

Raising Acceptance for Offshore Wind Energy

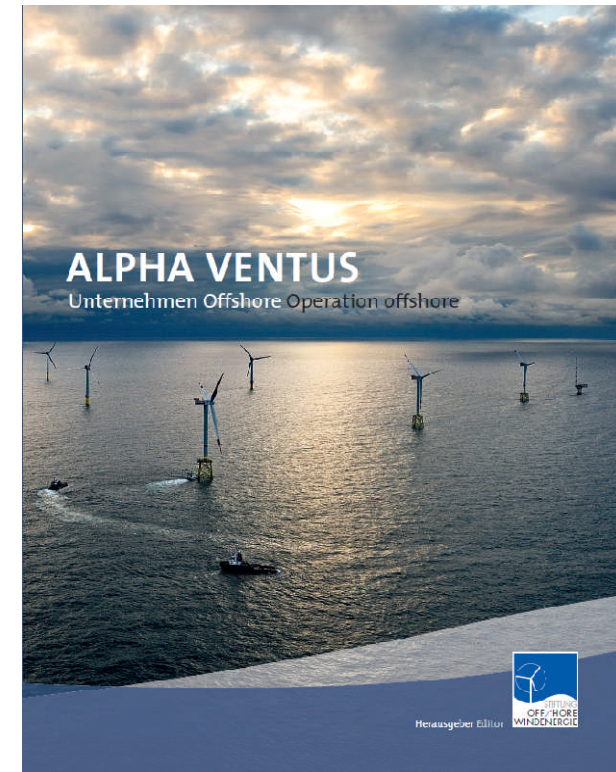
Touring Exhibition



Organised and Initiated by:
Stiftung OFFSHORE WINDENERGIE
(German Offshore Wind Energy Foundation)

Stiftung OFFSHORE-WINDENERGIE German Offshore Wind Energy Foundation

- Created in 2005
- Owner of the test site alpha ventus
- Promoting offshore wind in Germany
- Communication platform for politics, industry and R/D
- PR and mediation activities to overcome obstacles
- **Promotes public acceptance**



Starting Point

- Lack of public acceptance can be a major obstacle for the expansion of offshore wind energy (OWE)
- Providing information to the general public is crucial for success
- A new information concept about offshore wind (interactive, travelling along the coast)
- Reaching out to as many as possible (tourists and local population)



Key Objectives

- Bringing basic information on OWE to the general public -
Thereby promoting public acceptance of OWE
- Key target groups: Tourists and locals,
as well as the media, schools and decision makers
- Expand cooperative structures with other wind energy
networks and stakeholders, tourist agencies and others
(e.g. mayors)
- Linked to other events taking place along the coast, e.g.
harbour festivals, etc.

Successful Start in 2009 „FASCINATION OFFSHORE“

- Innovative approaches regarding social acceptance (POWER Cl. WP1)
- *“Offshore goes public / Touring exhibition along the Coast”*
- 13 different harbours along the North Sea coast visited in summer 2009
- Over 25.000 visitors, incl. German Minister for Environment
- 14 Press Releases, more than 65 articles in newspapers and online
- Kick-off during wab-offshore conference 2009



Supported by:



Kick-off in Bremerhaven

Die „Faszination Offshore“ erleben

OB Jörg Schulz eröffnete Wanderausstellung auf der „Greundiek“

BREMERHAVEN tw · „Einmal sehen ist besser als tausendmal hören“, sagt ein altes chinesisches Sprichwort. Der Bau und Betrieb von Offshore-Windanlagen findet jedoch weitgehend unter Ausschluss der Öffentlichkeit statt, bedauert Jörg Kubbier, Vorsitzender der Stiftung Offshore-Windenergie. Abhilfe soll jetzt die von der Stiftung organisierte neue Wanderausstellung „Faszination Offshore - Wind vom Meer für saubere Energie“, schaffen, die er am letzten Mittwoch zusammen mit Oberbürgermeister Jörg Schulz und Ministerialrat Udo Paschedag



aus dem Bundesumweltministerium auf dem Museumsschiff „Greundiek“ eröffnete. „Ein

Sichtersatz, wie die Stromerzeugung auf hoher See läuft“, freute er sich. Interaktiv können sich die Besucher über die Welt der Offshore-Windparks informieren (EWA berichtete).

Die Offshore-Windenergie sei ein Konjunkturmotor, der ohne staatliche Hilfe auskomme, sagte Kubbier in seiner Eröffnungsrede. Gerade strukturschwache Regionen würden von der Entwicklung in diesem Bereich profitieren, so Paschedag. Was Schulz bestätigte. „Die Windenergie-Industrie hat einen wichtigen Beitrag für den Strukturwandel in Bremerhaven und Cuxhaven geleistet“, betonte er.

Seit heute liegt die Greundiek am Helgoländer Kai Süd in Cuxhaven. Noch bis zum 28. Juni können die Besucher die Ausstellung von 10 bis 18 Uhr besichtigen.



OB Jörg Schulz, Stiftungsvorsitzender Jörg Kubbier (2.v.l.) und Ministerialrat Udo Paschedag (r.) waren nicht nur die ersten Besucher der Ausstellung, sie bekamen auch Windräder im Miniaturformat überreicht

Fotos: tw

Schwerpunkt Offshore-Windenergie

Bundesumweltminister Gabriel zu Gast beim HWG-Wirtschaftstreff

CUXHAVEN tw · Die Menschheit muss sich zwei großen Herausforderungen stellen - immer knapper und teurer werdenden Ressourcen und dem Klimawandel. Bei der Bewältigung dieser Herausforderungen leiste die Offshore-Windenergie einen wichtigen Beitrag. Bis 2030 sollen 25.000 Megawatt installiert sein, so Bundesumweltminister Sigmar Gabriel. Hierzu müssten jedoch noch einige Hemmnisse beseitigt werden. So forderte er am Freitag auf dem Wirtschaftstreff der Hafenwirtschaftsgemeinschaft Cuxhaven (HWG) die Sicherstellung von Netzanschlüssen für die Windparks und mehr Engagement der Banken auch in Zeiten der Krise. „Erneuerbare Energien mit Schwerpunkt Offshore-Windenergie“ war das Thema, zu dem der Vorsitzende Hans-Peter Zint in den Kuppelsaal der Hapag-Hallen eingeladen hatte. Gabriel zeigte sich erfreut über die freundliche Aufnahme, habe er sich doch nach der Entscheidung für Wilhelmshaven als



Norbert Giese von der Repower AG

Tiefwasserhafen nur noch mit Polizeischutz nach Cuxhaven getraut, meinte er schmunzelnd. Eine Entscheidung, die aber auch zur Entwicklung Cuxhavens als Offshore-Basishafen beigetragen habe. „Warum ist dann aber das niederländische Eemshaven Offshore-Basishafen für das Testfeld Alpha-Ventus?“ wollte Zint vom zweiten Gastredner

Norbert Giese, Direktor des Geschäftsfeldes Offshore Energie bei der Repower AG wissen. Die einfache Antwort: Fehlende Infrastruktur. „Einiges ist bereits geschafft, aber es gibt noch viel zu tun“, meinte Giese. Die Industrie zur Fertigung sei vorhanden, die Politik habe schon 23 Offshore-Windparks genehmigt, aber die Häfen könnten bei dieser Entwicklung nicht mithalten. Neben Schwerlastplattformen fehle auch das entsprechende technische Gerät, um große Anlagen zu transportieren. In Cuxhaven sei mit dem Bau der Schwerlastplattform ein Anfang gemacht. Für bis zu 80 Windturbinen, die pro Windpark verschifft werden müssten, jedoch noch lange nicht genug. Zudem brauche es ausreichend Platz für Lagerung, Montage und Umschlag, sagte er.

Platz, der in der Region durchaus vorhanden sei, und zwar in Cuxhaven und Bremerhaven, wie Zint hervorhob. „Wir stehen mit Bremerhaven nicht in Konkurrenz, sondern können uns gemeinsam zum Zentrum für Offshore Windenergie entwickeln“, betonte er, denn jeder Standort habe seine Vorteile, die es zu kombinieren gelte.



