

Albrecht Tiedemann

## Case Studies: Lessons Learnt

### “European Offshore Wind Farms”

European Offshore Wind Conference & Exhibition

4-6 December 2007, Berlin, Germany



## Outline of Presentation.

- About dena
- About POWER – **P**ushing **O**ffshore **W**ind **E**nergy **R**egions
- Recommendations:
  - Project Management
  - Authorities
  - Targeted Political Support





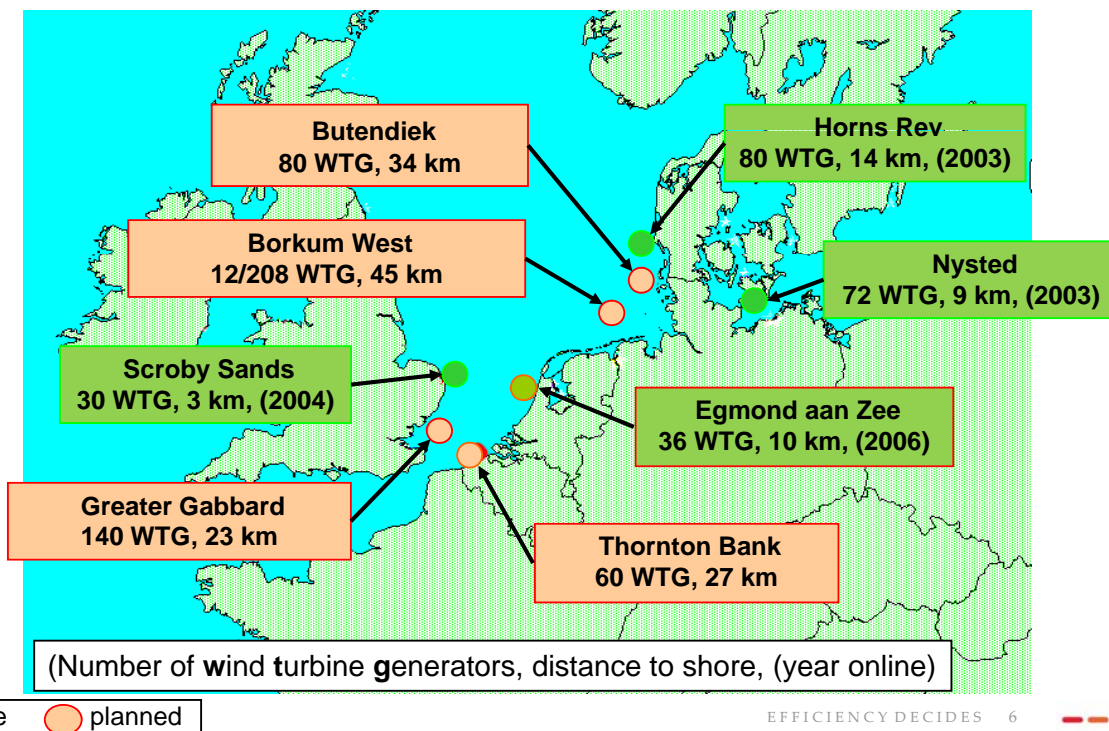


## Clients and Contractors.

- Clients:
  - Senator for Construction, Environment and Transport of Bremen
  - on behalf of INTERREG IIIB- Project “POWER – Pushing Offshore Wind Energy Regions”
- Contractors:
  - German WindGuard GmbH, Varel
  - German Energy Agency GmbH (dena), Berlin
  - University of Groningen (Faculty of Spatial Sciences)



