

2013 IGERT International Trip

May 15 – 24, the Netherlands



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Students:

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Goals of the International Trip

- Learn about offshore wind energy research, development, and policy first hand.
 - The Netherlands have leading research facilities, existing offshore wind energy projects/planned developments, and proximity to a wide spectrum of the European offshore wind energy industry.
- Make contacts and develop a network for future research.
- Group bonding!



Itinerary

- Amsterdam
- TU Delft
- Egmond aan Zee
- Delta Works
- GE Wind Energy
- IMARES Institute
- EWEA & EU Energy Commission



Day 1: Amsterdam Bike Tour



Day 2: Amsterdam Meetings

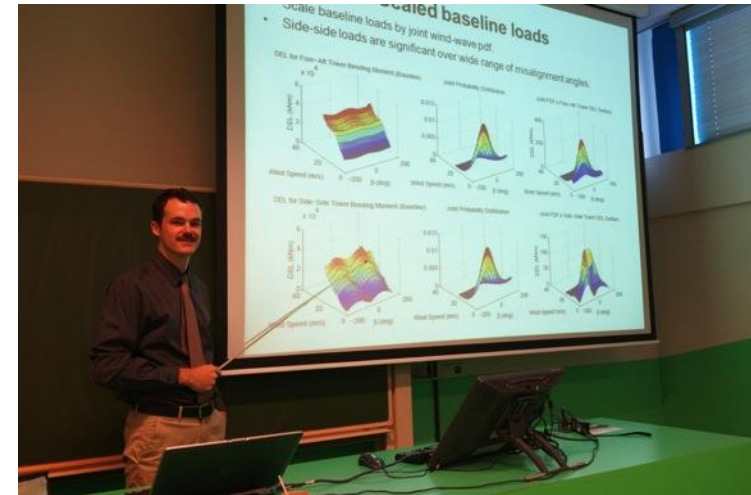
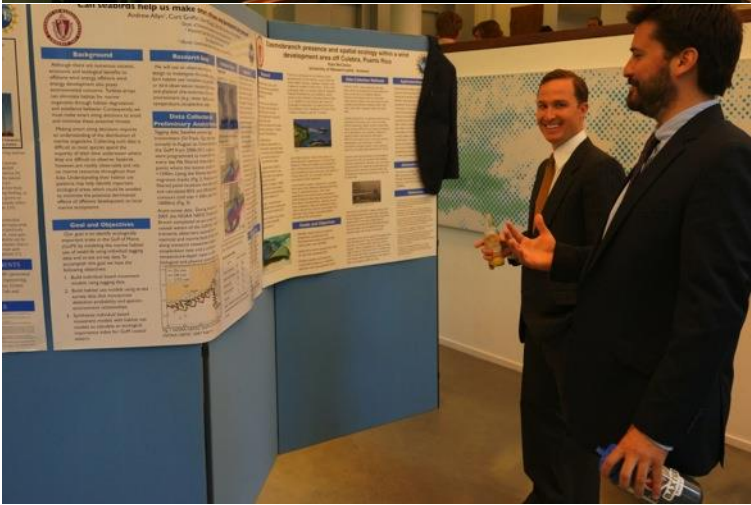
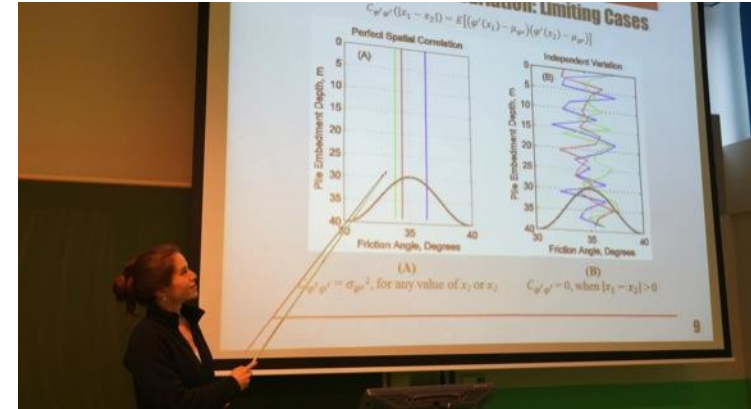
- Sustainability in Amsterdam
- Amsterdam Smart City



Day 3: Delft



Presentations at TU Delft



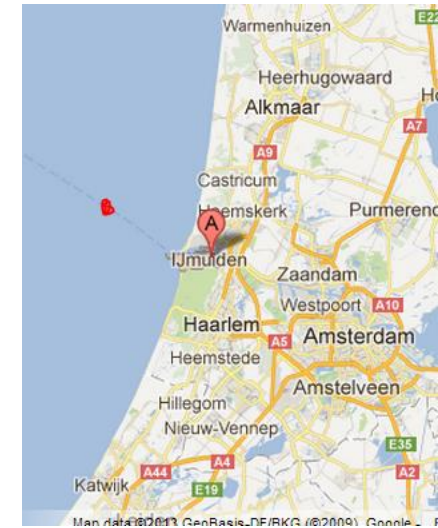
More Bike Rides!



Egmond aan Zee



- (36) Vestas V90-3MW turbines
- 10k offshore
- Seas were rough (~1.5m wave heights)...