Visit of Mr. Gabriel, Cuxhaven, June 2009
German Minister for the Environment

Auf dem Weg zum Wirtschaftstreff legte Bundesumweltminister Sigmar Gabriel (m.) auch einen Stopp auf der „Greundiek“ ein, die zurzeit mit der Ausstellung „Faszination Offshore“ die Nord- und Ostseehäfen besucht. Dabei kamen er und SPD-Bundestagskandidatin Thuid Küber (l.) auch mit Besuchern der Ausstellung ins Gespräch

Fotos: tw

Exhibition Concept

Topics Covered

- Why Offshore Wind - Climate Change & Renewables
- Technology and Development of Offshore Wind Energy
- Infrastructure and Grid Integration
- Economic and environmental aspects
- German test site „alpha ventus“



Developed by:

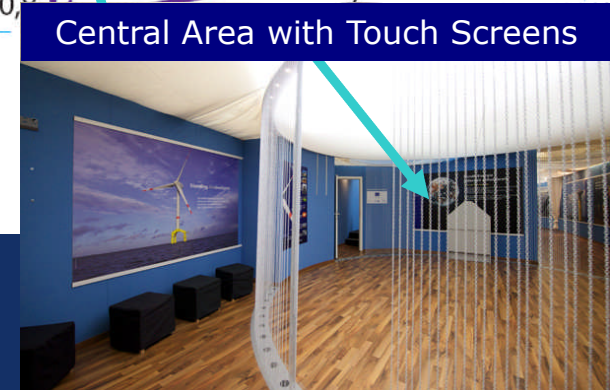
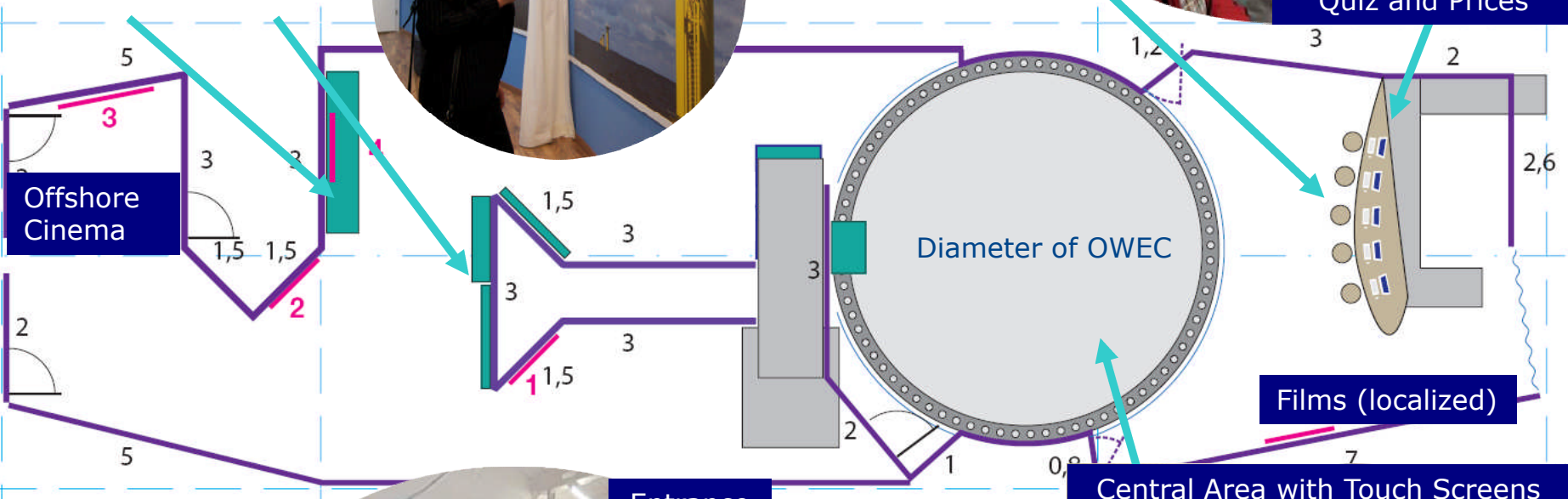


What can be seen?

Grid Integration and
Visibility of Offshore
Wind Farms



Quiz and Prices



Updates 2010

- Media-Show will be shown in a small „cinema“
- Media-Show will be updated and shortened, including english version
- Optimised exhibits (e.g. horizon model)
- Optimised touch screen manual
- More banners for improved public appeal
- New exhibit: Question-and-answer-wall
- New Slide Show - German offshore test site **alpha ventus**

Onshore Spring time exhibition

- From 5 March – 25 May 2010 the exhibition is shown onshore in Büsum (Schleswig-Holstein) in the museum „Blanker Hans - Sturmflutenwelt“
- This way, even more visitors can be attracted (> 10,000 since March)
- End of May the exhibition will be re-installed on the ship



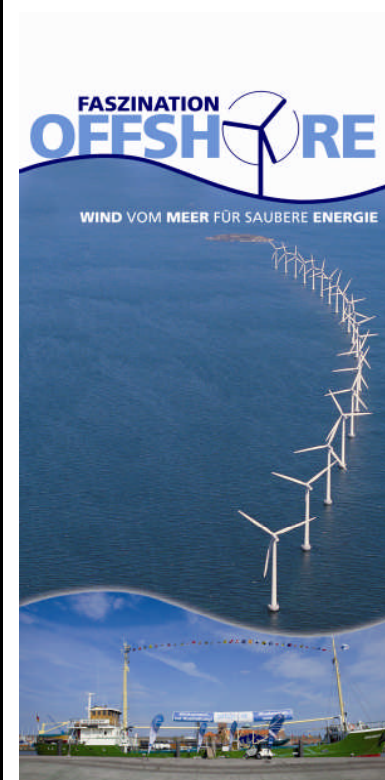
Tour Plan 2010 – Visits to 16 harbors in D and Dk



Itinerary 2010

This year also presented in Denmark!

3-6 June	Cuxhaven – Deutscher Seeschiffahrtstag
9-10 June	Esbjerg, Denmark, Dockhavn Pier 308
12-15 June	Römö, Denmark
17-22 June	Sylt, Hafen Hörnum
24-27 June	Föhr, Hafen Wyk
2.-4. July	Stralsund, Steinerne Fischbrücke
8.-11. July	Greifswald, Museumshafen
14-19 July	Sassnitz, Stadthafen – Sassnitz Sail
23 July - 1 August	Travemünde, Ostpreußenkai – Travemünder Woche
5-8 August	Rostock, Hanse Sail 2010
9 August	Nysted, Denmark
12-15 August	Flensburg, Nordertorkai - Flensburg Nautics
16-20 August	Sonderborg, Denmark
24-30 August	Bremerhaven, Alter Hafen Westseite – SAIL 2010
01-05 Sept.	Varel, Hafen (Am Kran)
21-25 Sept.	Husum, Stadthafen – Husum Wind



European Union
The European Regional Development Fund



Thanks you for your attention!



For more information
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Bob Blizzard

Waveney MP – 1997-2010



BOB BLIZZARD
**SPEECH TO “POWER cluster Mid Term Conference at ‘ALL ENERGY’
CONFERENCE, ABERDEEN, WED 19TH MAY**

I may have lost my seat in parliament, but I haven't lost my interest in offshore wind.

Last week at a lunch at a famous Scottish University not far from here, I found myself sat next to someone from the House of Lords (looking very relaxed as he had not just had to fight an election!). Inevitably we talked energy.

He said, 'There's far too much emphasis on offshore wind – it's too expensive; we don't know how to make turbines in this country; they won't work anyway and wind is unreliable!'

Well! Not much equivocation there! But I thought I'd better make that my starting point for this speech. And he didn't even mention grid connections and the consents processes!

What I'd like to do is to look at the drivers behind offshore wind and:
- Firstly show how these drivers overpower the challenges offshore wind faces. And show how some of the supposed obstacles are not as relevant as they are sometimes portrayed by people such as the Noble Lord.

- Secondly, by looking at where we've got so far, I want to demonstrate that actually offshore wind is overcoming these challenges and indeed we have forward momentum.

The two drivers are the most powerful we could have.

1. We know we are currently in something of economic crisis and even maybe some kind of political crisis. But there are two even more serious crises.

Climate change, or perhaps we should say climate destabilisation, is a bigger and more chronic crisis.

We know this from all the science, the Stern Report and the Copenhagen summit where, although all the countries of the world couldn't agree on a satisfactory solution, they did all agree we have a severe problem. The University of East Anglia may have got in a muddle with their emails, but only a fool would deny climate change, as the enquiry into the UEA affair showed.

Copenhagen may have been disappointing, but we have made real progress in this country. We have:

The Climate Change Act – with legally binding targets for CO₂ reduction.
The Committee on Climate Change - setting rolling intermediate targets.
So we HAVE to, by law, reduce CO₂ by 80% by 2050, and by 34% by 2020.

We can't do this without a huge shift to renewable energy – and we are committed to generating 15% from renewable by 2020.

Only wind is capable of being deployed at the scale and pace we need to meet that 2020 target. Yes we have tidal and wave coming along and they will have their day, but wind is easily closest to the market place now in terms of proven technology and price.

So the legislation provides the nearest thing you can get to a guaranteed market for offshore wind – and as we know – investors and developers are responding.

2. The second powerful driver stems from another crisis – the Energy Crisis.

It starts from this fact. There are 78 million more people in the world each year! More people means more demand for energy.

If we add to that the rapid economic growth of an increasing number of developing countries, we can see we face a huge increase in demand for energy – that cannot simply be met by energy efficiency and conservation

alone. And we are all wedded to expecting energy to be there when we want it.

