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THE EUROPEAN WIND ENERGY ASSOCIATION



# Wind Energy - The Facts

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Budapest, Hungary

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## IEE PROGRAMME



## WIND ENERGY - THE FACTS PUBLICATION



## WEBSITE

## INTELLIGENT ENERGY EUROPE (IEE) PROGRAMME

- Wind Energy – The Facts: IEE financed project (Renewable electricity area) of 2 years (01/11/07 - 31/10/09)
- IEE: EU's funding tool to encourage the use of renewable energy sources and energy saving and  
move towards a more energy intelligent Europe

*Source: European Info Day, Intelligent Energy – Europe, Brussels, 12 February 2009*

## INTELLIGENT ENERGY EUROPE (IEE) PROGRAMME in figures

- Budget:  
2007-13: €730 million
- Maximum funding rate:  
since 2007: 75%
- Projects supported to date:  
400+ projects  
60 local/regional energy agencies
- Number of beneficiaries:  
> 3,000

*Source: European Info Day, Intelligent Energy – Europe, Brussels, 12 February 2009*

## IEE OPERATIONAL OBJECTIVES

- Improve sustainability
- Boost investment
- Remove non-technological barriers

*Source: European Info Day, Intelligent Energy – Europe, Brussels, 12 February 2009*



## FUNDING AREAS – i.e. 2009



### Energy efficiency

- < Buildings
- < Energy-efficient products



### Renewable energy sources

- < Electricity
- < Biofuels
- < Heating + cooling
- < Small-scale in buildings



### Mobility

- < Alternative fuels and clean vehicles
- < Energy-efficient transport
- < Capacity building in agencies

*Source: European Info Day, Intelligent Energy – Europe, Brussels, 12 February 2009*

## EACI/IEE



More information available at:

[http://ec.europa.eu/energy/intelligent/contact/index\\_en.htm](http://ec.europa.eu/energy/intelligent/contact/index_en.htm)



EUROPEAN COMMISSION

for competitiveness & innovation

executive agency

**eaci**



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WIND ENERGY - THE FACTS PUBLICATION

<http://www>

WIND FACTS WEBSITE

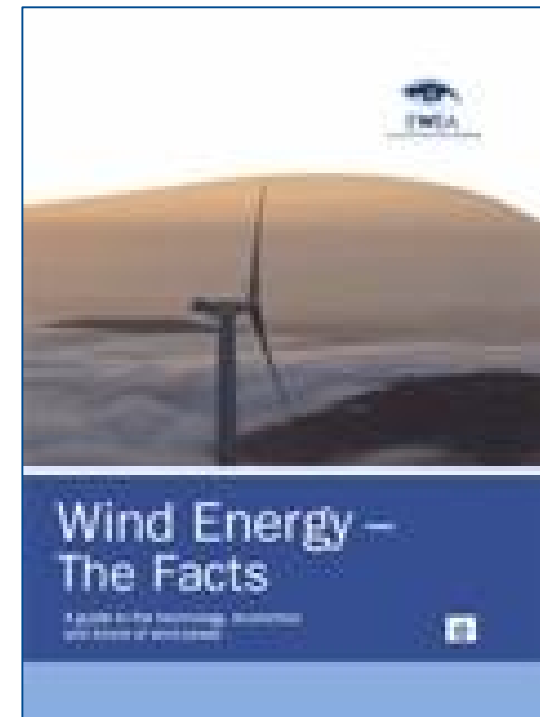




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## WIND ENERGY – THE FACTS PUBLICATION

- Considered to be the most important wind energy reference in the world
- Detailed overview of the wind energy sector
- Prepared by a consortium of leading experts from different sectors all over Europe





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# WIND ENERGY – THE FACTS VOLUMES

