



# Use of offshore wind energy in the German North and Baltic Sea – Climate protection versus biodiversity?

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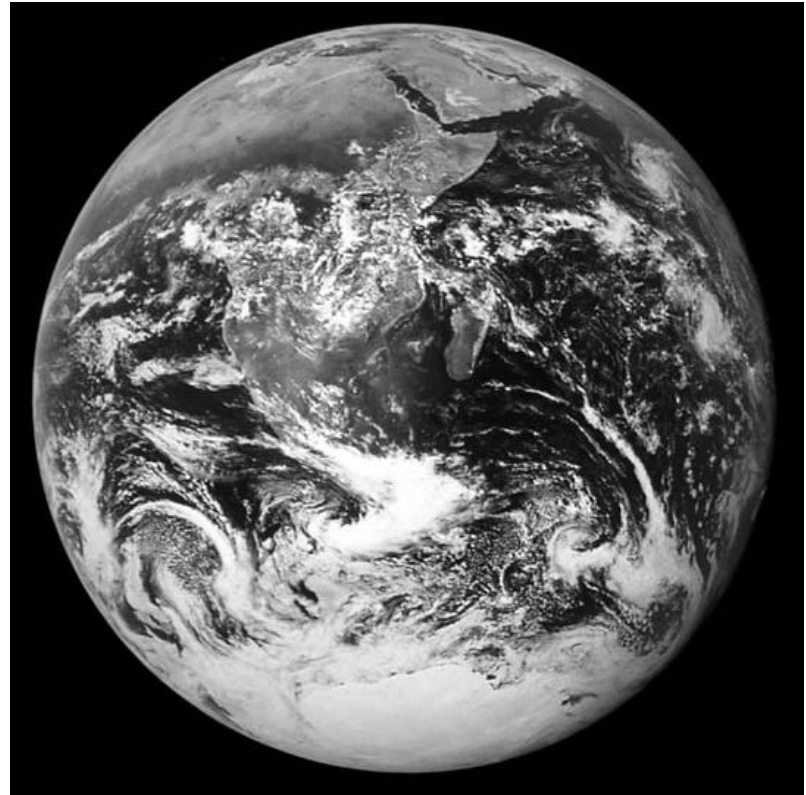
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# Introduction

**Climate protection!**



# Introduction



## **Mr. Trittin, Federal Minister for the Environment in Germany:**

„By 2030 wind energy could account for 25 % of the German energy consumption (1998),  
15 % of which could be produced by offshore wind farms.“

# Introduction

**Climate  
protection?**



**Biodiversity?**

# Introduction

„The Strategy of the German Government on the use of off-shore wind energy“



**Clima  
protection!**

**Biodiversity!**

# Content

- 1. Key elements of energy policy in Germany**  
national goals
- 2. Policy instruments for promoting offshore wind energy**  
Renewable Energy Sources Act, Strategy of the German Government, research and development
- 3. Recommendations**  
solving the divergence between climate protection and biodiversity
- 4. Outlook**



# Energy policy in Germany

## ...energy supply

### **Future-orientated energy supply:**

- conservation of the environment and resources, esp. climate protection
- economic efficiency for producers and consumers
- securing the energy supply





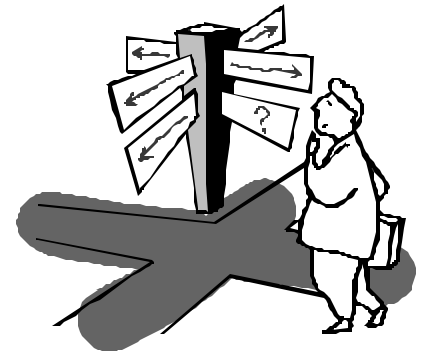
# Energy policy in Germany

## ...new direction

- massive expansion of renewable energies
- marked improvements in energy efficiency and economical use of energy
- phasing out nuclear technology and its attendant risks

<http://www.bmu.de/de/800/js/base/>

<http://www.erneuerbare-energien.de/1024/>







# Policy targets of the German Gov. ...in the energy sector

- **short-term target (2010):**
  - share of renewables in electricity generation 12.5 %
- **medium-term target (2020):**
  - share of renewables in electricity consumption 20 %
- **long-term target (2050):**
  - share of renewables in total energy supplies 50 %



# Policy targets of the German Gov. ...for climate protection

- **long-term target (2050, global):**
  - reduction of 80 % in emissions by the industrialised countries
- **medium-term target (2020, Germany):**
  - 40 % of Kyoto gas emissions





# Policy targets of the German Gov. ...competitiveness of renewables

- balanced mix of fossil and renewable energies
- Renewable Energy Sources Act
- market incentive programmes for renewables
- research and development for renewables





# Renewable Energy Sources Act

## **Obligations on network operators:**

- connect to their grids installations generating electricity from renewables
- purchase all of the electricity produced from these installations as a priority
- pay fixed rates for the electricity

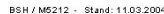
# Strategy of the German Gov. on the use of off-shore wind energy



To reach the aims of the German Government offshore wind power plays an important role in terms of climate protection.