Delta Works: Modern Wonder of the World

- Most of the Netherlands is below sea level
- System of dams, levees, dikes, etc. that control storm surges and flooding



GE Wind Energy: Salzbergen, Germany

- GE was one of the first companies involved in OWTs
 - Due to high risk and investment, they pulled out of offshore and do onshore only
 - In order to make offshore wind economically viable, they determined that much larger turbines are required (6MW+)
- Viewed assembly lines for RNA (no picture permitted) and learned about assembly processes



GE Wind Energy

Tour of training facility for wind turbine construction & maintenance workers



GE Wind Energy



Brussels, Belgium



EU Energy Commission

Robert Lorentz (policy officer – international affairs renewable energy policy)

- EU has goal of 20% renewable energy by 2020

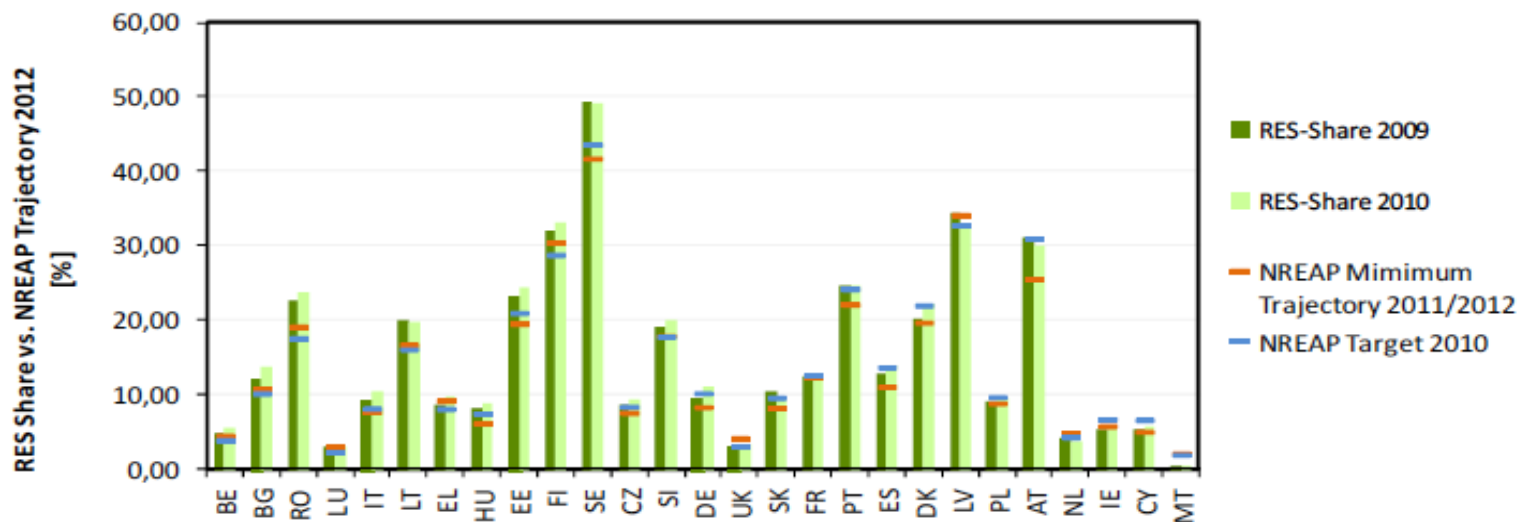


Figure 1. Actual RES Share in 2009 and 2010 vs. 2011/2012 minimum trajectory and 2010 NREAP target (%).

EU Energy Commission

Policy mechanisms:

1) Feed-in tariffs

2) Renewables Portfolio Standards

3) Tenders



European Wind Energy Association (EWEA)

Anne Bénédicte Ganachte (regulatory affairs advisor, offshore)

Athanasia Arapogianni (senior research officer, offshore)

- Offshore wind currently meets 0.5% of European energy consumption, and the approval rating is in the range of 80%
- 76% of future projects (globally) are 5MW or bigger
 - 39% of these projects are European, 8% are US
- Challenges
 - Regulatory uncertainty
 - Offshore grid deployment
 - Supply chain bottlenecks
 - Skills shortage
 - High risk perception



EWEA

Policy objectives:

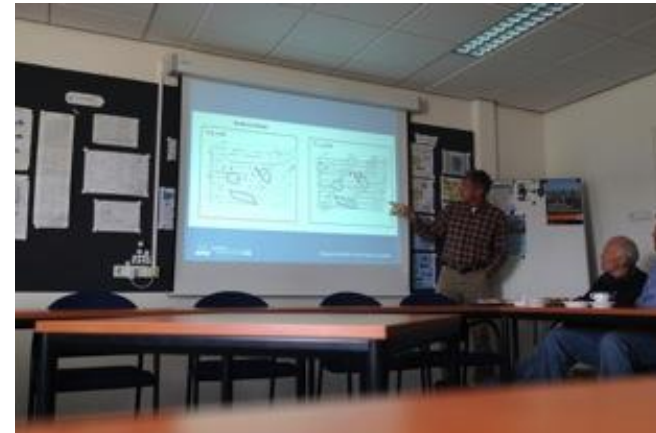
- North Sea offshore grid
- Maritime spatial planning
- EU industrial strategy
- 2030 renewables targets

Industry priorities:

- Building relationships between industry and banks
- Promoting offshore manufacturing and construction as an economic recovery mechanism for Europe.
- Building export market in Europe. Best opportunities for new offshore development may be in Asia.

IMARES Institute

- Learned more about the European system for environmental impact assessment
- All research results are in the public domain, but only after approved by the government
- Main environmental issues:
 - Pile hammering (not permitted from Jan 1 - July 1)
 - No research has been performed on decommissioning
 - Cumulative impacts
 - One project is not likely to have a significant effect, but if all the North Sea projects are built, they may have a cumulative impact





Thank you!



Questions?

