



Offshore Wind in Germany Status and Trends

Trondheim, 14.2.2013

Vi gir lokale ideer globale muligheter

Content

- Innovation Norway in Hamburg
- Transforming the Energy Sector
- Offshore Wind in Germany
- Outlook

The German »Energiewende« is ambitious and based on renewables, tough savings and imports

Security of Supply

- Back-up systems for volatile power generation
- Grid extension
- Storage capacity

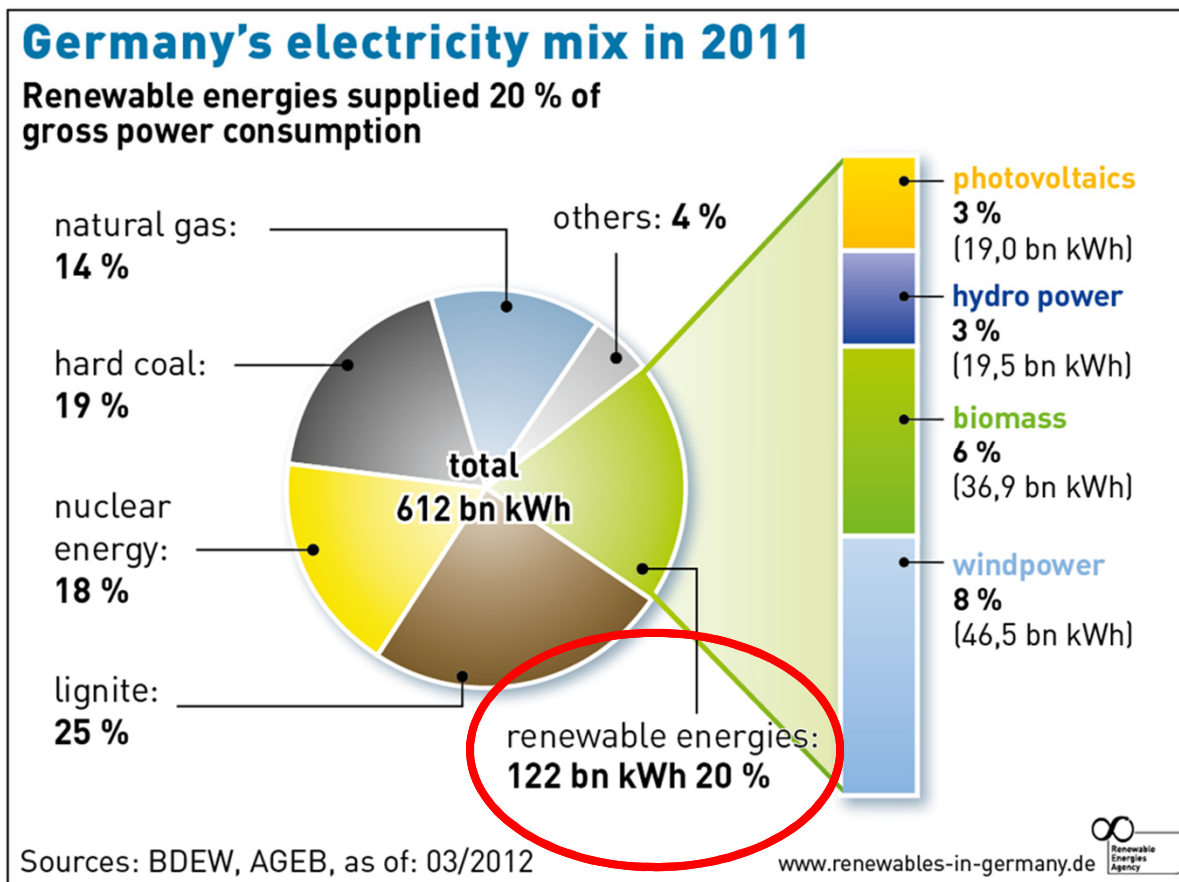
Sustainability

- Phase out of Nuclear Energy
- Renewable Energy Power Production shares: 2020: 35% (2030: 50%, 2040: 65%, 2050: 80%)
- Energy Efficiency