So a government that lets the lights go out is soon out itself!
Therefore we will need ALL the energy we can lay our hands on from all available sources. And a mix of sources means we are not over-dependent on and vulnerable from an interruption to one source.

So to those who say – we must go nuclear – yes. Go for clean coal – yes. Import gas – yes.

But we would be mad not to use OUR wind. We are the windiest country in Europe. It's here. It's ours. It doesn't blow all the time (which is why we need nuclear baseload), but it does blow most of the time. As I know coming from Lowestoft!

Cost?! Yes, offshore wind is more expensive than onshore. I tell that to objectors worried about the alleged devaluation of their properties. But even if we develop all the sites that do meet the planning criteria, we would soon run out of them, given the scale of renewable energy we have to achieve.

Yes, offshore wind is more expensive than the energy we've been used to in the past. But where is the cheap energy of the future? \$10 oil is long gone, never to return. Nuclear is not cheap. Clean coal and carbon capture are not cheap.

Most frightening of all is this. Although the world's hydrocarbons are not yet 'running out', they are finite, and PEAK OIL production will be reached, maybe sooner than we think.

So if production cannot meet demand, and we caught a glimpse of that before the recession, oil and gas prices will SOAR again. And that's not to mention the worries about security of supply from some of the unstable parts of the world and the unreliable political regimes that produce oil and gas.

Hydrocarbons will one day be the most expensive energy source of all.

So the real point about the cost of offshore wind is that, unlike the unpredictability of oil price, once it is in place, offshore wind as a source is everlasting. We can know the cost and it's not variable. It's stable and ongoing.

Large scale offshore wind will give us not just security of supply, but security of price. And the industry predicts it can reduce its cost by 30% by 2020.

So the two drivers:

- the legal obligation to reduce CO2
- the need to exploit wind to keep the lights on

mean that offshore wind will overcome the challenges it faces. As indeed it is doing.

More wind energy was installed in Europe in 2008 and 2009 than any other form of electricity generation.

Britain is now leading the world in offshore wind energy. This is the result of important government policy decisions. Not only in setting binding targets, but the incentive provided by ROCS, and now the recently announced Green Investment Bank. It was the Economic State Secretary of Schleswig-Holstein who told me that ROCS are better than the German feed in tariffs for kick starting wind energy. And with his state generating over 40% of its power from wind, he should know!

To demonstrate the progress we are making I want to cite the example of my own area, centred on Lowestoft in East Anglia.

Greater Gabbard, the largest offshore wind farm in the world, so far, is currently under construction and the developer, Scottish and Southern, has chosen Lowestoft as the operational base with new helipad and port facilities.

The port of Lowestoft is ideally located close to some of the best areas for offshore wind. And we have transferable skills from the offshore oil and

gas industry and our maritime tradition. But we were chosen because some years ago we looked ahead and saw the opportunities.

As the local MP, I set up a Lowestoft Wind Energy Steering Group, so that all the key local organisations were in a line. We obtained £9m from our RDA for our OrbisEnergy centre so that the highest quality accommodation was there when the energy companies came looking. It showed we meant business.

Next door to it we have the largest onshore wind turbine in the country – as a symbol of our commitment – named Gulliver by the local community, because they like it and are behind our drive to be a leading centre for the industry.

By the way, Gulliver is in the centre of town. There are no noise problems. No tv reception problems, and no dead birds underneath!

Lowestoft College is a centre of excellence for offshore skills, with energy skills development in the pipeline.

We have been supported by Eeegr – the best named organisation I know – which promotes our area as a centre for energy industries. And our area includes Great Yarmouth with its port and available land.

We became part of the POWER partnership to widen our horizon. We have shared experience and learned from that. The energy challenge is too big for any one country. We need shared goals.

So we ARE overcoming the challenges for offshore wind. We know that because the energy companies WANT to invest.

Last week's announcement that the Greater Gabbard will double in size (the so called Round Two and a Half, with four similar extensions around the country) demonstrates this. I can only quote the Director of Marine Estate of the Crown Estate who said this expansion had been driven by 'developer appetite' for offshore wind energy.

This was already borne out by developer response embodied in the £100 billion Round Three announcements in January.

Again, at Lowestoft, we have one of the largest zones on our doorstep – the East Anglia Array. The developers, Scottish Power and Vattenfall are impressed with what our area has to offer – location, Orbis, port and helipad facilities and available waterfront land. They like the existence of local political leadership.

I say all this not just to promote my area, but to show what is needed to overcome those challenges and how it IS happening. What is breathtaking is the scale of Round Three. 7.2GW; 1000 turbines in the East Anglia Array alone. A £15 billion investment; 4000 jobs. It's one of 9 zones in Round Three.

But there is an issue here. How can we source all those turbines? If we rely on imports, we might not get them or be held to ransom on price. We have to manufacture here in Britain. And it's not as simple as – manufacture in the North East; O and M in other places like Lowestoft.

There's a whole lot more to manufacture than just turbines. The wind farm developers themselves want us to look at some manufacturing in our area, close to the wind farm itself.

So we need an industrial policy for offshore wind manufacturing that would see steel works open up again rather than closing for lack of demand. Because there's even more beyond Round Three. Many of you will know of the Supergrid project.

Wind farms across the North Sea, networked into a single system and a single market, less costly than connecting individual wind farms to national grids and offering security of supply (and price) to Europe.

Blue sky thinking? Well Supergrid is spearheaded by people like Mainstream, already a successful Round Three developer with a track record under the name Airtricity, with Greater Gabbard. They are not fools.

Finally. (Painful though it is for me personally), we should cast our minds over the recent election. Did anyone hear the environment or energy mentioned..? Is the public not interested? No, I don't think so. I think the

lack of focus on these issues says something about the way our elections are conducted, rather than doubting their importance.

Someone said these issues didn't emerge because all the main parties are agreed and there's not enough to argue over. I don't think so. Not when we now have a Sec of State for Energy and Climate change opposed to nuclear power who says he will abstain when the new government takes nuclear proposals forward! Sorry, I couldn't resist that one.

But where is the new government on offshore wind? The Lib Dems must be keen. They have to be if they don't want nuclear. The lights have to be kept on somehow. The Conservatives generally oppose onshore wind and they don't seem to have the same passion for offshore wind as the previous government, but they've said they'll keep banded ROCS and the new Green Investment Bank. That's good.

But actually, they have no choice. It has to be this way, because energy is too important to be party political. The new government is still facing those same two drivers:

The need for secure and sufficient energy supply to meet the Energy Crisis.

The need to reduce CO2 to tackle the Climate Destabilisation Crisis.

Offshore wind delivers on both!!