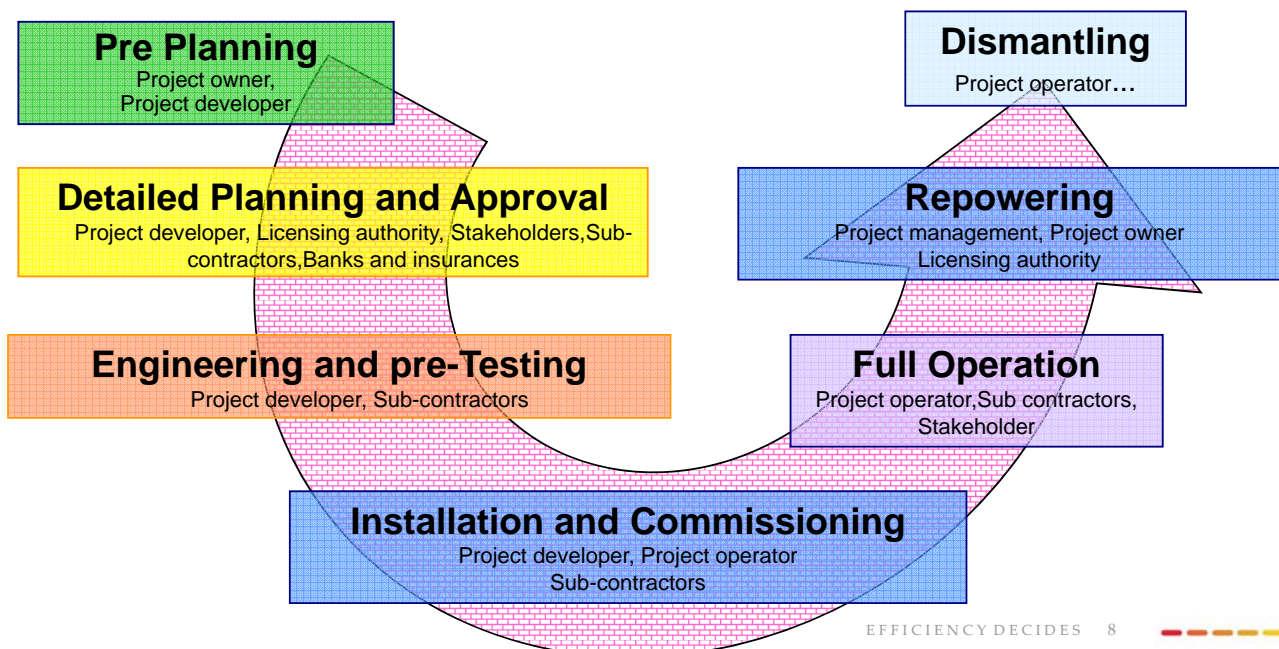
## Analysed Offshore Wind Farms.



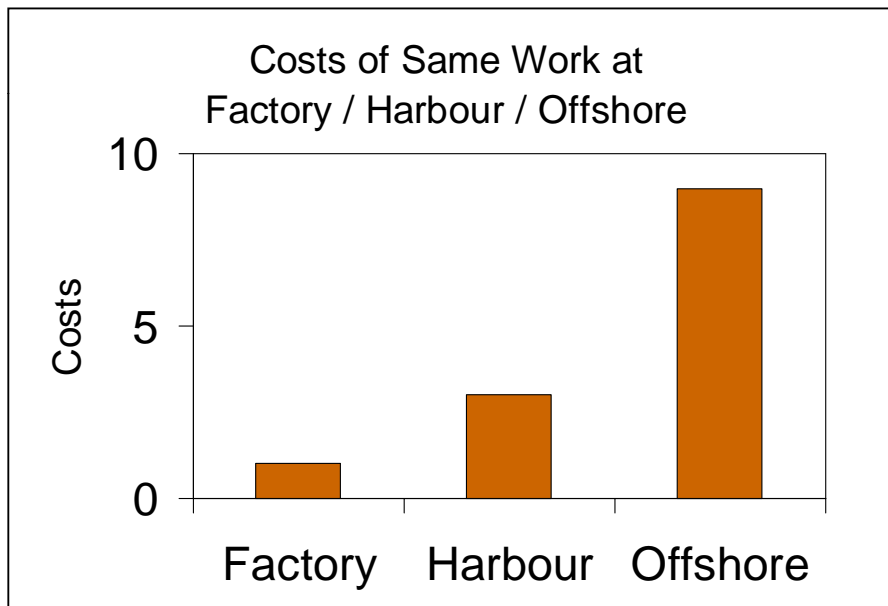
## Recommendations to Gain Public Acceptance.