Cost Effectiveness

- Technology Policy
- Feed-in Tariffs

Renewable Energy Power Generation



Target
2020: 35%

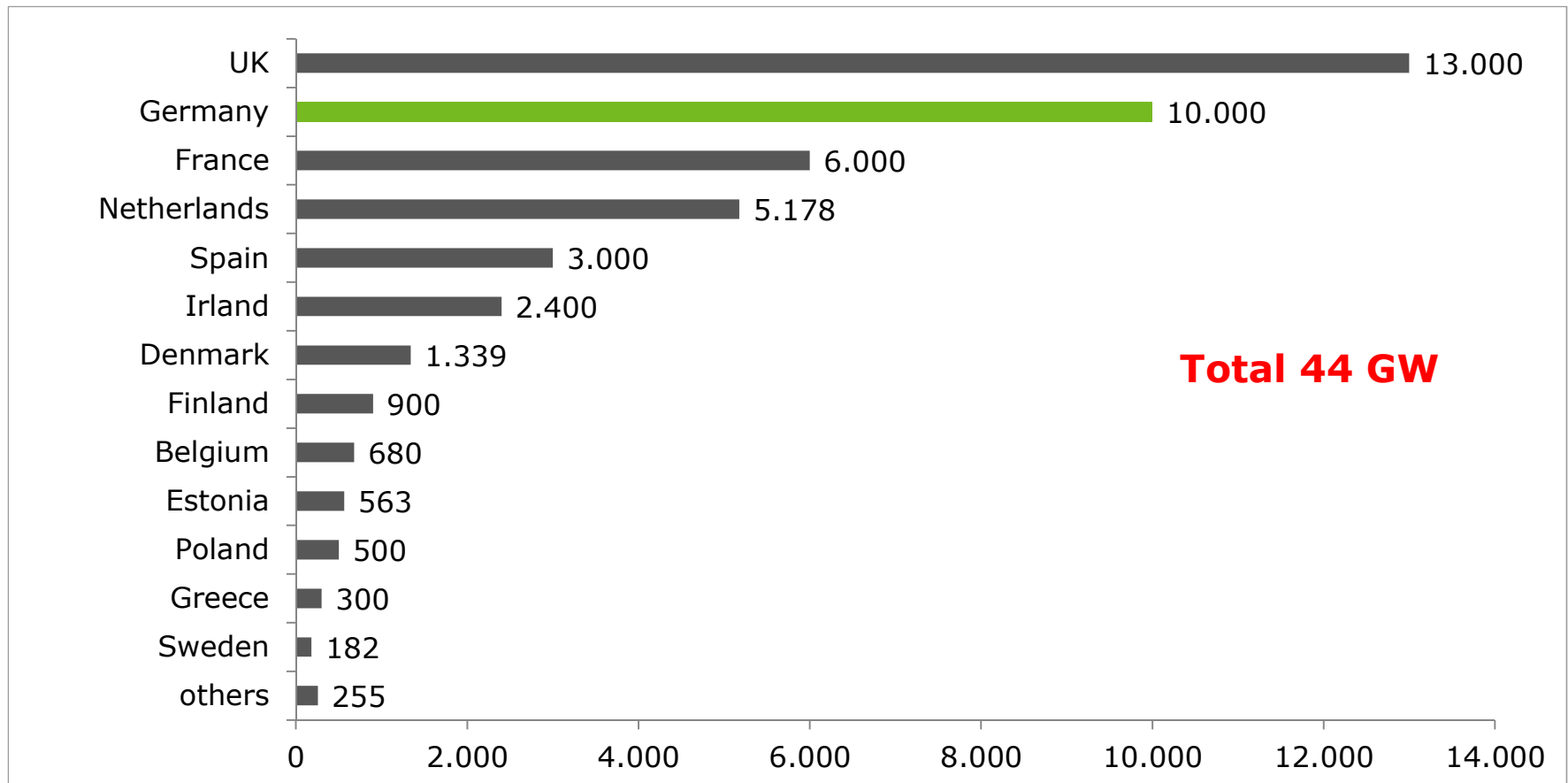
Target
2050: 80%

Why Offshore Wind?