Interreg IVB North Sea Programme

POWER Cluster Mapergy

**John Best
Chief Executive Officer
East of England Energy Group**

19 May 2010



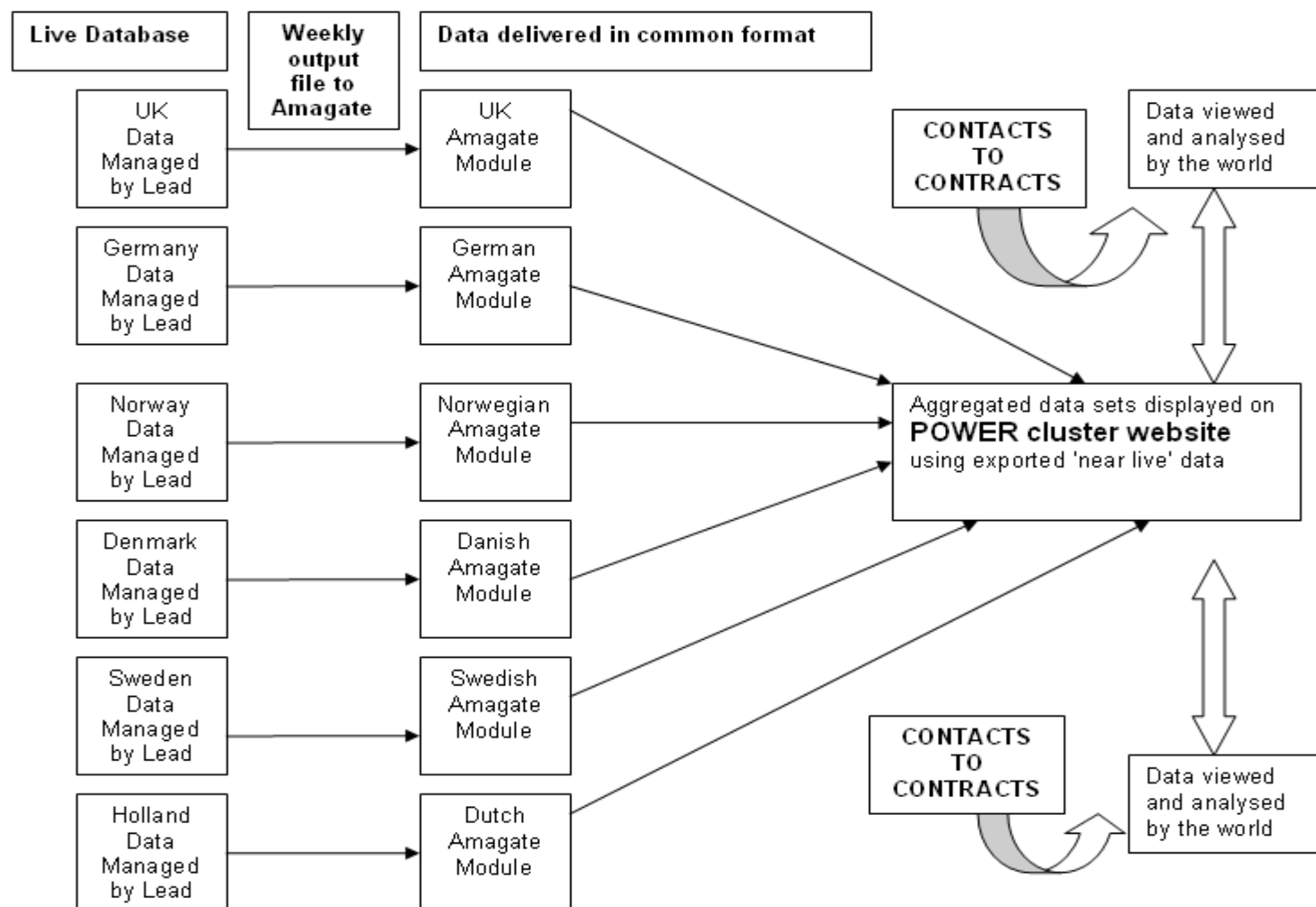
About POWER cluster Mapergy



- POWER cluster Mapergy builds on previous knowledge of EEEGR's Mapergy
- The process was coordinated by Suffolk County Council in partnership with EEEGR, Offshore Centre Denmark, WindComm, Greater Stavanger, Chalmers University and TU Delft University of Technology
- The Offshore Wind cluster map shows the locations of companies involved in the offshore wind sector
- Each company is classified under a common methodology devised by Douglas Westwood in 2009
- Publically available information on each company is provided to promote European networking



POWER cluster Mapergy process



European Union
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Main cluster mapping screen



Search facility by role or category



A screenshot of the POWER cluster website's search interface. The header features the "POWER cluster" logo on the left and a banner with a wind turbine and the text "OFFSHORE WIND ENERGY" and "A NORTHERN EUROPE CLUSTER MAP FOR ORGANISATIONS INVOLVED IN THE OFFSHORE WIND SECTOR". Below the banner is a navigation bar with links: Home, About, FAQ, Join, and Main POWER cluster Website. The main content area includes a "Quick locator" dropdown menu, a "Filters" section with "Category" and "Role" dropdowns, and a map of Northern Europe. The map shows various countries and cities, with blue circles indicating search results. A legend on the right lists roles with checkboxes: Consultant, Design, Engineering, Installation, Manufacture/Supply, Operator (checked), Research and Development, Service, Support Organisation, and Training and Education.

Quick locator for Regional clusters



www.power-cluster.net

The Northern European
competence network
for offshore wind energy

Zoom facility (Example Denmark)



Company information



A screenshot of the POWER cluster website. The header features the "POWER cluster" logo on the left and a large banner with the text "OFFSHORE WIND ENERGY" and "A NORTHERN EUROPE CLUSTER MAP FOR ORGANISATIONS INVOLVED IN THE OFFSHORE WIND SECTOR". Below the banner is a navigation bar with links: Home, About, FAQ, Join, and Main POWER cluster Website. A "Quick locator" dropdown menu is set to "Quick locator". To the right, there are "Filters" for "Category" and "Role". The main content area displays a map of Northern Europe. A callout box is open over the Netherlands, showing the details for "Vestas Benelux B.V.", including the address "P.O. Box 63, 6990 AB Rheden, Rheden". A link for "More information" is also visible. The map shows various cities and roads in the region.

www.power-cluster.net

The Northern European
competence network
for offshore wind energy

Are you on the Map?



The European Regional Development Fund

www.power-cluster.net

The Northern European
competence network
for offshore wind energy

Further information

- Join the Map at the POWER cluster stand (C50) or via the POWER cluster website (www.power-cluster.net)
- David Wood
- POWER cluster project manager
- Tel: 01502 509242
- Email: business@power-cluster.net