- Public is interested in information
- Public acceptance is crucial for offshore wind farms
- Strategies for media and stakeholder involvement should be developed in the pre-project planning phase
- Recommendations to increase public awareness:
  - Project specific website-  
(e.g. Greater Gabbard, Horns Rev, Nysted, Butendiek, Egmond aan Zee and Thornton Bank)
  - Information centre-  
(e.g. Scroby Sands, HornsRev, Nysted, Thornton Bank)

## Sufficient Skills for Management of Large Projects.



## Reduce Work at Offshore Location.

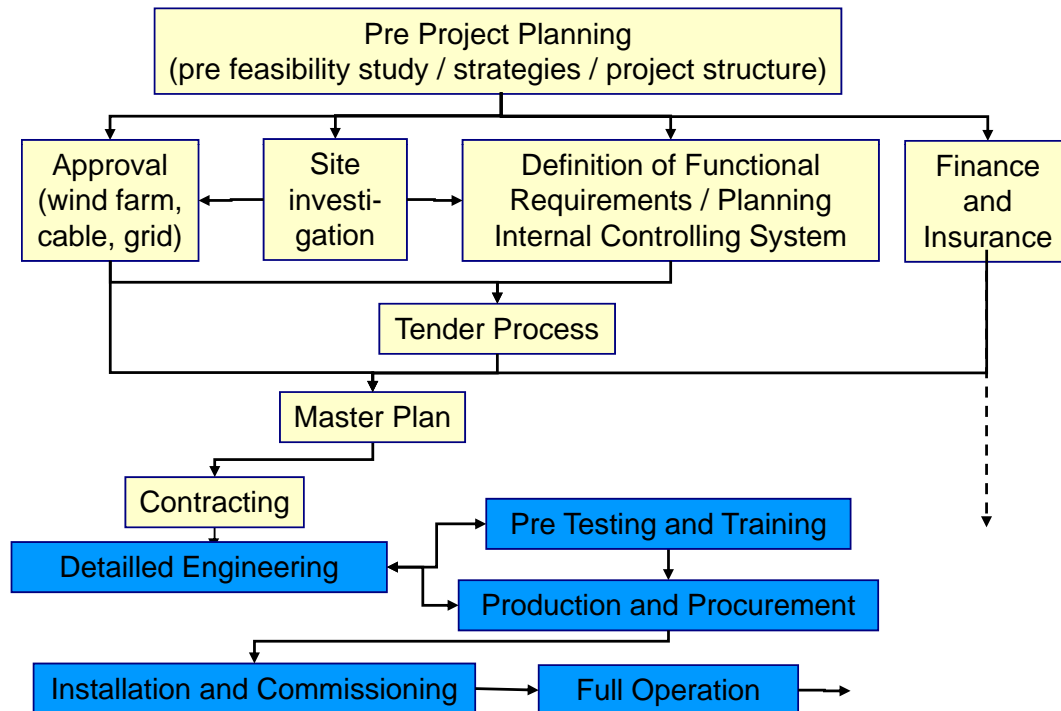


- Test and assembly in factory locations.
- Avoid offshore work location as much as possible.