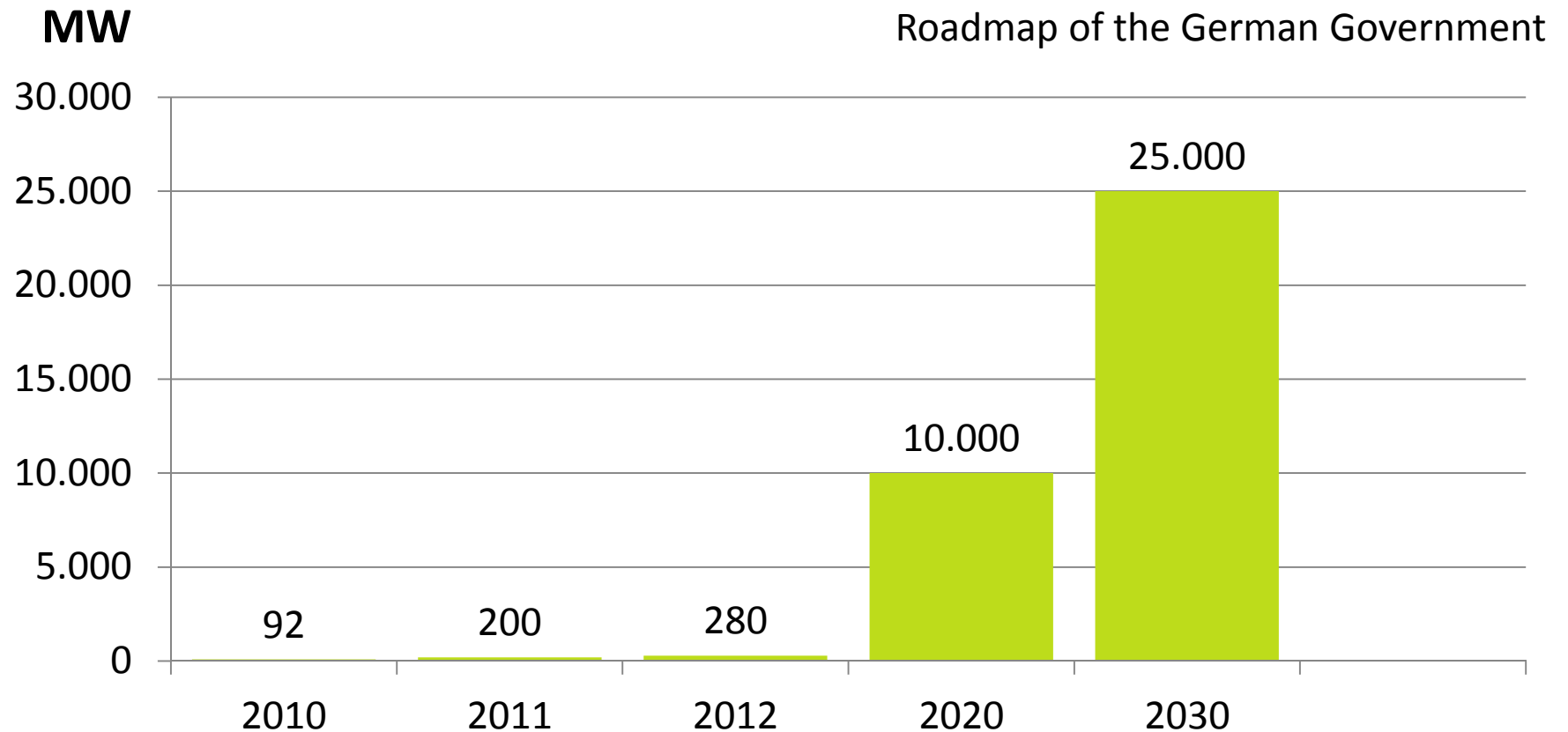
Source: Windreich

	Onshore	Offshore
Wind speed	5 - 6 m/s	> 10,5 m/s
Full load hours per year	2.000	> 4.500
Remuneration	Ca. 9,5 Cent/kWh	19 Cent/kWh / 15 Cent/kWh
FiT duration	App. 20 years	App. 14 years
Technology	1,5 - 3 MW	2,3 - 6 MW
Land lease	4 - 8 % of the annual income	No
Cable connection	Project developer	is provided by TenneT
Permit duration	2 - 5 years	6 - 8 years
Baseload capacity	No	Yes
Ø Project volume	< 50 Million Euros	> 1.000 Million Euros
Project return	< 10 %	> 10 %
Wind fluctuation / year	> 50 %	< 10 %