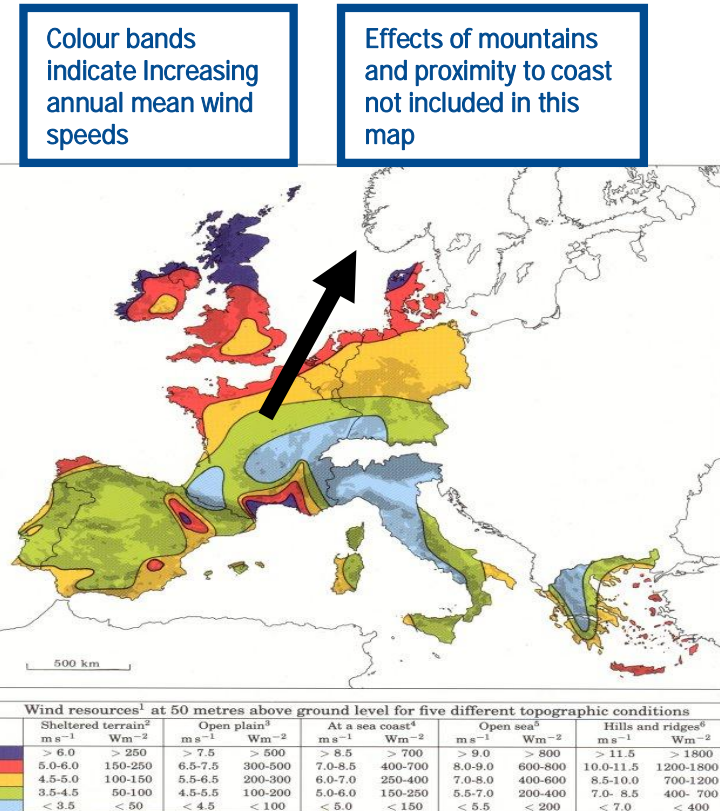
- I. Technology
- II. Grid Integration
- III. The Economics of Wind Power
- IV. Industry and Markets
- V. Environment
- VI. Scenarios and Targets



# I. TECHNOLOGY

Covers :

- a. Resource estimation
- b. Technology
- c. Wind farm design
- d. Offshore wind power
- e. Small wind turbine
- f. R & D.



Onshore wind energy resource, as computed on a broad scale for the European Wind Atlas.



## GRID INTEGRATION

Covers:

- a. Design and operation
- b. Infrastructure upgrade
- c. Connection requirements
- d. System adequacy
- e. Market design
- f. Economics of wind power integration





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### III. ECONOMICS OF WIND POWER

Covers :

- a. Onshore wind power
- b. Offshore development
- c. Finance
- d. Prices & support mechanisms
- e. Impact of wind power on spot power prices
- f. Comparison of wind power to conventional power
- g. Employment



### III. ECONOMICS OF WIND: Costs



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- Æ Investment costs
- Æ O&M costs
- Æ Electricity production
- Æ Average wind speed
- Æ Turbine lifetime
- Æ Discount rate

Cost structure of a typical 2 MW wind turbine installed in Europe (€<sup>2006</sup>)

	INVESTMENT (€1,000/MW)	SHARE OF TOTAL COST %
Turbine (ex works)	928	75.6
Grid connection	109	8.9
Foundation	80	6.5
Land rent	48	3.9
Electric installation	18	1.5
Consultancy	15	1.2
Financial costs	15	1.2
Road construction	11	0.9
Control systems	4	0.3
<b>TOTAL</b>	<b>1,227</b>	<b>100</b>

Source: EWEA 2009 report "The Economics of Wind Energy"

- Æ Wind energy: 75% of costs paid upfront
- Æ Conventional power: less capital intensive — uncertain fuel and carbon costs