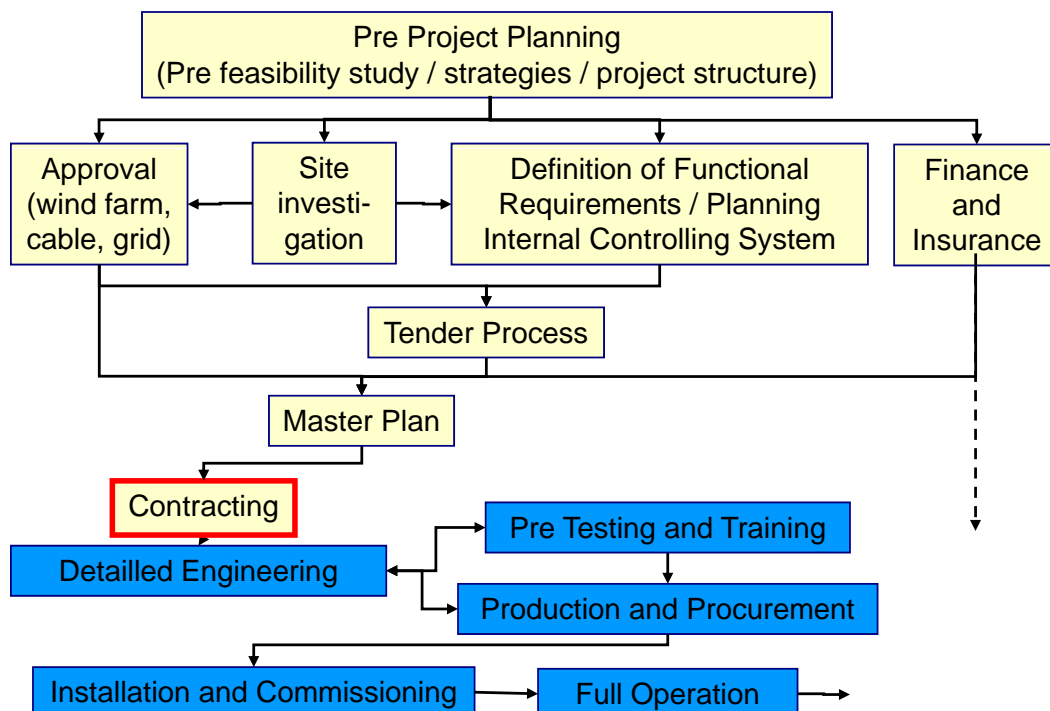
## Recommendations to Risk Management.

- Engineering, Procurement, Commissioning Contract (EPCC):
  - EPC contractor covers all risks (including risks for installation and for bad weather)
- Multi-Contracting (MultiC):
  - Client and contractors share risks
  - Client must have sufficient engineering skills for tender process
  - Client must be able to control and manage the complete process and interfaces.
- Expert's estimation: MultiC ~ 20 % cheaper than EPCC

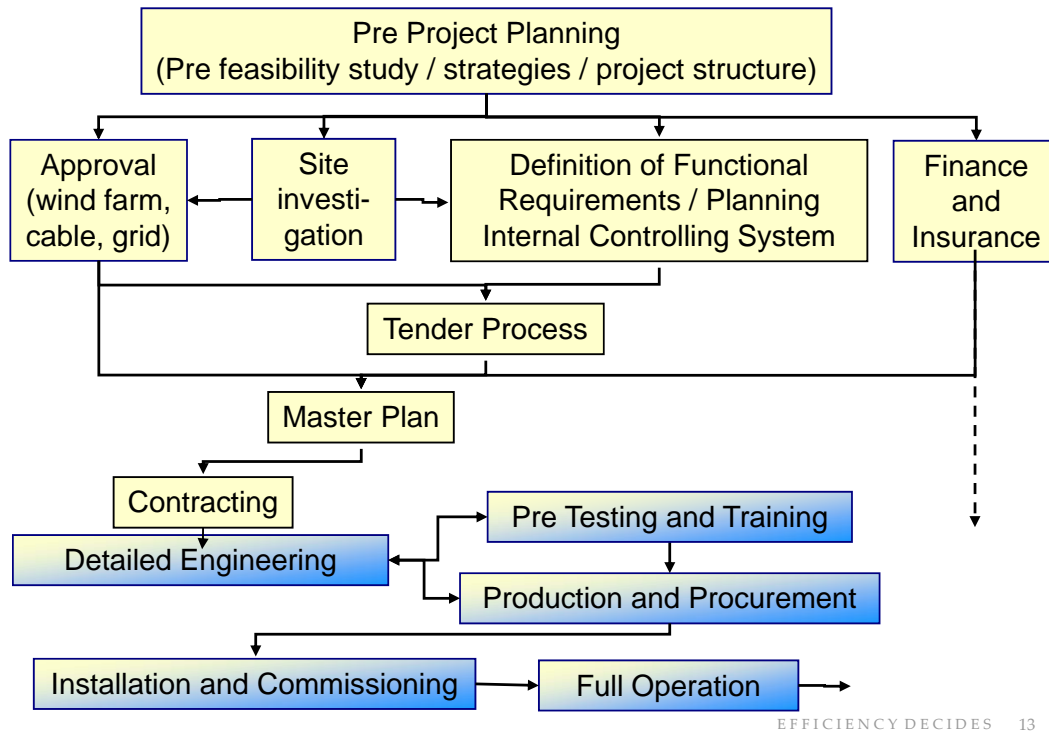
## Risk Management: EPC Contracting.



