



# Offshore Wind Power & Environment WWF Perspective

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# Structure

- Climate Change
- New WWF 2020 Scenario! & Wind development
- WWF Position on wind (on and offshore)
- Conclusions





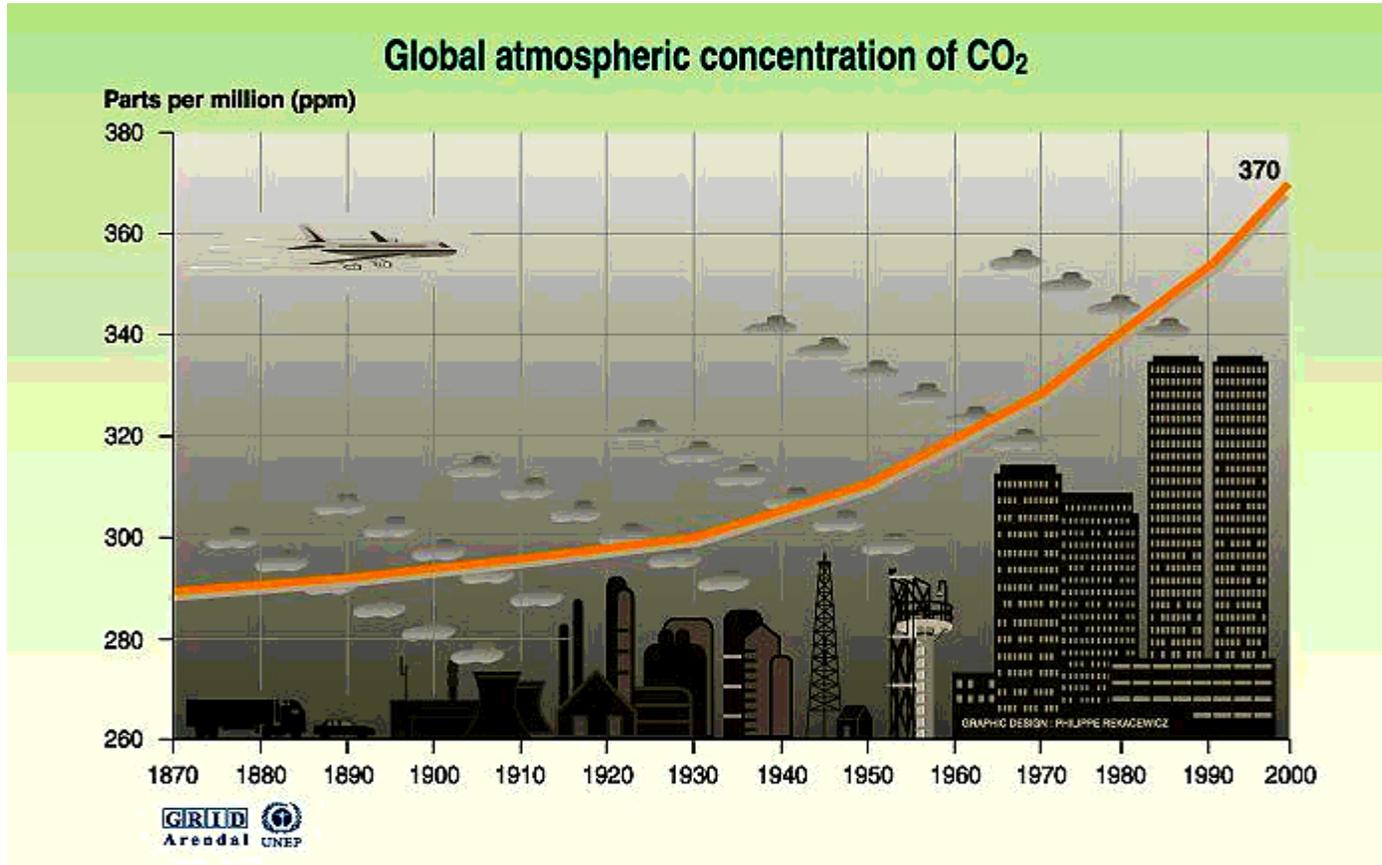
## The Climate Change team at WWF

- 60 people working on impacts, adaptation and mitigation
- North-South representation: from North America to EU, from Russia to China, from South Africa to Brazil
- Economists, scientists, campaigners and policy experts
- WWF European Policy Office
  - Energy Efficiency
  - Renewable Energies
  - ETS
  - International Climate Negotiations