Political targets for offshore wind in Europe until 2020 , in MW



Installed and planned capacity of Offshore Wind



In Operation

alpha ventus (2009)

Size: 60 MW (12 x 5 MW)
Turbines: Repower, AREVA M5000
Operators: DOTI (E.ON, EWE, Vattenfall)

2011: 267 GWh

Baltic 1 (2011)

Size: 48,3 MW (21 x 2,3 MW)
Turbines: Siemens
Operator: EnBW

2012: 185 GWh

Under Construction 2012-2014

Bard Offshore 1

Size: 90 MW (18 x 6 MW)
 Turbines: Bard
 Operator: Bard

Borkum West II

Size: 400 MW (80 x 5 MW)
 Turbines: AREVA
 Operator: Trianel

Meerwind

Size: 288 MW (80 x 3,6 MW)
 Turbines: Siemens
 Operator: Wind MV GmbH

Global Tech I

Size: 400 MW (80 x 5 MW)
 Turbines: AREVA
 Operator: Global Tech I

Borkum Riffgat

Size: 108 MW (30 x 3,6 MW)
 Turbines: Siemens
 Operator: ENOVA, EWE

DanTysk

Size: 288 MW (80 x 3,6 MW)
 Turbines: Siemens
 Operator: Vattenfall/Utility Munich

Nordsee Ost

Size: 288 MW (48 x 6,15 MW)
 Turbines: REpower
 Operator: RWE Innogy

Total 1862 MW
Turbines: 416

Planned

Consented

- 29 offshore park projects
- 2081 wind turbines

Planned

- 97 projects

9.000 MW

Status

- Delayed grid connection
- Financing
- Political framework

Developments & Risks

- Technology will develop further
- Cost have to go down
- Financing
- Cost of raw material
- Human resources
- Availability of vessels

Statements and insights

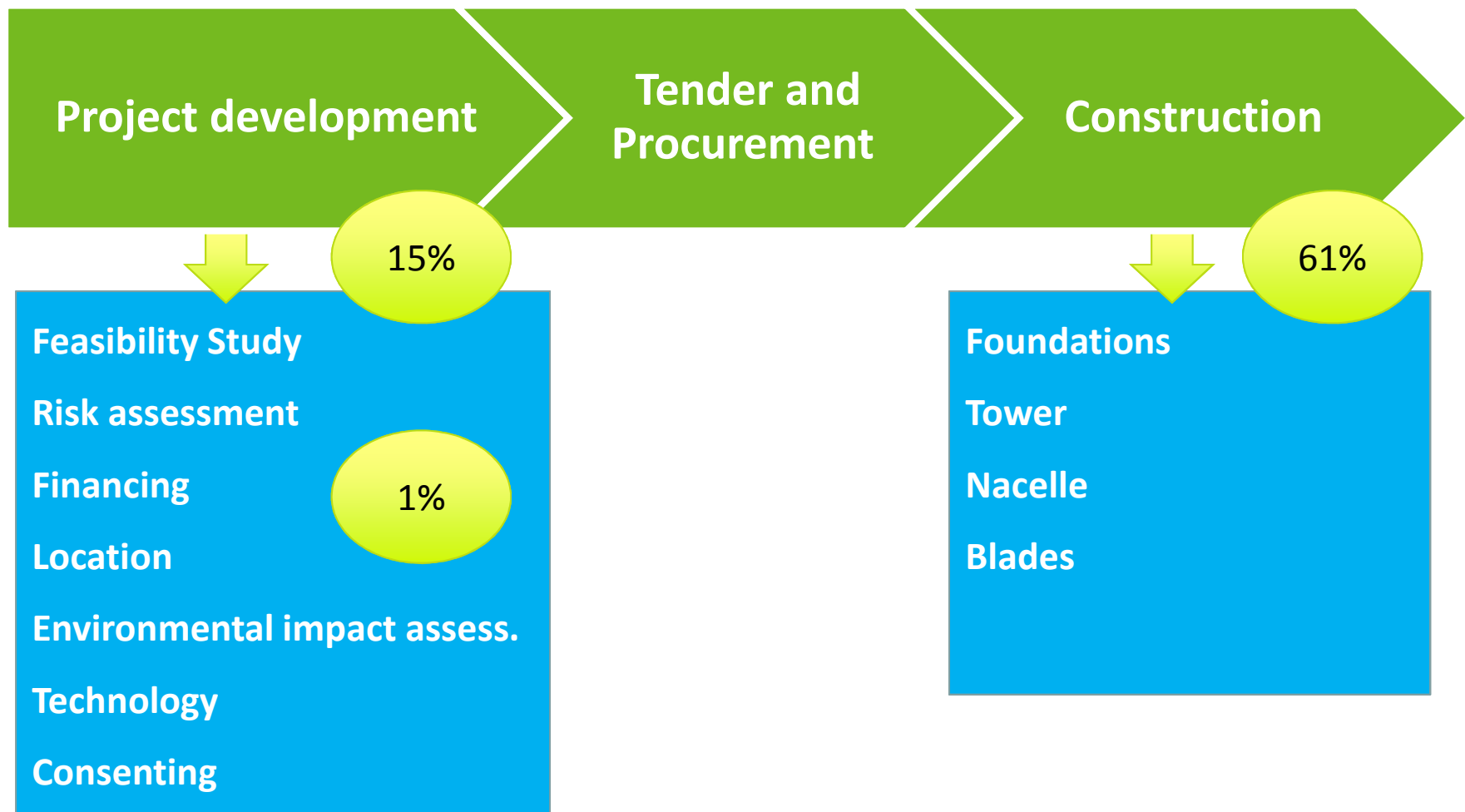
Based on a survey among suppliers in 2012