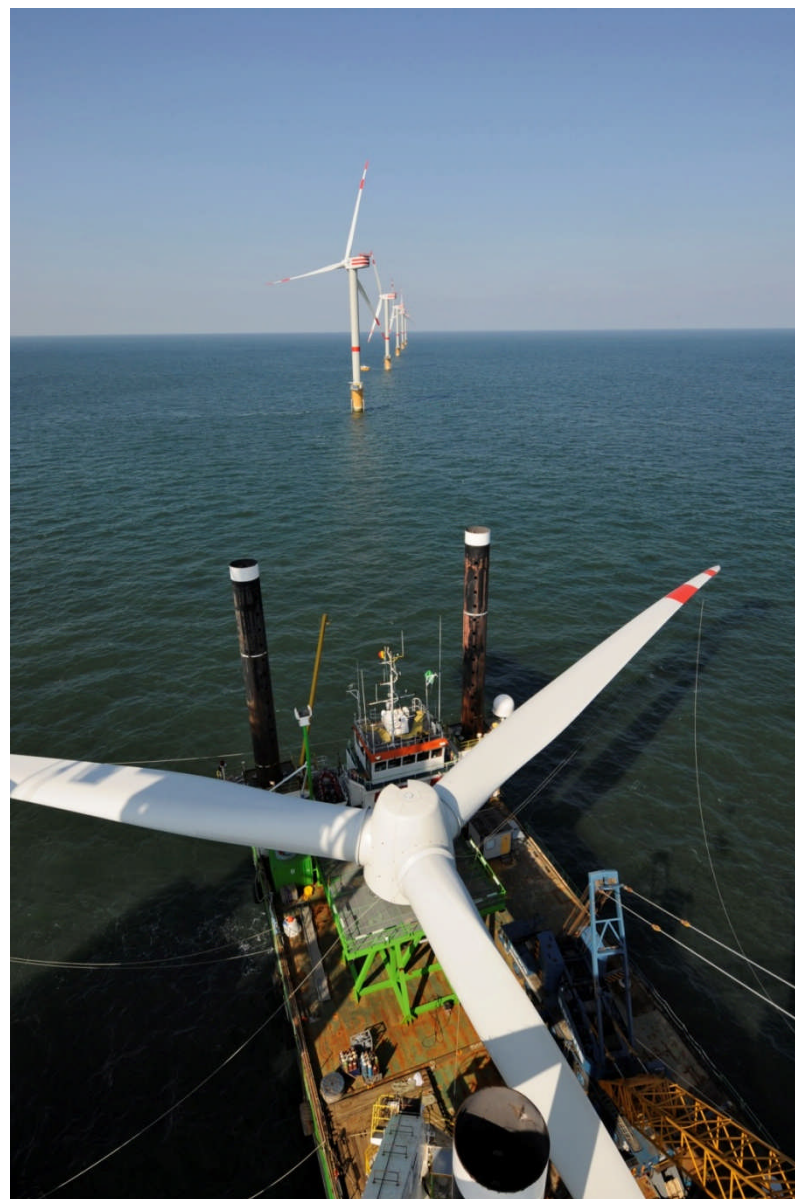


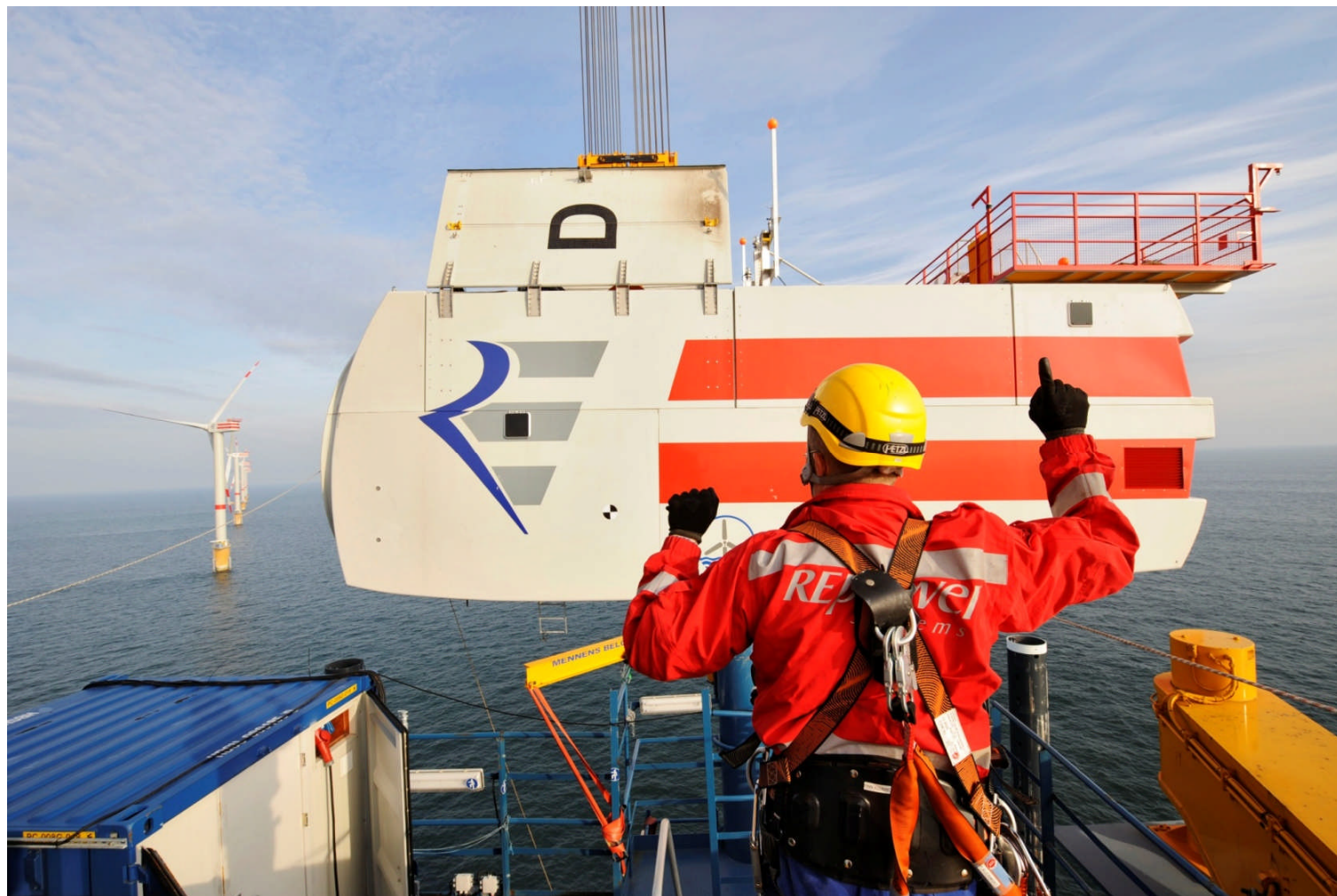




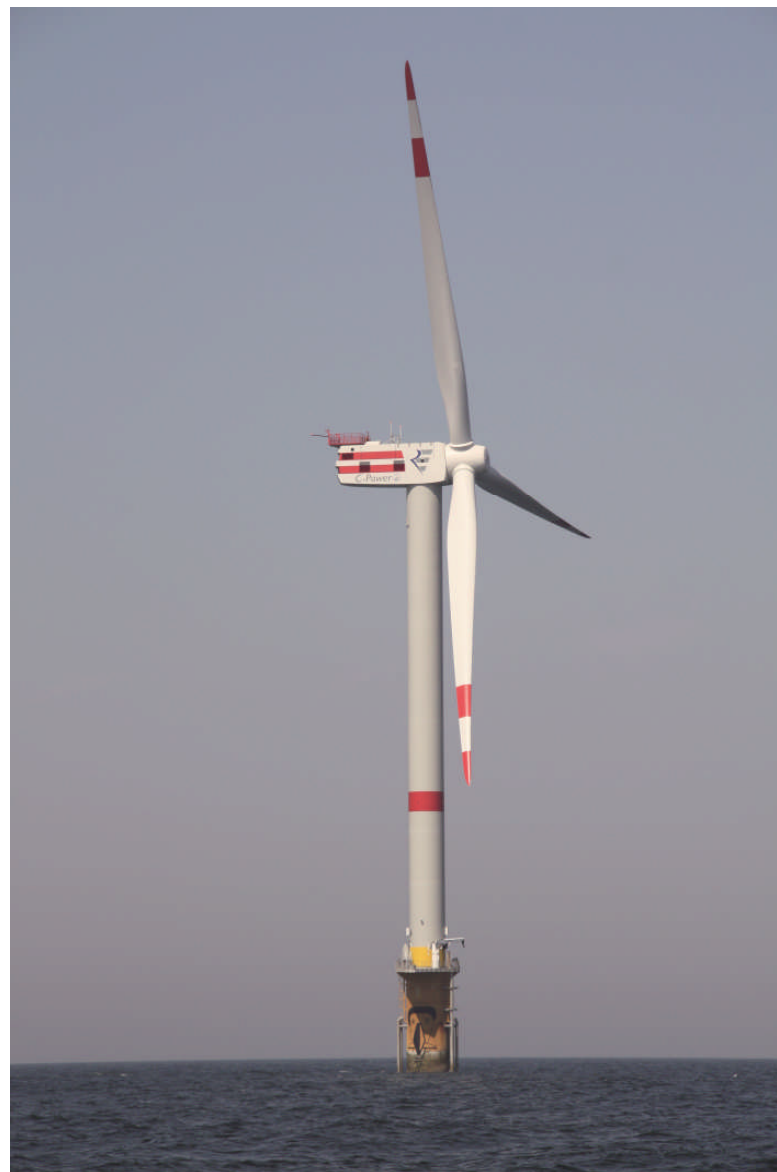


















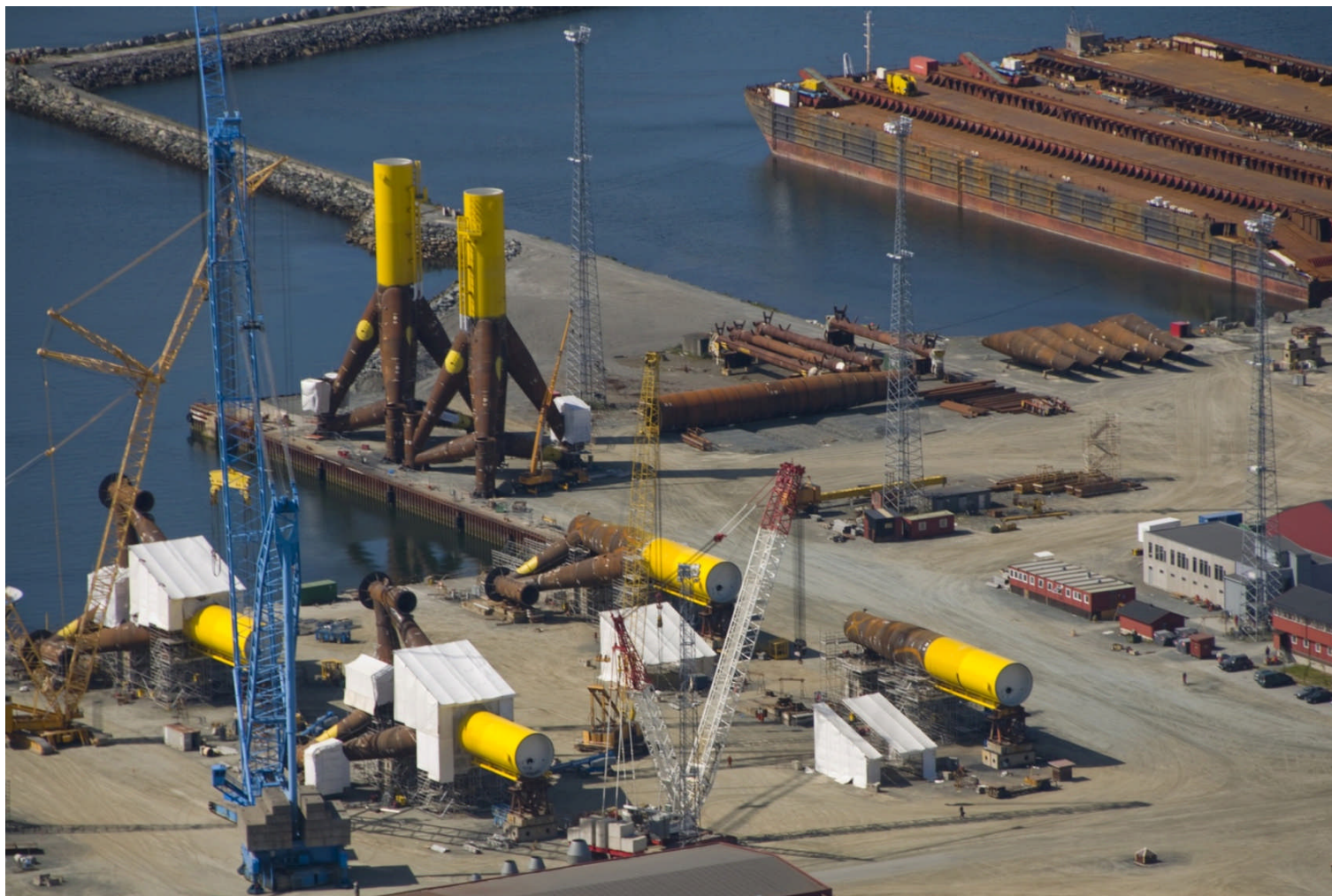














POWER cluster midterm conference



Offshore wind Energy in the North Sea Region

Workforce needed Now and in the Future and how to get them educated

Gerard van Bussel
Delft University of Technology
Delft, The Netherlands

Ola Carlson
Chalmers University of Technology
Göteborg, Sweden

Ian Fisher
Northumberland College
Newcastle, UK



The Interreg IVB
North Sea Region
Programme



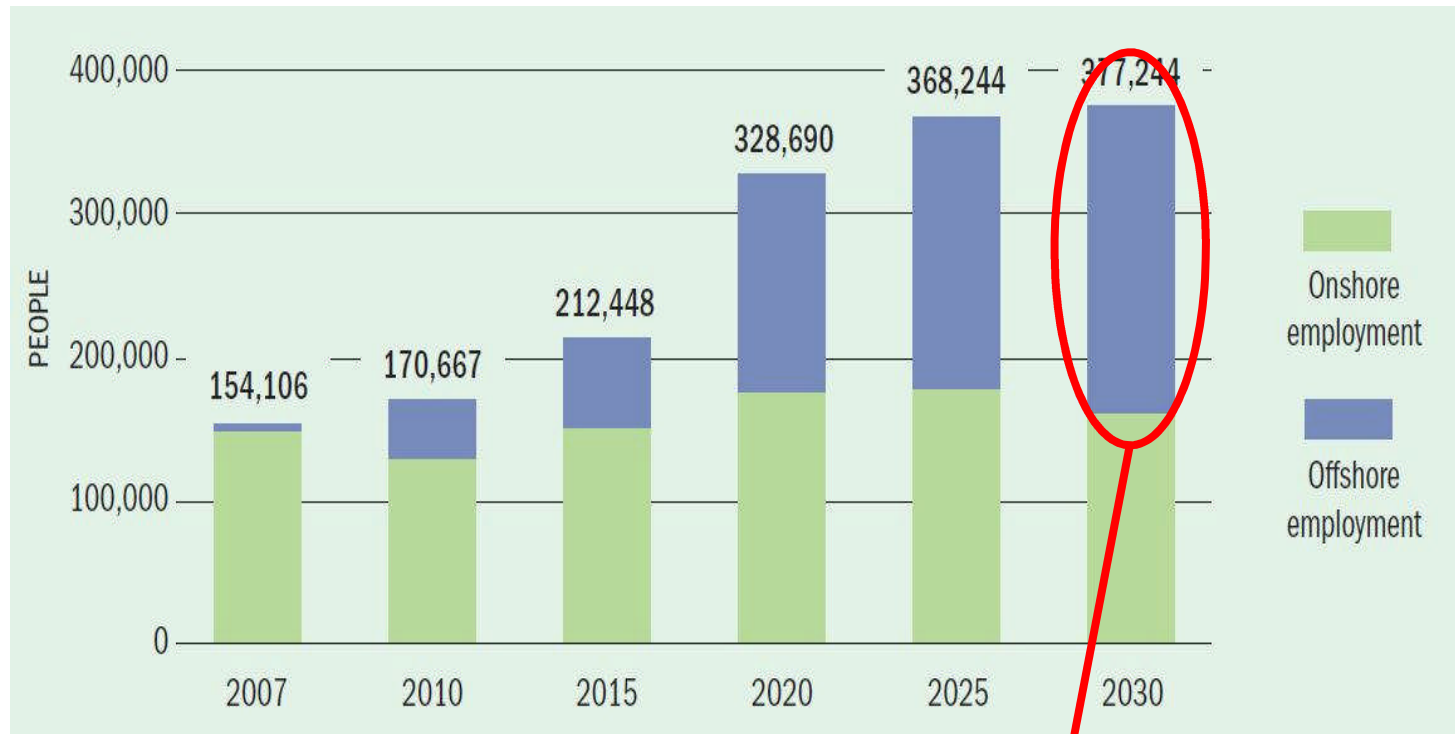
European Union
The European Regional Development Fund

www.power-cluster.net

INTERREG IV B North Sea Region Programme 2007 – 2013
All Energy Europe Aberdeen May 2010

The Northern European
competence network
for offshore wind energy

Urgent need for qualified workforce

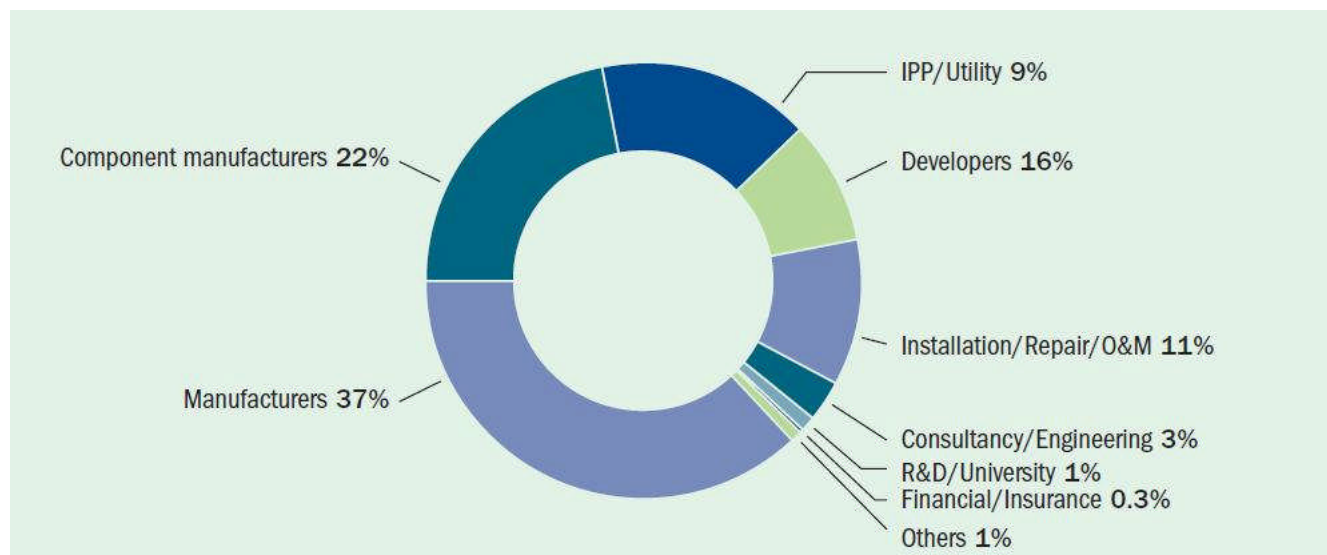