## Nordsee - Offshore-Windparks (aktuelle Planungen)



# Strategy of the German Gov. on the use of off-shore wind energy

**Climate protection?**



**Economic viability?**

**Biodiversity?**



# Strategy of the German Gov. on the use of off-shore wind energy

- **revised Federal Nature Conservation Act**

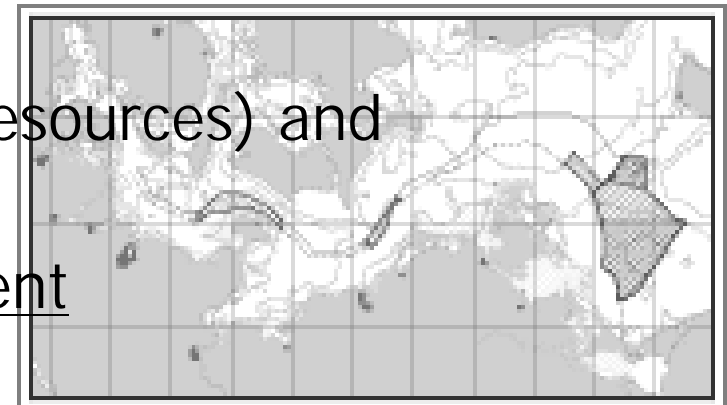
- protected areas and suitable areas

- **licensing procedure according to the Offshore Installations Ordinance**

- navigational, environmental protection and nature conservation issues

- commercial (fisheries, mineral resources) and military uses

- Environmental Impact Assessment



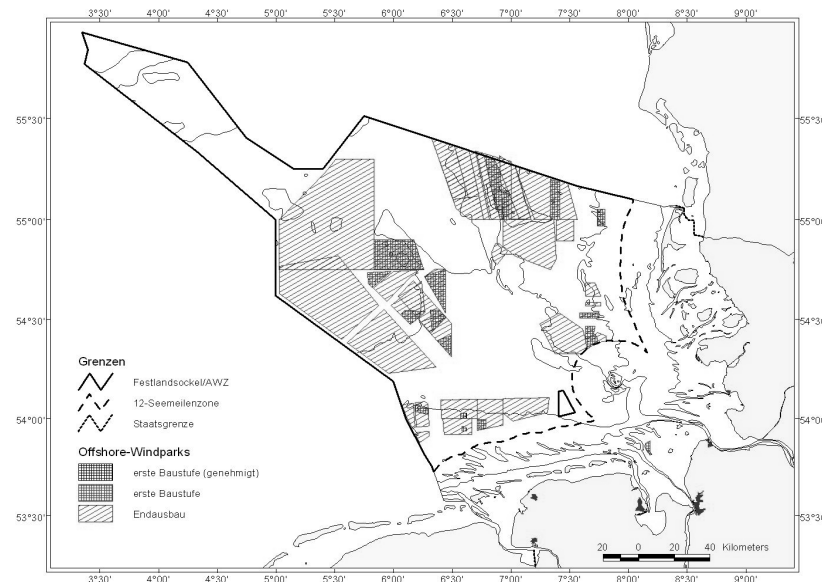




# Strategy of the German Gov. on the use of off-shore wind energy

- **gradual expansion**
- **accompanying ecological research**
- scientific research
- research to adopt esp. the EIA to the special conditions in the EEZ