- Over capacity, cost pressure → need for closer cooperation and optimizing of supply chain
- No clear specification for product development, supplier shall take risk
- Quality assurance
- Willingness for testing is low
- Procurement: changing personnel
- No transparency – OEMs are not interested to participate in expert groups
- Financial situation of SMEs and risk

Young and immature industry

The Industry is developing

generated turnover of 5,9 billion € in 2010

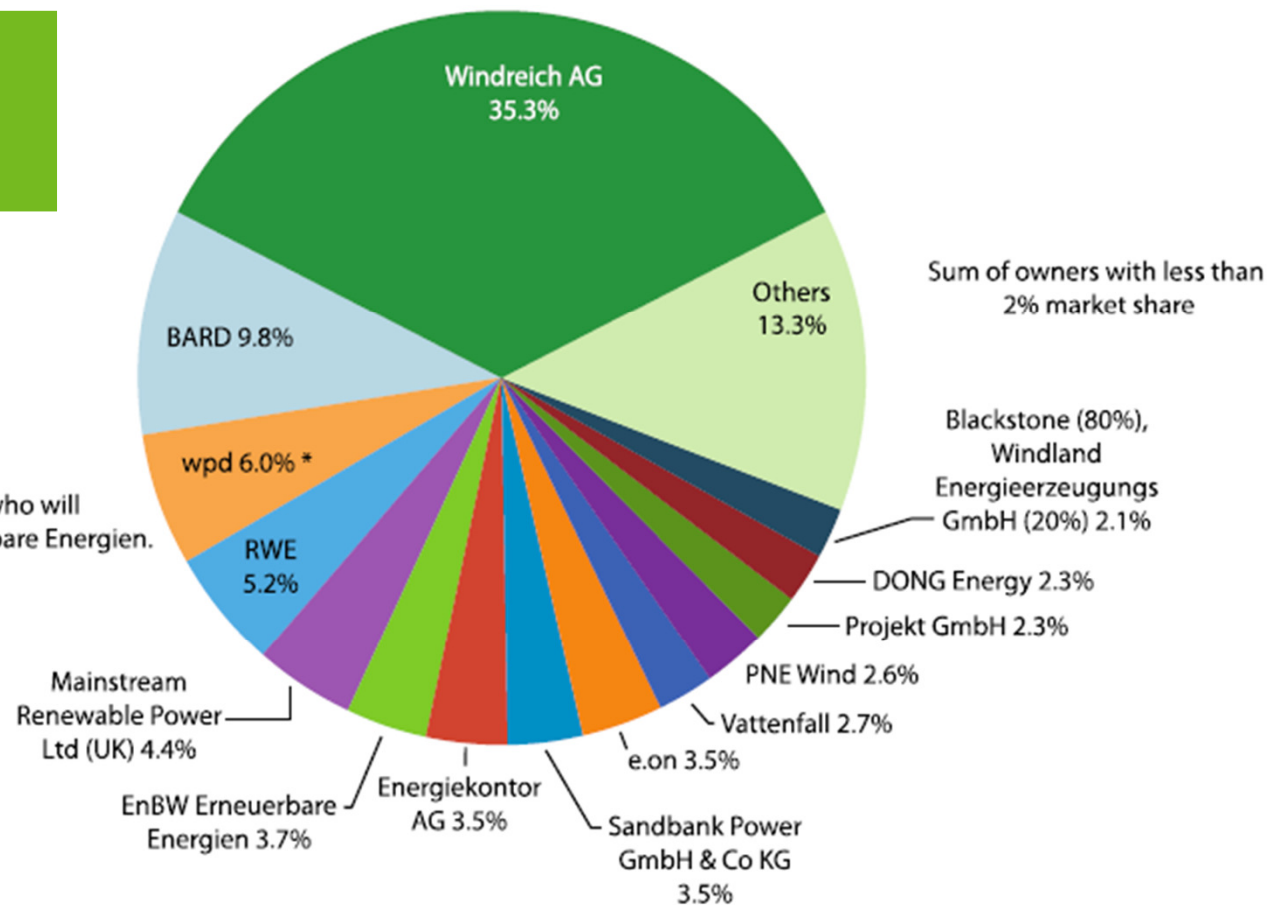


Project Developer Market Share in 2011 North Sea

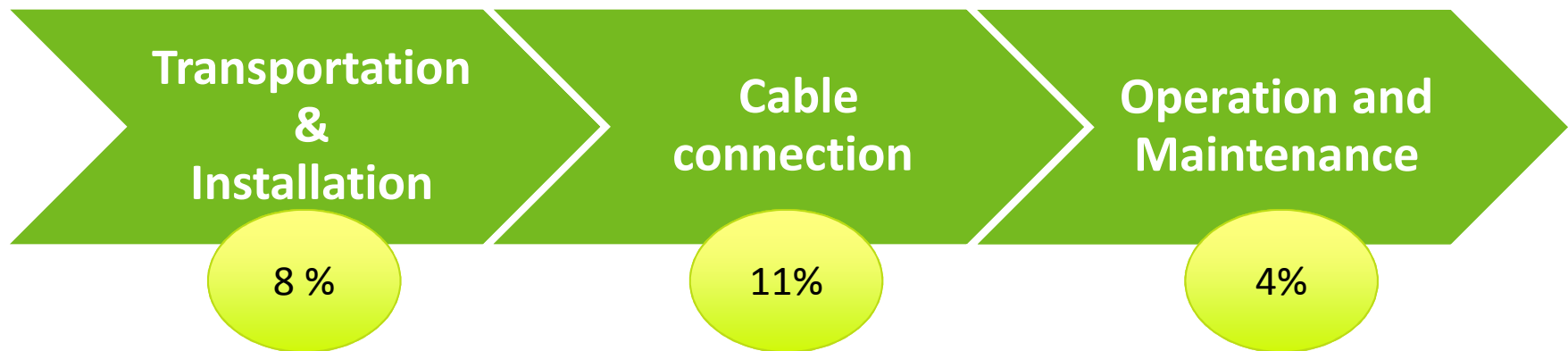
Measured by
installed capacity

Source: Windreich

* wpd is a project developer who will pass its shares on to EnBW Erneuerbare Energien.