Some 400.000 jobs in 2030

~ 200.000 new jobs offshore!!

EWEA "Wind at Work" 2009

Which qualified workforce??



Academics: EQF levels 6-8: R&D, Engineering, Developers, Others

~ 5 - 10%

Engineers: EQF levels 4-6: Manufacturing, Installation, O&M etc

~ 30 %

Technicians: EQF levels 3-5: Manufacturing, Installation, O&M etc

~ 30 - 35 %

“Un”skilled: EQF levels 1-2: Support: assistance, production, transport

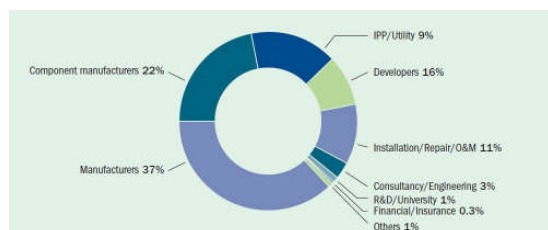
~ 20 %

Rest: EQF levels 3-8: Management, Finance/insurance, Developer, IPP/Utility

~ 10 %



How much qualified personnel??



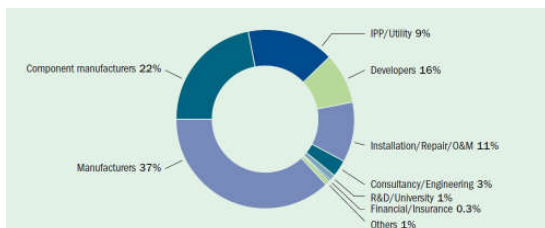
In numbers:		Total	Per year	“Offshore”
Academics:	EQF levels 6-8:	35.000	1.750	1.000
Engineers:	EQF levels 4-6:	120.000	6.000	3.000
Technicians:	EQF levels 3-5:	150.000	7.500	4.000
“Un”skilled:	EQF levels 1-2:	60.000	3.000	1.000
Rest:	EQF levels 3-8:	35.000	1.750	1.000

20.000

10.000

New people per year!!

