

# MONITORING ENVIRONMENTAL IMPACTS OF OFFSHORE WIND FARMS IN THE BELGIAN PART OF THE NORTH SEA

## FUTURE MONITORING

Steven Degraer &

Ilse De Mesel, Matthias Baeye, Dick Botteldooren, Robin Brabant, Delphine Coates, Wouter Courtens, Elisabeth Debusschere, Luc Dekoninck, Veronique De Maerschalck, Yana Deschutter, Jozefien Derweduwen, Marisa Di Marcantonio, Valérie Dulière, Michael Fettweis, Frederic Francken, Jan Haelters, Piet Haerens, Kris Hostens, Rik Houthaeye, Jean-Sébastien Houziaux, Francis Kerckhof, Mieke Mathys, Alain Norro, Thierry Onkelinx, Jan Reubens, Bob Rumes, Marc Sas, Eric W.M. Stienen, Jan Vanaverbeke, Sofie Vandendriessche, Sarah Vanden Eede, Dries Van den Eynde, Marc Van de walle, Nicolas Vanermen, Gert Van Hoey, An Vanhulle, Vera Van Lancker, Timothy Van Renterghem, Hilbran Verstraete, Laurence Vigin and Magda Vincx.



LEARNING FROM THE PAST TO OPTIMISE  
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## CAREFUL ATTENTION NEEDED !

- Rationalisation of basic monitoring programme needed
  - Likelihood of impact detection
  - Meaningfulness of impact size
  - Representativeness of findings
- Continued investment in targeted monitoring needed
- Increased attention for cumulative impacts needed
- International scientific collaboration: the key to the cost/benefit efficiency !



## LIKELIHOOD OF IMPACT DETECTION

- Not detecting an impact  $\neq$  impact not being present !
  - Dependent on internalities and externalities
    - Internalities: research effort and sampling-induced variability
      - technical means to analyse, quantify and optimise
    - Externalities: natural variability and impact size
      - Informed selections to be made





## MEANINGFULNESS OF IMPACT SIZE

- Not all impacts are socio-ecologically meaningful !
- Example: “How big is big enough?”





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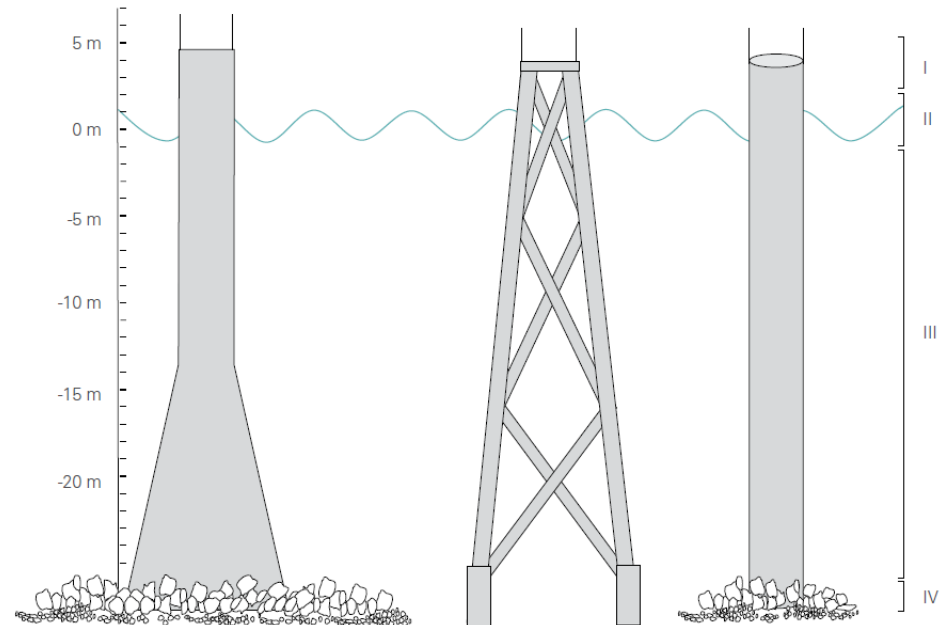
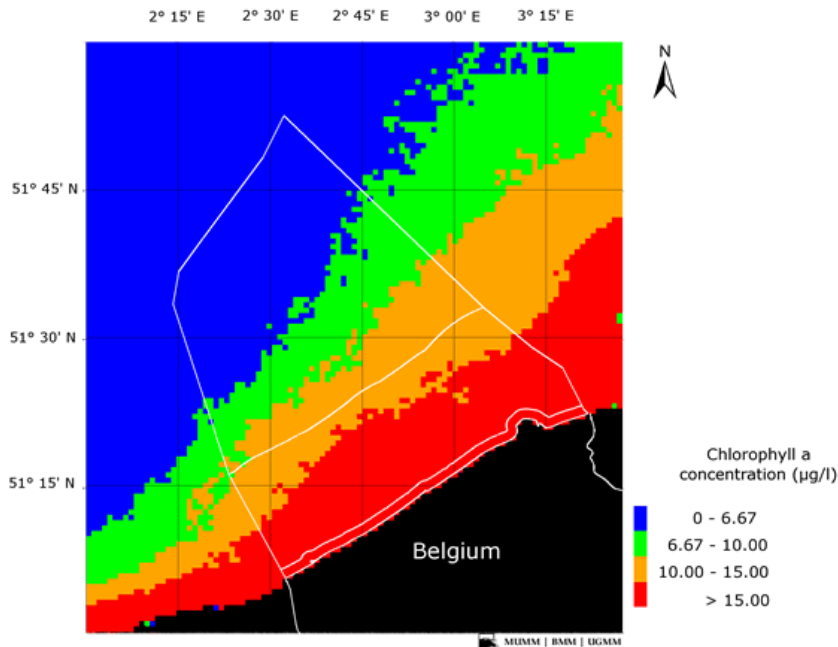
- Socio-ecological relevance
- Thresholds for sustainability
  - Inspiration from implementation of EU regulations

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## REPRESENTATIVENESS

- Not all study results can be extrapolated just like that !
  - Natural gradients
  - Foundation type



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## RATIONALISING BASIC MONITORING

- Resources restricted      well-deliberated decisions needed !
  - Workshop to be organised in 2014 to be implemented in 2015...