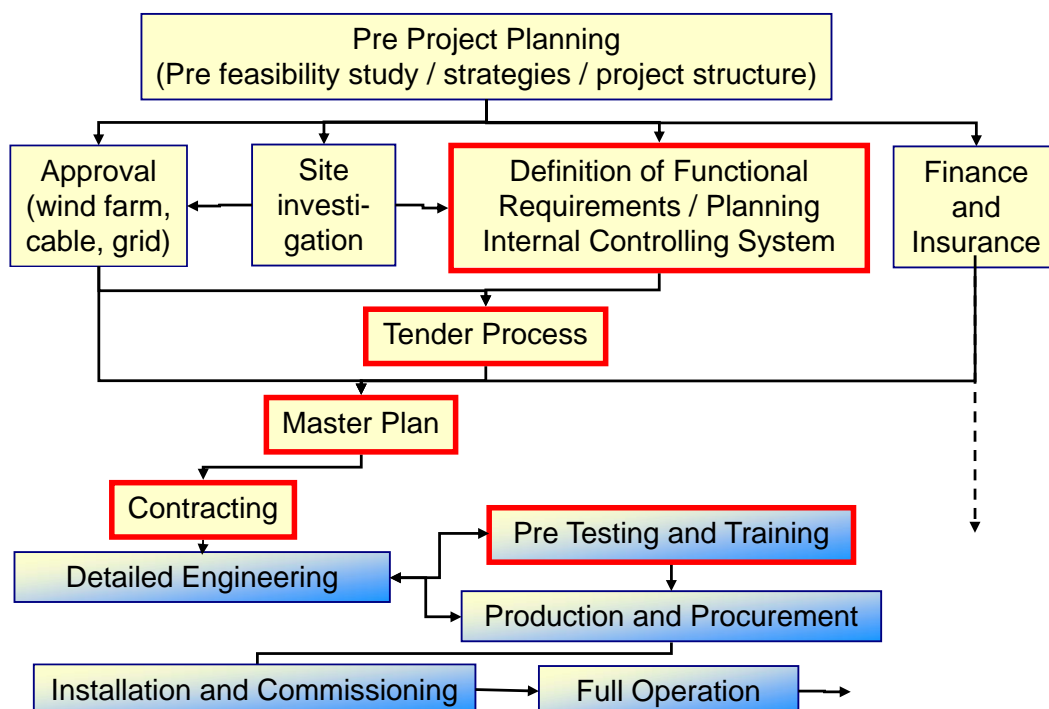
## Risk Management: EPC Contracting.