How much personnel per year??



Offshore Wind Demand

Type:

Academics:

Administrative/Management

Engineers/technicians

Unskilled

Level:

EQF levels 6-8

EQF levels 3-6

EQF levels 3-6:

EQF levels 1-2:

Total

1.250

750

7.000

1.000



The Interreg IVB
North Sea Region
Programme



European Union
The European Regional Development Fund

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The Northern European
competence network
for offshore wind energy

Power Cluster Skills development (WP3)



Vestas

Issues addressed:

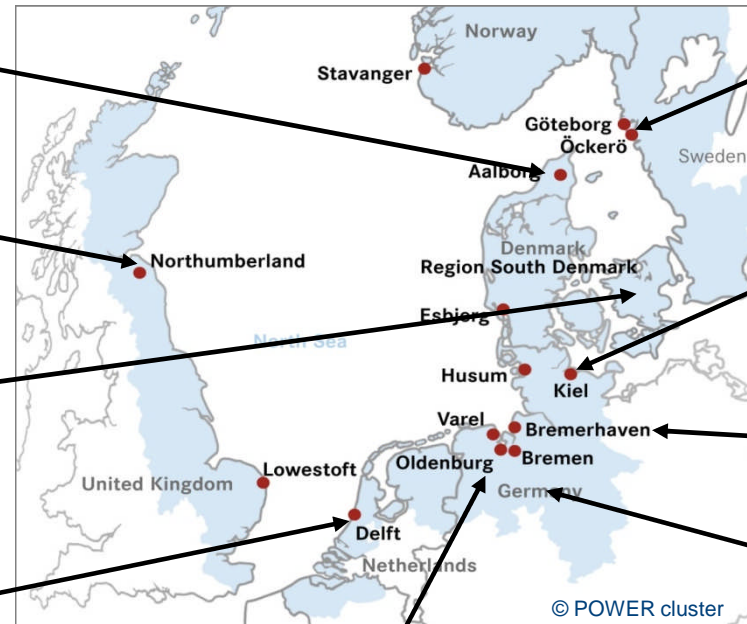
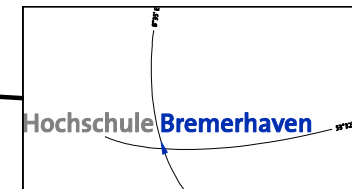
- educational modules at different levels
- common training standards
- addressing shortage of technicians:
 - inspiring the youth
 - rise awareness among teachers and students



Power Cluster wind energy educators in the partner region



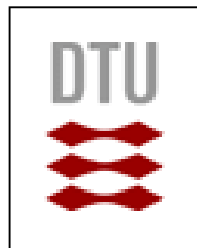
Chalmers



max 5% of the need



European Union
The European Regional Development Fund



07
15

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INTERREG IV B North Sea Region Programme 2007 – 2013
All Energy Europe Aberdeen May 2010

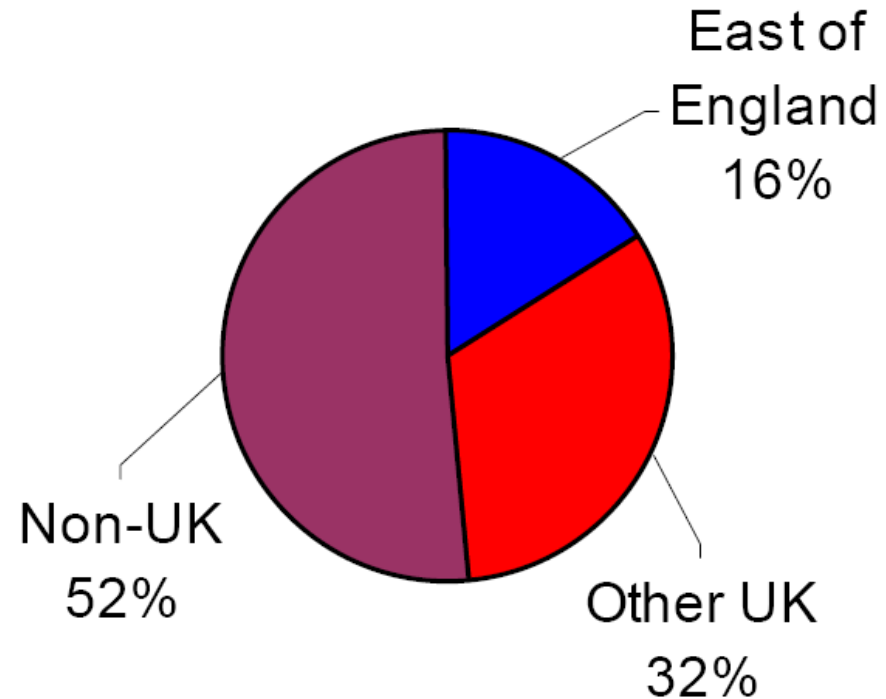
The Northern European
competence network
for offshore wind energy

Local content of Offshore wind



Case Study:

- Scroby Sands
- Near Great Yarmouth
East of England
- 16% local content (£)
- 48% National (UK) content (£)



Power Interreg III study
Douglas Westwood 2005

Development of Offshore wind

- Genuine European activity
- Substantial regional content

Offshore wind education:

- Genuine European dimension
- Regional implementation
- Needed: European Standards
 - Qualification Framework (EQF)
 - Harmonisation & Certification!!



Power Cluster WP3 (Skills) builds on EAWWE and on the Windskill project:



- Academic standards: Bologna Treaty and the European Wind Academy
- European Qualification Standard for operational skills
- Modularised education and training concept



European accreditation body needed



Where next with offshore wind power

By Morten Holmager, Manager Renewables



Offshore Center Danmark

Agenda

- Offshore Center Danmark
- Political targets
- POWER cluster countries
- How are POWER cluster benefiting other regions
- Trends and challenges

Offshore Center Danmark

The National Innovation Centre for the Danish offshore industry



- Membership based business support organization – currently 220 membership companies and institutions
- Private and public funding (50%/50%)

- Network activities
- Knowledge sharing
- Development projects
- Courses
- Internationalisation



www.power-cluster.net

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Political targets

Political targets

Renewable energy in EU to increase from 8.6% in 2005 to 20% in 2020 *

2020: 40 GW offshore wind

2030: 150 GW offshore wind



*) 2009 EU Renewable Energy Directive

www.power-cluster.net

POWER cluster countries

United Kingdom



www.offshorecenter.dk/offshorewindfarms

Stats:

- Online: 1,041 MW
- Under construction: 1,452 MW
- Planned: 40,000 MW

The Netherlands



www.offshorecenter.dk/offshorewindfarms

Stats:

- Online: 250 MW
- Planned: 4,800 MW

Germany

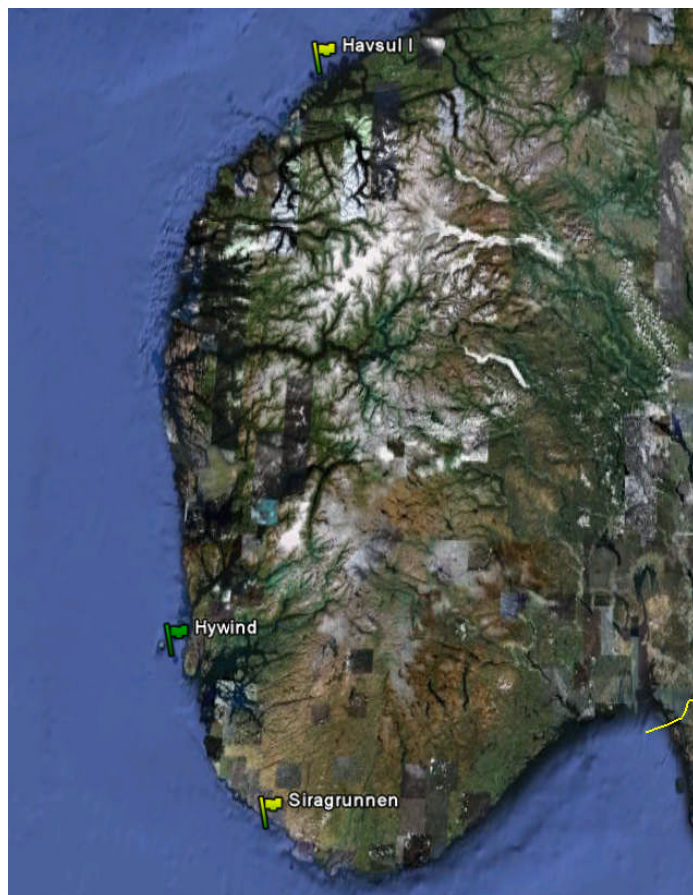


www.offshorecenter.dk/offshorewindfarms

Stats:

- Online: 72 MW
- Under construction: 930 MW
- Planned: 23,700 MW

Norway

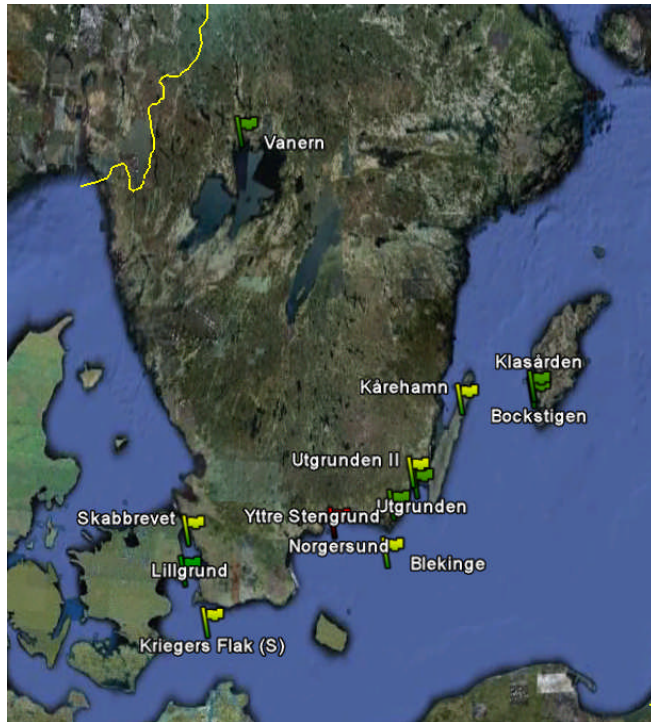


www.offshorecenter.dk/offshorewindfarms

Stats:

- Online: 2 MW
- Planned: 11,300 MW

Sweden

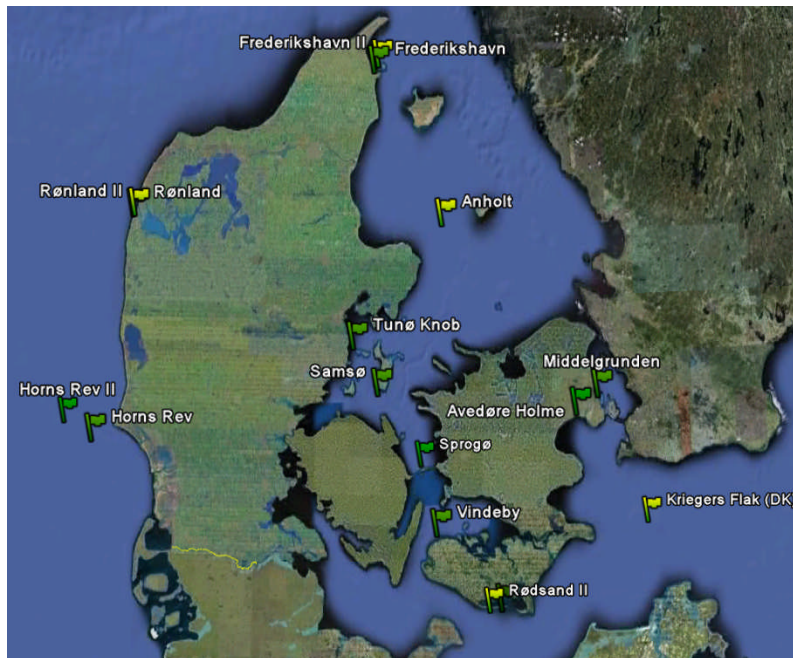


www.offshorecenter.dk/offshorewindfarms

Stats:

- Current: 164 MW
- Planned: 11,000 MW

Denmark



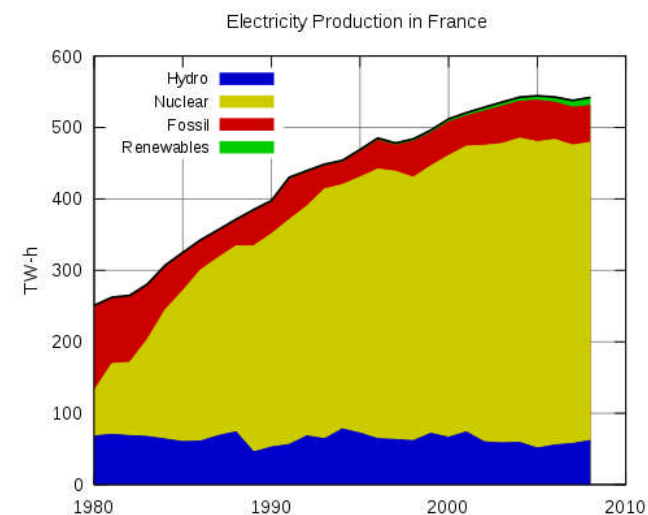
www.offshorecenter.dk/offshorewindfarms

Stats:

- Online: 665 MW
- Under construction: 607 MW

How are POWER cluster benefiting other regions

How are POWER cluster benefiting other regions



How are POWER cluster benefiting other regions



Environment minister Jean-Louis Borloo and President Nicolas Sarkozy

“6 GW offshore wind in by 2020”

- Social acceptance
- Business
- Skills



www.offshorecenter.dk/B2B

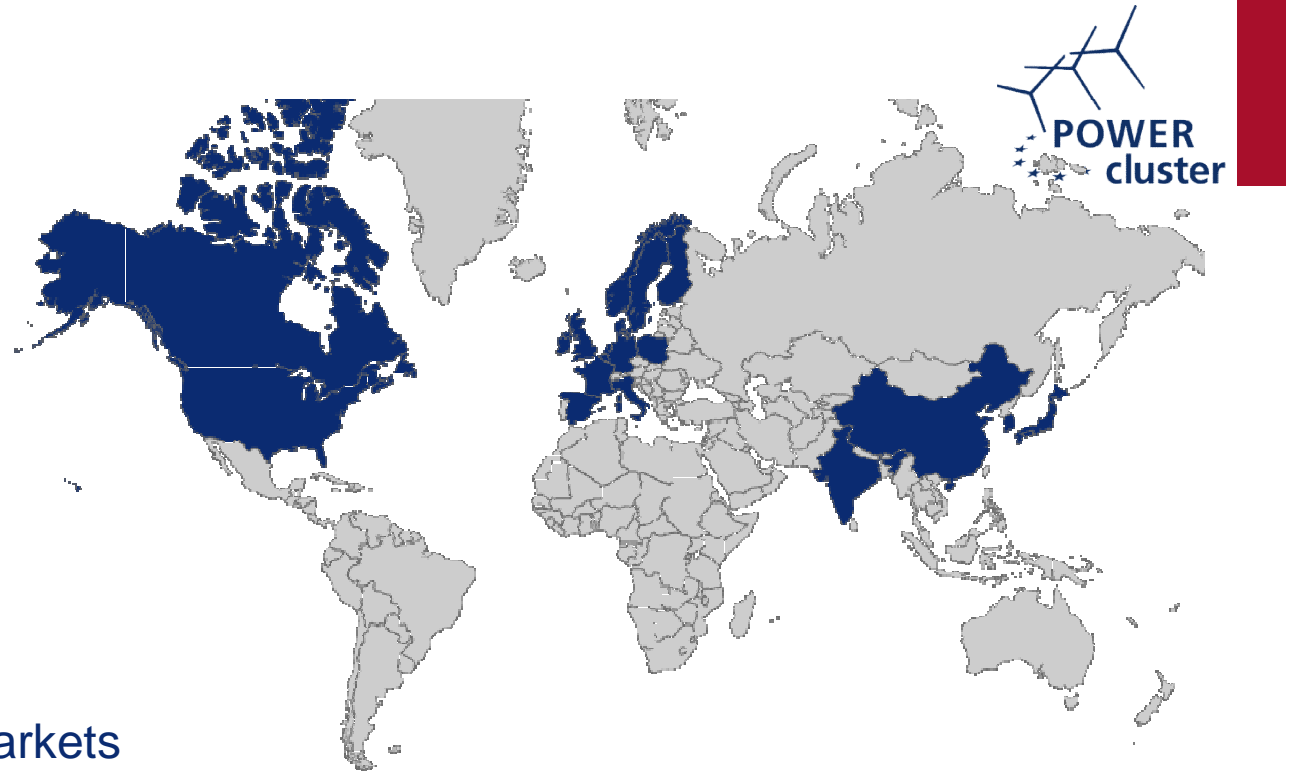


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Trends and challenges

Future development



Trends

- New markets
- Bigger, deeper, further offshore
- Development of transnational grid systems
- Cost reduction

Challenges

- Competition with other energy sectors
- Shortage of equipment
- Politics

For further information please refer to our
websites

www.power-cluster.net

www.offshorecenter.dk