Nordsee: Beantragte Offshore-Windparks





# Accompanying ecological research

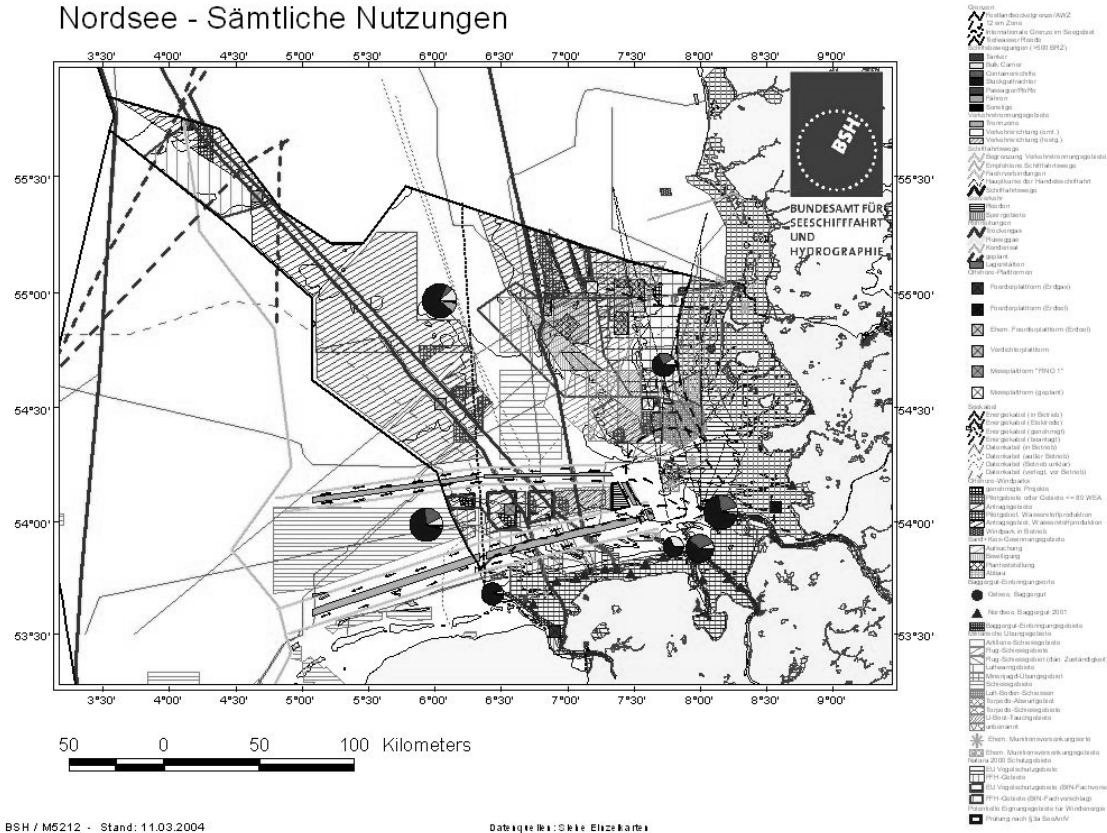
- large-scale and long-term interference
- lack of practical experience
- lack of definite projections for the environmental impacts
- Investment Programme for the Future
  - technical research
  - research related to nature conservation and environmental protection



# Accompanying ecological research



## Recommendations on solving the conflict between climate protection and biodiversity





## Recommendations on solving the conflict between climate protection and biodiversity

**Aim:** to develop **EIA**, Assessment according to the Habitats Directive and SEA that

- an effective application

**...as well as**

- an optimised consideration of the needs of the marine environment

**...are supported!**



[http://www.tu-berlin.de/fb7/ile/fg\\_lbp/forschung/fp%20offshore.htm](http://www.tu-berlin.de/fb7/ile/fg_lbp/forschung/fp%20offshore.htm)

[http://www.tu-berlin.de/fb7/ile/fg\\_lbp/](http://www.tu-berlin.de/fb7/ile/fg_lbp/).



## Recommendations on solving the conflict between climate protection and biodiversity

- **Offshore Installations Ordinance**
  - endangerment of the marine environment or
  - endangerment of the bird migration
- **“Standard Programme for environmental Examination”**
  - EIA procedure
  - precautionary principle



## Recommendations on solving the conflict between climate protection and biodiversity

offshore wind farms'  
impacts



marine environment and  
its specific sensitivity



**evaluation of the significance of impacts on  
the marine environment due to offshore wind  
farms**



# Recommendations on solving the conflict between climate protection and biodiversity

## **Main complexes of adverse effects:**

- displacement and/ or collision of seabirds
- barriers and/ or collision of migrating birds
- harassment and/ or displacement of harbour porpoises due to construction noise
- harassment and/ or displacement of fish due to dispersed sediments, vibrations and/ or electromagnetic fields
- marine pollution due to the collision of ships
- visual impacts on the landscape
- interactions and cumulative effects