The Industry is developing



Estimated turnover 2021: 22,4 billion €
Number of employees: 33.100

Key Competences of Suppliers

Process Competence

- Process efficient
- Cooperation and communication
- Logistics

Product Competence

- R&D
- Competitive product
- Quality management
- Integration

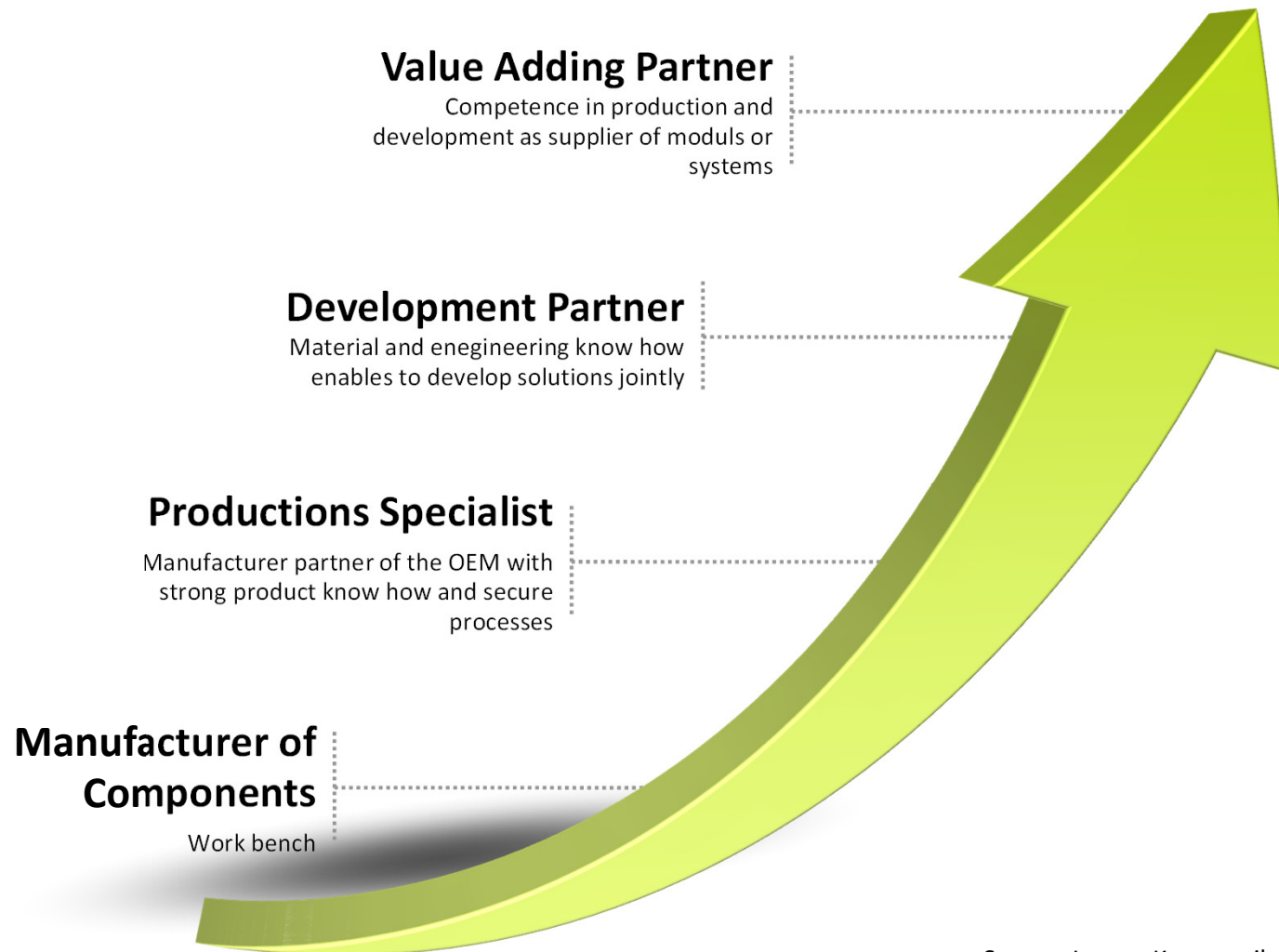
Management Competence

- Objectives, people, implementation
- Professional project management
- Knowledge management