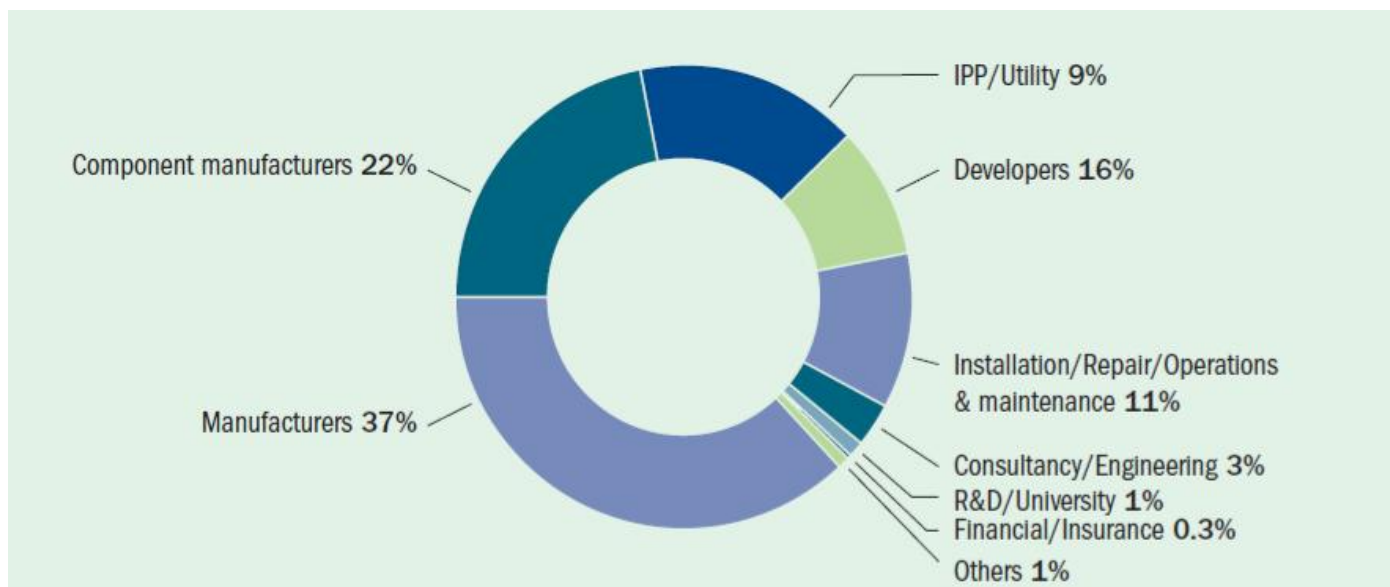
## IV. ECONOMICS OF WIND POWER: Employment



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### What is the current employment situation?

- The EU wind energy sector directly employed approximately **108,600 people** in 2007
- On average, wind energy sector in Europe created **33 new jobs every day**







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## IV. INDUSTRY AND MARKETS

Covers :

- a. The EU energy mix
- b. Wind Energy in the European power market
- c. Current status of the wind market
- d. European wind industry
- e. Key player positioning & future investment
- f. Status of global wind market
- g. Adm. & grid barriers.