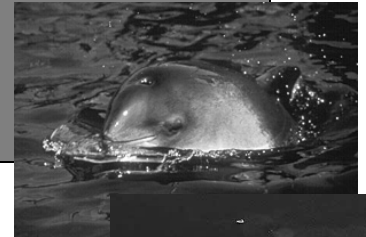
# Recommendations on solving the conflict between climate protection and biodiversity

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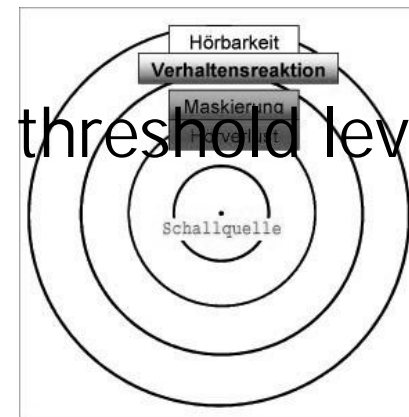


# Recommendations on solving the conflict between climate protection and biodiversity



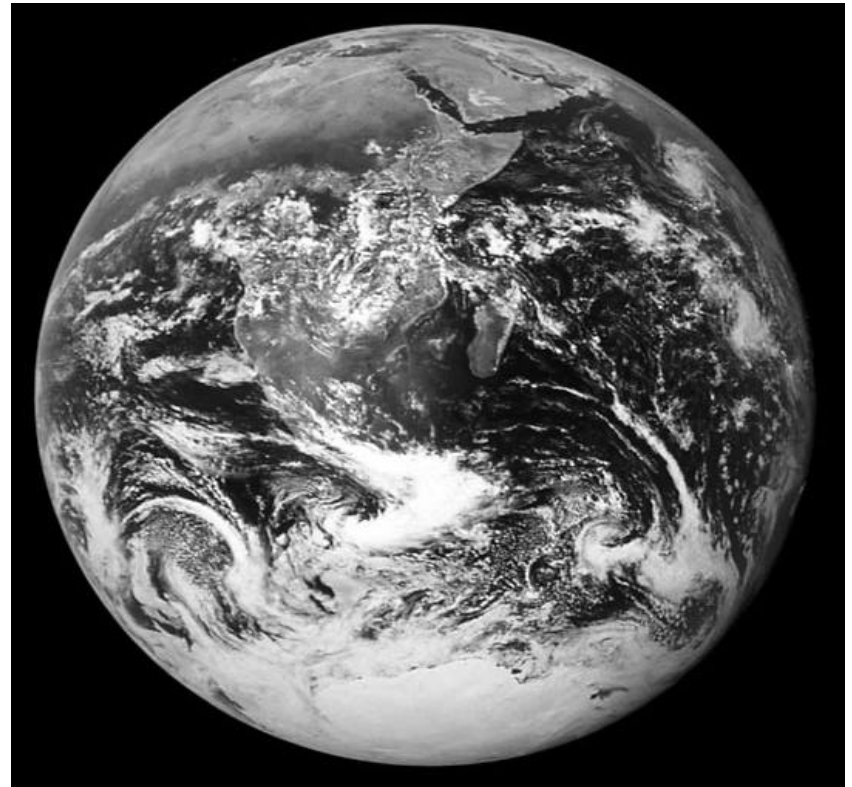
## Relevant criteria for the evaluation:

- excessive sensitivity of hearing
- pile construction noise
- masking of acoustic signals (several reactions of behavior, e. g. escape and/ or disturbance of communication)
- lasting adjustment of the hearing threshold level (loss of orientation, death)



# Recommendations on solving the conflict between climate protection and biodiversity

But where to fix the limit to cope with climate protection as well as biodiversity?



# Recommendations on solving the conflict between climate protection and biodiversity

## **Process of discussion between biologists, planners and politicians with the aim to develop**

- approaches of evaluation
- criteria of evaluation
- indicators of significance

## **...to specify the undetermined terms to permit or deny an application:**

- endangerment of the marine environment
- endangerment of the bird migration

# Outlook – Climate protection versus biodiversity?

**Climate  
protection?**



**Economic viability?**

**Biodiversity?**



# Outlook – Climate protection versus biodiversity?

## Strategy of the German Government on the use of off-shore wind energy:

- improvement of the legal situation
- gradual expansion
- **accompanying ecological research**

- outcomes not self-explanatory applicable for the licensing procedure
- **TRANSFORMATION and CONCERTED ACTION!**