge for the future of the Wadden Sea and the region nearby:

Implementing renewables (wind, but also others) sustainably, i.e. compatible with nature and landscape.

Preparing at the same time for climate adaptation (in particular concerning the increased sea level rise): Wadden Sea must grow with the sea!
Wadden Sea countries have decided in 2010: 
„Support the global and national efforts to mitigate causes of climate change at the regional level, by calling especially upon local and regional competent authorities and stakeholders, to work towards developing the Wadden Sea Region into a CO2-neutral area by 2030 or before, putting the focus on the special threats for coastal zones by global warming and sea level rise.“

There is already a very large contribution from the coast to the energy turnaround („Energiewende“).

This contribution will become much larger in the future.

However, where are the limits of growth?

How to detect what is really necessary for society, and what is just business?
In the following some **spotlights** on aspects of energy production in the **region around the Wadden Sea**:

- The old stuff (nuclear and fossil energy)
- Wind energy (onshore)
- Wind energy (offshore)
- Solar power
- Biomass (corn-based)
- Transmission (cables and overhead lines)
- Energy efficiency

**Spotlight:**
The old stuff
(nuclear and fossil energy)
The old stuff, lessons learned:
Nuclear power plants are about to go! And should do so as quickly as possible.
Coal fired power plants: New ones not required, many plans at the Wadden Sea coast were cancelled already. Avoid cooling water.
CCS: Would prolong the old stuff, cost a lot of extra energy, and would be quite risky.
Oil drilling: Not compatible with the goals of a protected area. Also, we cannot save the climate if all fossil carbon is being used. Better leave it in the ground.
Spotlight:
Wind energy (onshore)
Wind energy (onshore), lessons learned:

No problem between these birds and the windmills in the background. However, badly placed windmills disturb or kill more than just a few birds. And badly placed windmills can have a dramatic influence on the landscape.

Important: Proper distance to sensitive areas (for nature and for humans), technical measures to minimize impact, consider landscape in regional planning, not on the islands.

It is much better to concentrate the wind farms in ecologically less valuable areas than to distribute them everywhere.

Wind farms never have no effect - but the effect can be acceptable. Decision needed, where acceptable, and where not („Eignungsgebiete“). Local planning not enough, regional guidance necessary to avoid chaos.

„Citizen windfarms“ („Bürgerwindparks“) are often very good for local economies and for local acceptance.
Spotlight:
Wind energy
Harbour Porpoises have an acoustic orientation system and are very sensitive to loud noise. The pile driving of offshore windmills may cause damage for them in considerable distances if not mitigated.
The German Federal Minister for Environment, Peter Altmaier (on the right), gets information on pile driving noise and harbour porpoises during a visit at the Wadden Sea, 19 Aug 2012.

Breeding seabirds on Helgoland. Except for breeding, these birds are always on sea and need the habitat there.
Some seabird species are very sensitive to disturbances.

Bevor they migrate in large numbers over the North Sea and the Baltic, small landbirds wait for good conditions. Many of them migrate during the night.
If the birds face bad weather during mass migration nights, very many could collide with offshore installations.
Wind energy (offshore), lessons learned:

Pile driving noise must be minimized, and avoided in the future.

Bird collisions must be minimized, e.g. by distance from coast and technical measures. Research needed.

Avoidance of sensitive areas to protect seabirds.

Safety installations, tugs and surveillance: Risk for shipping accidents must not increase.

In Germany, more offshore wind farms are planned and applied for than actually needed and acceptable for the marine environment.
Solar power, lessons learned:

On agricultural land, much higher energy production per hectare, when compared with biogas (e.g. from corn), and probably much less ecological damage.

Problem: Many roofs are built just for solar panels, because in Germany solar power is better paid when it comes from a roof than from agricultural land.

Overall, only few problems are caused by solar power.

Spotlight:
Biomass (corn based)

Transition of protected grassland to a corn field
Biomass (corn based), lessons learned:
Large scale damage to coastal landscape, the ecology and the groundwater.
Should be stopped in the present form, future focus more on „leftovers“ and on only combined use of storage, electric power and heat.

Spotlight:
Transmission (cables and overhead lines)
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."
Two different routes for the cables connecting the 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 route was cancelled. For the southern route altogether four DC-cables were permitted as an exceptional case.

Transmission, lessons learned:

Impact by **cables** crossing the Wadden Sea: Large scale construction. Repeatedly, if cables are damaged or natural dynamics expose them. Mudflats getting heated, possibly causing a change of species community along the cables. Wilderness areas get interrupted by industrial installations.

Mitigate this impact: Cable bundling on as few as possible routes, high capacity DC cables. Buried to an extent that risk of exposure and effects of heating are minimal, routing and construction as less damaging as possible, and comprehensive „ökologische Baubegleitung“. Limit on the total number of cables!

On land, large impact by **overhead transmission lines** on landscape, birds, people. Technology to use cables instead are almost state of the art. Why not use the same technique as for the connection of offshore wind farms also on land? If this would really not be possible in time, then at least compensation: Change lower voltage transmission lines into underground cables.
**Spotlight: Energy efficiency**

**Energy efficiency, lessons learned:**

Efficiency measures: Still as much to do as everywhere.

Specific for the Wadden Sea:

Reduce climate footprint in tourism (e.g. more public traffic, slower ships, less air traffic to the islands).

Positive example by climate friendly places: e.g. Kreis Nordfriesland, Dutch Wadden Sea Islands, Island Pellworm, Island Juist. However, much care is needed on the islands, energy production there must not hurt the special nature and landscape.

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**Energy Transition in the Wadden Sea: Take Home Message**

The Wadden Sea is a protected area (National Parks and others, World Heritage Site). It is already a role model for conservation, with a lot having been achieved, but also a lot still to do. Clearly, no energy production should be allowed within the protected area.

The region around the Wadden Sea should be a role model for a „Climate Protection Region“. There should be a sustainable implementation of renewables on a large scale. However, this also means very good planning and limits of growth for them. Unsustainable activities such as fossil and nuclear energy use should be phased out.

Integrating these two, the Wadden Sea Region will consist of a well protected unique nature area and a climate protection region around it. A region in which people like to live and that they can be proud of. Actions towards climate adaptation allow us both to save the Wadden Sea from erosion driven by sea level rise and to ensure the safety of the people.
Thank you for your attention!