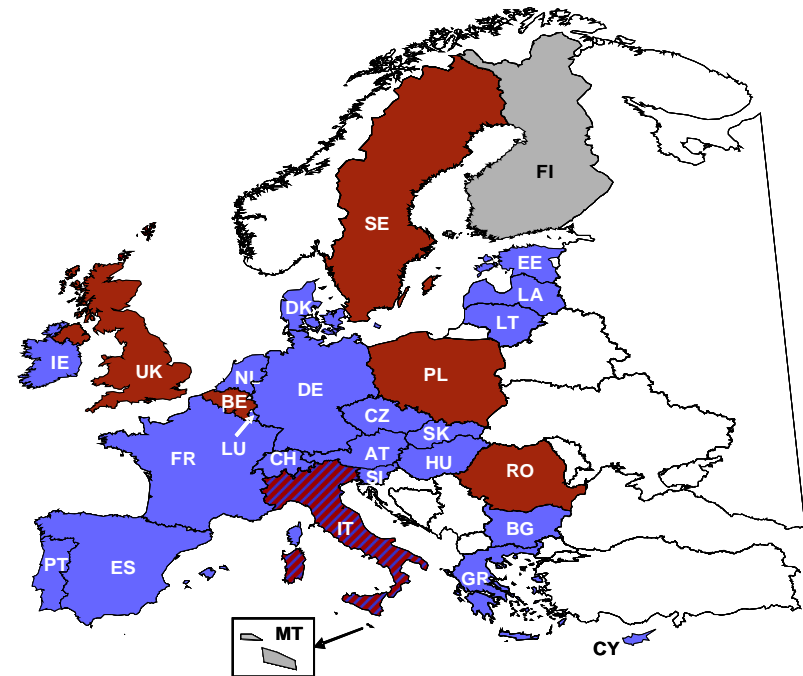


## IV. INDUSTRY AND MARKETS: Support schemes for RES-E



### National support schemes

- Each Member State can choose its own support scheme
- Strong tendency towards:
  - Feed-in tariffs
  - Quota obligations with tradable green certificates



Blue: Feed-in tariff  
Red: Quota / TGC

Grey: Tax incentives / Investment grants



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## V. ENVIRONMENT

Covers:

- a. Environmental benefits,
- b. Environmental impacts,
- c. Policies measures to combat climate change,
- d. Externalities of wind compared to other technologies,
- e. Social acceptance of wind energy & wind farms.



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Intelligent Energy  Europe

IEE PROGRAMME



WIND ENERGY - THE FACTS PUBLICATION

[http://www](http://www.ewe.eu)

WEBSITE

WEBSITE: [WWW.WINDFACTS.EU](http://WWW.WINDFACTS.EU)



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# Wind Energy THE FACTS

TECHNOLOGY GRID INTEGRATION ECONOMICS INDUSTRY & MARKETS ENVIRONMENT SCENARIOS & TARGETS

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**MAIN PUBLICATION :**

TECHNOLOGY  
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INDUSTRY & MARKETS  
ENVIRONMENT  
SCENARIOS & TARGETS

APPENDIX  
ABBREVIATIONS  
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How to order?

Wind Energy - The Facts (WindFacts) is a European project financed by the Intelligent Energy - Europe programme of the Executive Agency for Competitiveness and Innovation that runs from November 2007 to October 2009.

The 'Wind Energy - The Facts' publication is widely considered to be the most important wind energy reference in the world. It presents a detailed overview of the wind energy sector, with the most up-to-date and in-depth information on the essential issues concerning wind power today.

This new edition of the 'Wind Energy - The Facts' publication includes chapters on:

- [Technology](#) (Download as PDF 3.5MB)
- [Grid integration](#) (Download as PDF 1.5MB)
- [The economics of wind](#) (Download as PDF 505KB)
- [Industry and markets](#) (Download as PDF 404KB)
- [Environmental impacts](#) (Download as PDF 1.7MB)
- [Scenarios and targets](#) (Download as PDF 1.5MB)

These have been prepared by a consortium of [leading experts](#) from different sectors all over Europe.

The second year of the project is dedicated to the updates on the website and to the organisation of a dissemination campaign through 5 [workshops](#) in [France](#), Hungary, [Latvia](#), [Romania](#) and Sweden.

Wind Energy - The Facts is implemented by a [consortium](#) led by the European Wind Energy Association ([EWEA](#)).

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http://www



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## WEBSITE

- Full publication in html & pdf available at:  
[www.windfacts.eu](http://www.windfacts.eu)
- You can also order the publication via website:  
<http://www.wind-energy-the-facts.org/en/how-to-order.html>

# EUROPEAN WIND ENERGY EVENTS



- Come to this year's offshore wind event in Stockholm (14 - 16 September 2009)
  - Over 80% of the exhibition space has already been sold.
    - 2000 participants expected
  - More information: [www.eow2009.info](http://www.eow2009.info)



- EWEAs annual event will take place in Warsaw, Poland (20 – 23 April 2010).
  - More information: [www.ewec2010.info](http://www.ewec2010.info)





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# Thank you very much for your attention

[www.ewea.org](http://www.ewea.org)

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