# Rise in CO<sub>2</sub> concentration 378 ppm in 2004

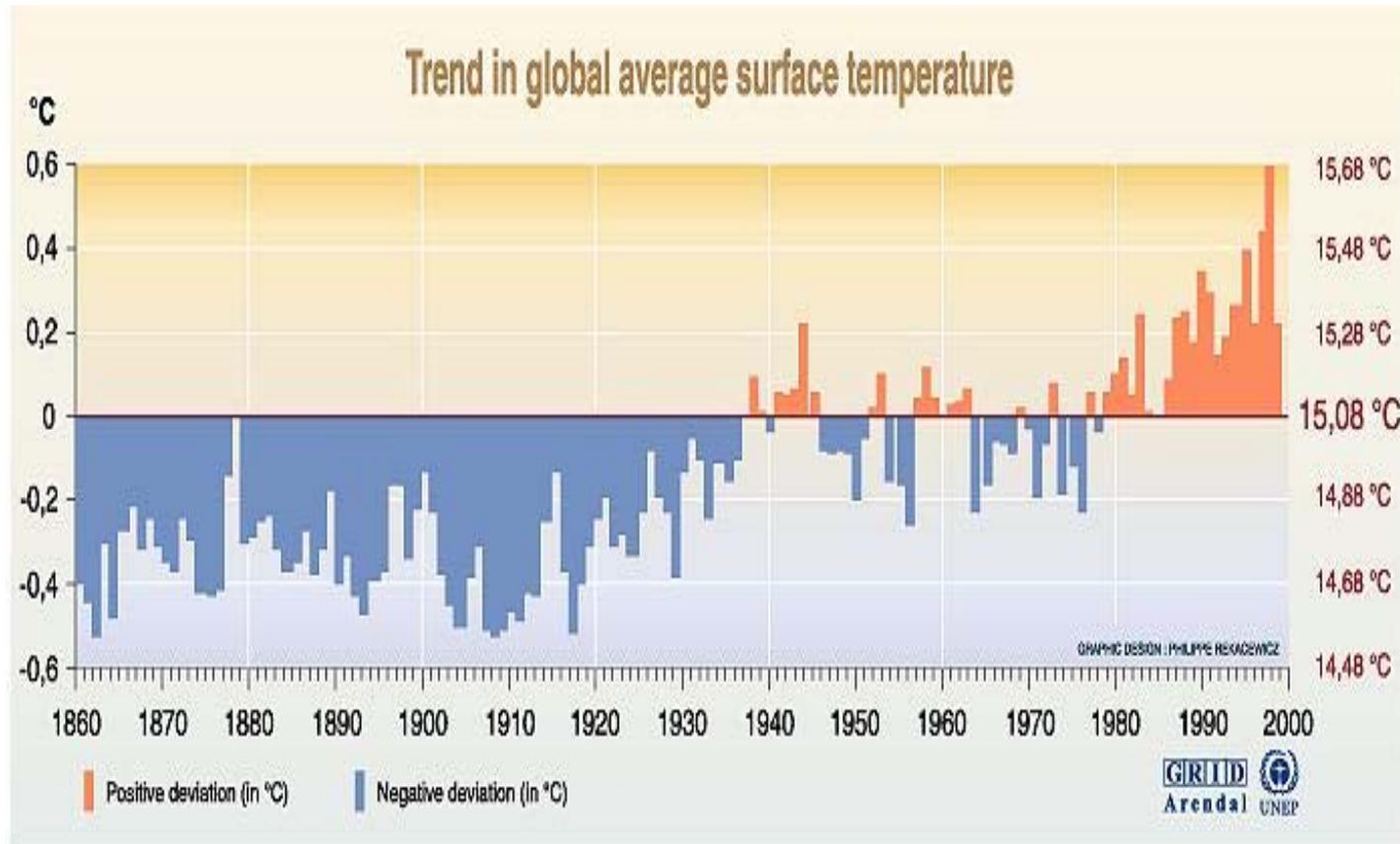


Sources: TP Whorf Scripps, Mauna Loa Observatory, Hawaii, Institution of oceanography (SIO), university of California La Jolla, California, United States, 1998