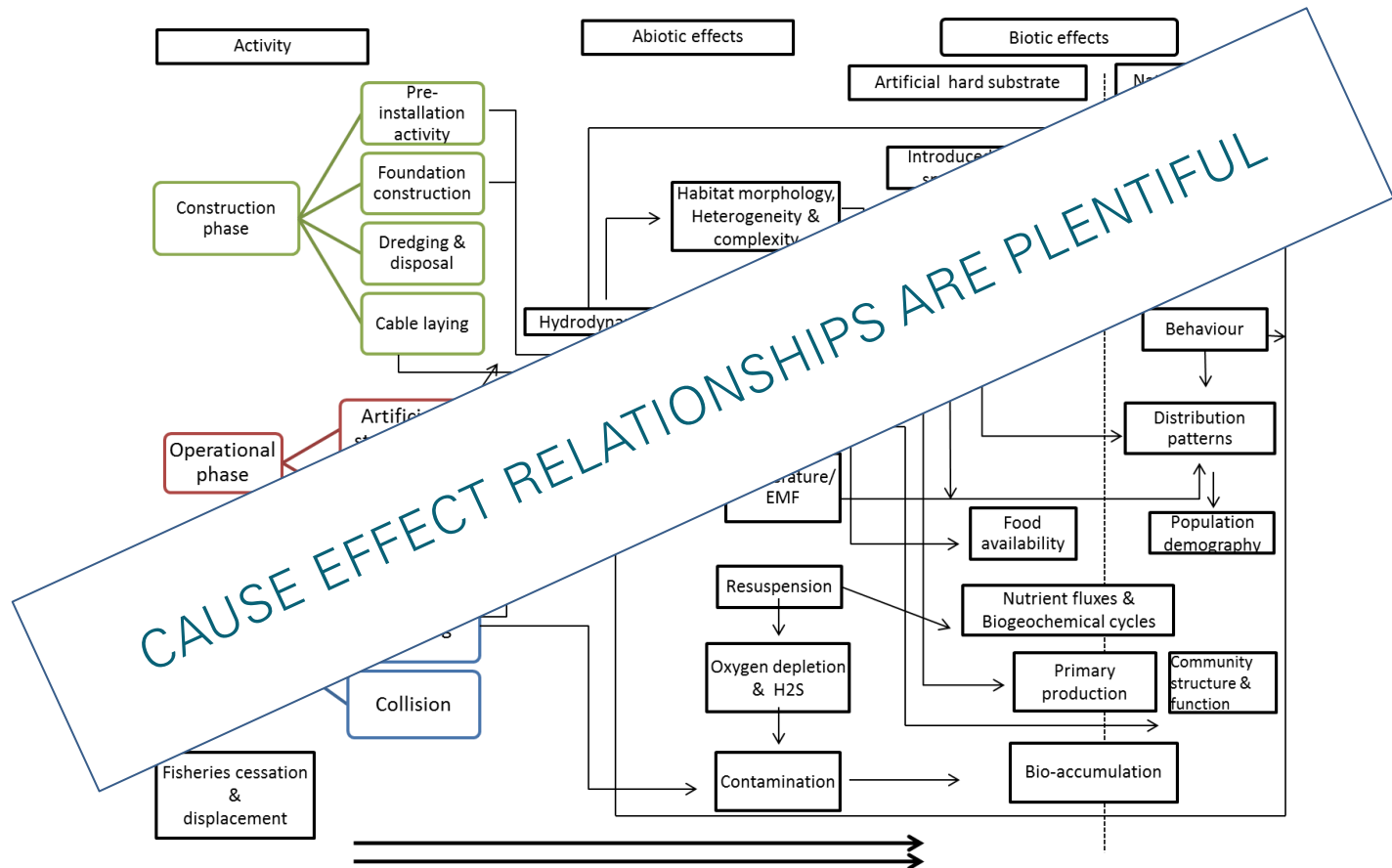


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## CONTINUING TARGETED MONITORING

- Understanding-focused to foster environment-friendly future wind farms





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## SELECTION OF TARGETED MONITORING

- Artificial reef effect
  - Local organic enrichment effects
  - Attraction-production for commercial species
  - Trophic interactions
  - Increased attention to the pelagic environment
- Operational noise effects
  - Harbour porpoise attraction
  - Fish larvae development



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## CUMULATIVE AND LARGE SCALE EFFECTS

- Cumulative effects
  - 109 turbines      530 turbines  
14000 turbines
- Context setting
  - Other human activities and their impacts...



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## INTERNATIONAL COLLABORATION !

The key the cost/benefit efficiency !

- A lot of work and lots of choices to be made: Let us work together !
- Avoid unnecessary repetition of basic monitoring
  - Similar types of habitat or foundation types, similar impacts
  - Single wind farm versus impacts at population level
  - Etcetera...
- Coordinated monitoring needed
  - Cross-border coordinative initiatives needed



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## VIEWPOINT FROM EXTERNAL SCIENTIFIC COMMITTEE BOARD...

Han Lindeboom,  
IMARES, NL



Dan Wilhelmsson,  
Stockholm University, SE



Andrew Gill  
Cranfield University, UK



Jennifer Dannheim,  
Alfred Wegener Institute, DE