International competence

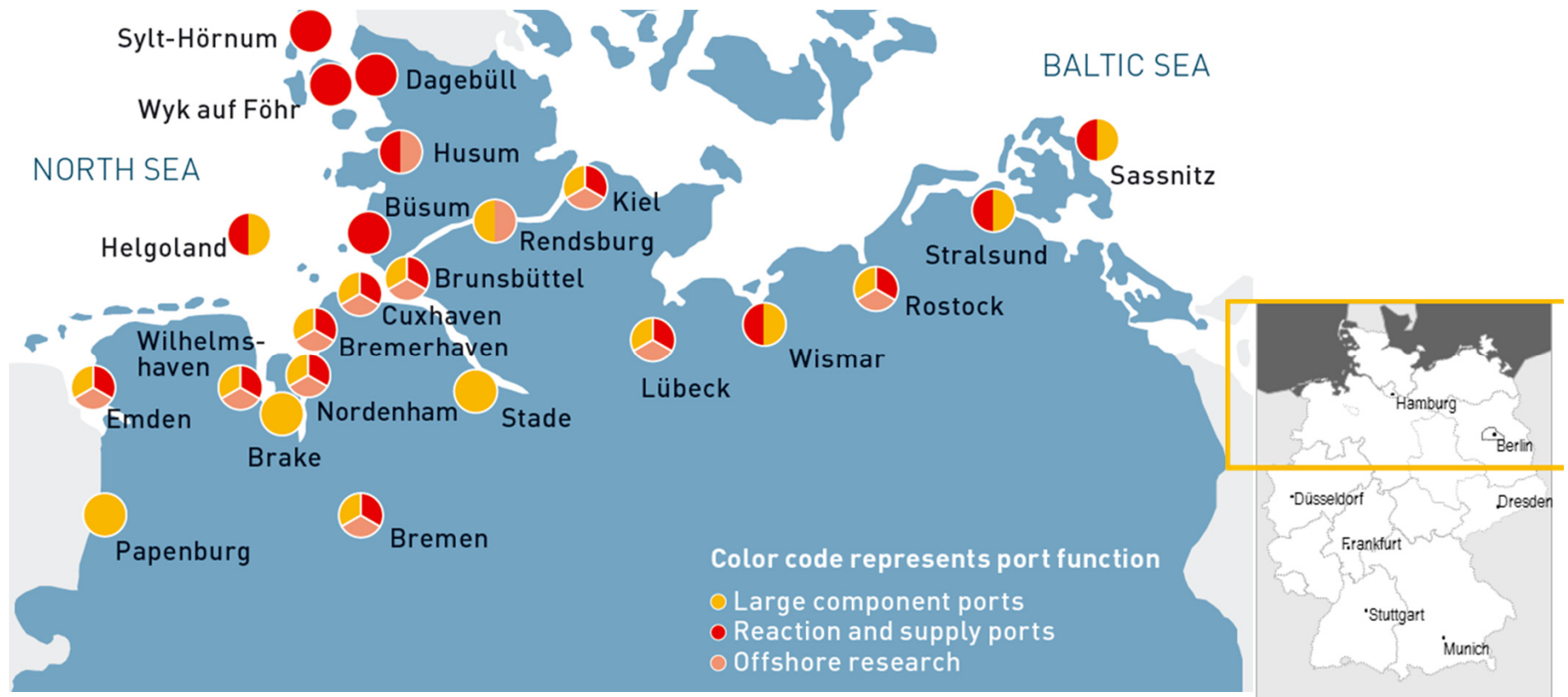
- Culture
- Language
- Logistics
- Installation

Cooperation between OEM and Supplier





Offshore Wind Infrastructure



The time is right

- Problem solver
- Alliances and interplay
- Join established organisations and events



Network

1. Offshore-Basis Cuxhaven (www.offshore-basis.de)
2. WAB Windenergie Agentur (Bremerhaven/Bremen (www.wab.net))
3. HUSUM WindEnergy (<http://community.husumwindenergy.com>)
windcomm schleswig-holstein (www.windcomm.de)
4. Erneuerbare Energien Hamburg (www.erneuerbare-energien-hamburg.de)
5. Wind Energy Network Rostock (www.wind-energy-network.de)



Opportunities

- **Trade fairs and exhibitions**

- Hannover Messe 08. - 12. April 2013
- Meeting Point Wind in Düsseldorf 18.-19.06.2013
- EWEA Offshore Frankfurt 19. – 21. 11.2013

- **Conferences**

- 9. WAB Offshore-Windforce Bremen/Bremerhaven 4-6 June 2013

- **Study Tours**

- **B2b meetings**

Who forgets to prepare, prepares to be forgotten

- 40% of sales pitches are too generic
- 57% of sales people are poorly prepared/ unprepared for an initial client meeting
- 50% of sales people need to be better informed about client specific requirements
- Use the internet
- Get to know the company
- Prepare 10-20 minutes

Who remembers to prepare, prepares to be remembered.

Source: IDC survey from 2011

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