# Global temperature: 0,6°C above pre-industrial

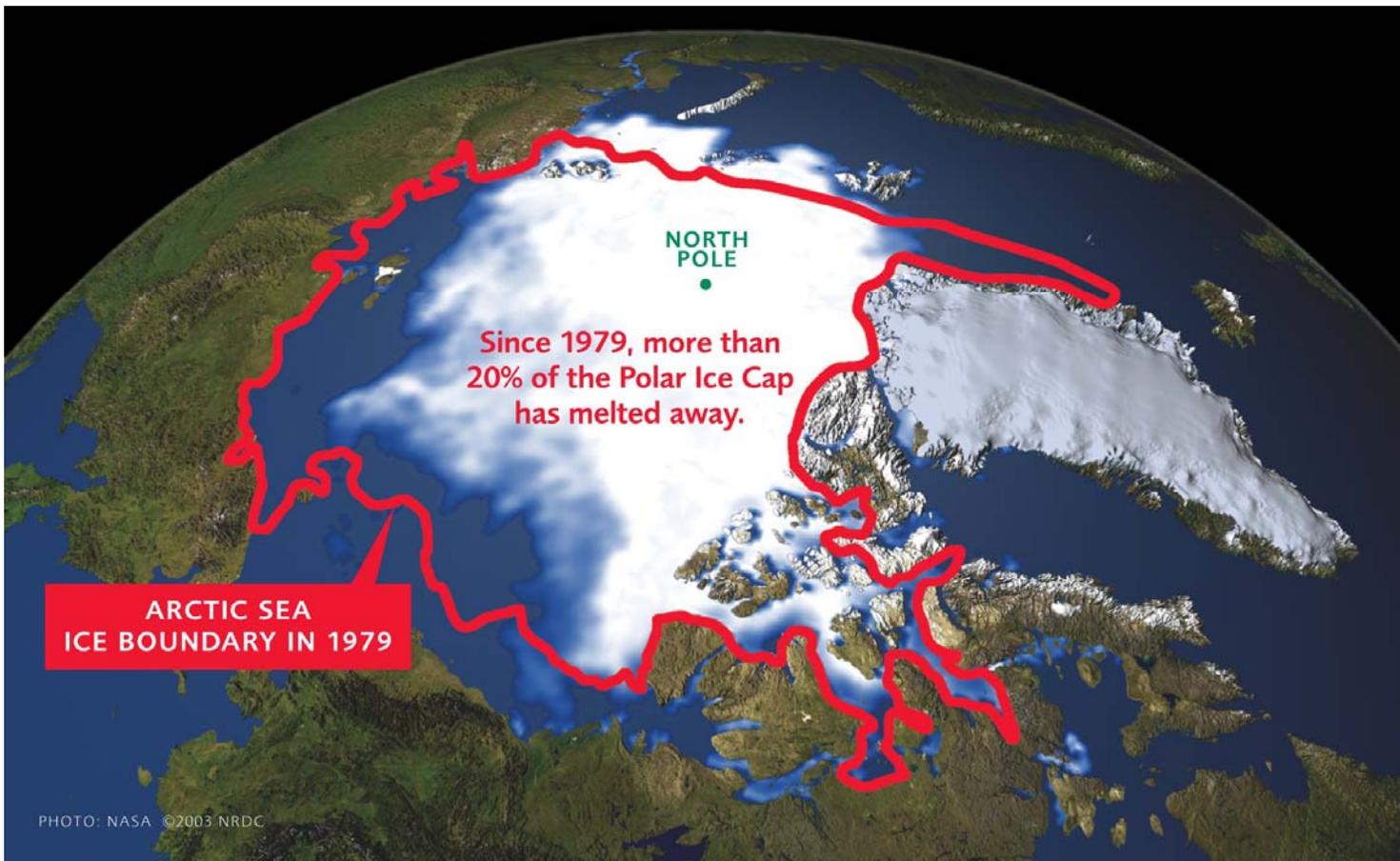


Sources: School of environmental sciences, climatic research unit, university of East Anglia, Norwich, United Kingdom, 1999.