## Risk Management: Multi Contracting.



## Risk Management: Multi Contracting.



## Pre-Testing Before Start of Serial Production.

- Test ease of service and maintenance for main components in a full size model of turbine and tower
- Test access to wind turbine (full size model offshore)
- Small number of turbines must demonstrate a sufficient trial period (onshore or offshore)
- Evaluate experiences of tests



## Good Accessibility of Logistic Centre and Sufficient Space.

- Criteria to choose a harbour for logistics:
  - Ability to assemble main components close to or at quayside
  - Sufficient space at quayside (~1,000 m<sup>2</sup> per wind turbine)
  - Good accessibility by both sea and road (truck loads)
  - Ability to start vessel loading immediately upon arrival
  - Short distance to wind farm site isn't the most important aspect



## Recommendations to Spatial Planning.

- Pre-selection of offshore wind farm sites by authorities in the framework of a spatial planning process has advantages:
  - Less conflicts with competing land use
  - Less site investigations
  - Streamlined approval process
  - Higher level of planning safety



## Recommendations to Approval Procedure.

- Appointment of one single leading authority:
  - High value for both the planning authorities and the project developer
  - Approval process can be streamlined
  - Discrepancies can be avoided
  - Organizational effort can be reduced



## Political Recommendations.

- Offshore wind energy is a young business
- Offshore wind energy needs stable framework conditions to support its development
- Political support for offshore wind energy should target:
  - sufficient onshore and offshore test sites
  - coordinated licensing procedures
  - financial support for first projects
  - public acceptance



## Full Report.

Full Report in English-

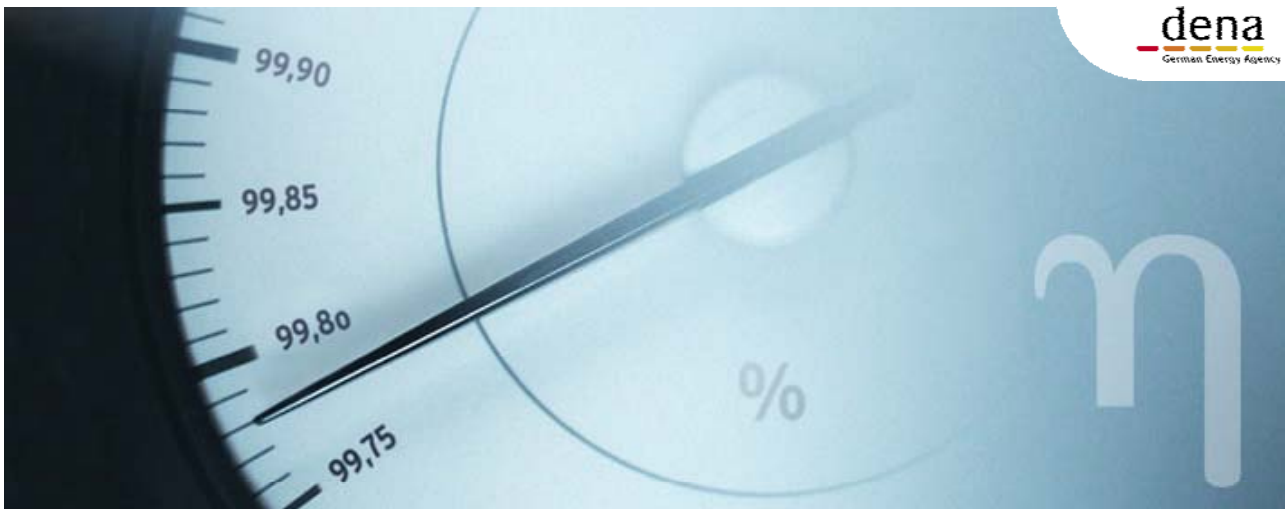
Summary in German and English-

Available at:

**[www.offshore-power.net](http://www.offshore-power.net)**

**[www.offshore-wind.de](http://www.offshore-wind.de)**





Efficiency decides.



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Thanks for your attention.