# Arctic in 2004: 1,8°C above pre-industrial could rise by 10°C by 2100





## Observed changes (+0,6°C) Exeter, February 2005

- *90% globe's glaciers retreating since 1850*
- *Northern hemisphere snow cover decreased by 10% since 1966*
- *Sahel: loss grassland & acacia; loss flora/fauna, shifting sands*
- Europe: northward migration plants; disappearance of species from Southern Europe
- Spring phenology advanced by 5 days
- Decreased alpine flora, migration to higher altitudes
- Japan: altered distribution of trees, butterflies, birds, insects
- WWF Himalaya report...





# Predicted changes

## Exeter, February 2005

- *+ 0,7°C: Africa's last tropical glacier Kilimanjaro lost*
- < 1°C: coral reefs at high risk
- < 1°C: high risk to richest floral area in the world
- + 1°C: 10% global ecosystems transformed; only 53% wooded tundra remains stable, loss cool conifer forest. Ecosystems variously lose between 2 to 47% of their extent
- *+ 1,5°C: onset of complete melting of the Greenland ice: when completed, 7 m of additional sea level rise; all coastal regions and many world cities inundated*
- + 2-3 degrees: collapse of amazon rainforest replacing forest by savannah...





## Is there a solution?

The global scientific community agrees on the following:

*Keep global temperature growth below 2° C above pre-industrial times to prevent disastrous climate change*

This means that:

- no later than 2020, **global emissions have to fall**
- = industrialised nations have to cut GHG by 60 - 80%





**NEW!!!**

## WWF Scenario 2020 for EU 25

- 33% GHG emission reductions compared to 1990
- In the energy sector:
  - 56% CO<sub>2</sub> emission reductions in electricity, steam and heat production compared to 1990
  - 0,4% energy demand reduction yearly!!
  - 25% renewable energy and 38% renewable electricity (1273 TWh)
  - wind power: from 0,8% (in 2000) to 10,8% (in 2020) of electricity generation - 102 GW onshore, 51 GW offshore. Wind electricity generation will reach 355 TWh in 2020, of which 203 TWh onshore and 152 TWh offshore ( = conservative estimation; a production of 444 TWh (EREC 2005) would be possible).





## WWF Position (Extract 1)

- In comparison with fossil and nuclear the environmental impacts associated with wind power are small!
- The positive benefits of developing renewable energy (e.g. greenhouse gas emissions reduction) have to be balanced with any short-term negative environmental impact the development may have.
- The development of wind farms should be framed within regional and local spatial planning guidelines, with:
  - wind targets





## WWF Position (Extract 2)

- no-go areas (e.g. in important bird nesting grounds or within identified bird migration routes, IUCN 1 - 2 protected areas...) unless a comprehensive EIA clearly indicates that the proposed development will not cause adverse effects on the integrity or conservation objectives of statutory protected area.
- Research is needed to obtain more detailed information on the precise impacts of large-scale offshore wind. However, the development of offshore wind farms should not be unduly delayed until all potential problems have been identified and solved.





## Conclusions

- Offshore wind is a necessary tool to fight climate change
- Balance positive benefits and possible negative environmental impact - careful planning but...
- **No delay!** - several studies have looked at impacts with mainly positive results. These results will need to be confirmed in the future.





# Wake up time for Climate Change!



*Save energy?*  
[www.topten.info](http://www.topten.info)

*Green power?*  
[www.eugenestandard.org](http://www.eugenestandard.org)

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