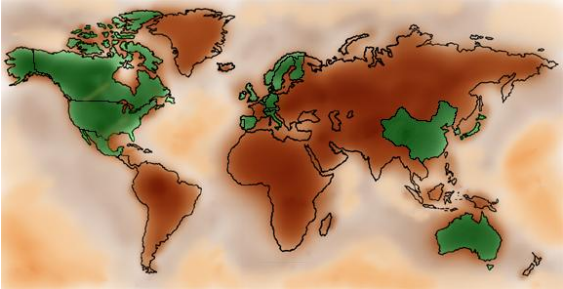


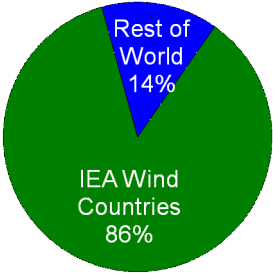


86% of the world wind capacity is in IEA Wind member countries



IEA Wind Countries

(+France and Russia in the process of joining in 2011)



World Wind Capacity





IEA Wind has broad membership

OECD Participating Countries:

Europe:

Austria, Denmark, Finland, Germany, Greece, Ireland, Italy, the Netherlands, Norway, Portugal, Spain, Sweden, Switzerland, the United Kingdom, and the European Commission
(+France and Russia in the process of joining in 2011)

North America:

Canada, Mexico, and the United States

Asia and Pacific:

Australia, Japan and South Korea

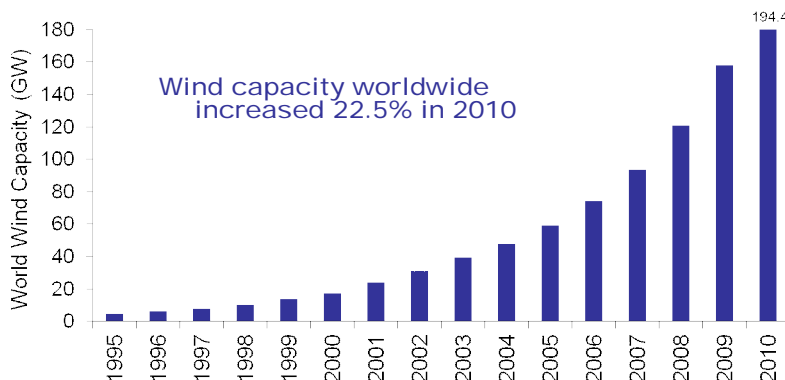
International Organizations (sponsors):

Chinese Wind Energy Association and the European Wind Energy Association



Wind generation is significant and growing

In Europe, wind power is 9.6% of total installed electrical generation capacity. (Source: EWEA, 2011)





Wind contributes to national electrical demand

IEA Wind Country	National electricity demand (TWh/yr)	Percent of national electricity demand from wind*
Denmark	34,8	19,3%
Portugal	49,9	15,0%
Spain	251,5	14,4%
Ireland	27,4	10,8%
Germany	582,5	6,5%
Canada	549,9	1,8%
United States	3 741,0	1,9%

* % of national electricity demand from wind = (wind generated electricity/ national electricity demand)

Source: IEA Wind 2009 Annual Report

- The EU has moved from 0.1% wind contribution in 2000 to 5% in 2010.
- Portugal experienced an instantaneous wind energy contribution of 70% with no operational problems.



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Wind energy development brings national benefits

IEA Wind Country	Total Wind Capacity (MW)	Estimated jobs	Economic impact (Million euro)
U. S.	35 086	85 000	14 450
Germany	25 777	90 000	5 650
Spain	19 149	25 438	
Italy	4 850	18 000	2 000
UK	4 051	16 000	
Portugal	3 616	2 500	956
Denmark	3 480	26 000	5 300
Canada	3 319		1 500

Source: IEA Wind 2009 Annual Report

- Thanks to wind generation, the U.S. avoided 62 million tons of CO₂ emissions, the same as taking 10,5 million cars off the road

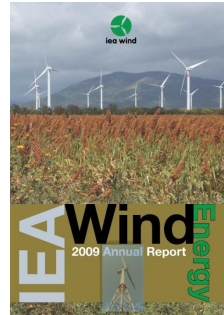


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Information Exchange:

- Country and Task reports at meetings of the IEA Wind Executive Committee (two per year, 21 countries, the European Union, and the European Wind Energy Association)
- IEA Wind Annual Report (168 pages) contains chapters on research tasks, country activities, and an Executive Summary. It is distributed to all participating organisations.
- Public Web site: www.ieawind.org
- Members-only Web pages



Active Research Tasks of IEA Wind

- WAKEBENCH: Benchmarking of wind farm flow models (Task 31)
- Dynamic Codes and Models for Offshore Wind Energy (Task 30)
- Aerodynamic Data Analysis of the EU MEXICO Project (Task 29)
- Social Acceptance of Wind Energy Projects (Task 28)
- Consumer Labeling of Small Wind Turbines (Task 27)
- Cost of Wind Energy (Task 26)
- Power Systems with Large Amounts of Wind Power (Task 25)
- Wind Energy in Cold Climates (Task 19)
- Base Technology Information Exchange (Task 11)





IEA-Wind Task 31: WAKEBENCH

Benchmarking of wind farm flow models

- O.A.: Javier Sanz Rodrigo (CENER), Patrick Moriarty (NREL)
- Objective: To improve wind farm modeling techniques and provide a forum for industrial, governmental and academic partners to develop, evaluate and improve atmospheric boundary layer and wind turbine wake models for use in wind energy
 - from flat to complex terrain,
 - from single to multiple wakes,
 - both onshore and offshore,
 - using well defined test cases from the literature and test wind farms (“research” conditions) as well as from industrial sites (“real-life” conditions)
- Main deliverables
 - Inventory of flow models and validation test cases
 - Model evaluation protocol for wind farm modeling
 - Best practice procedures for wind and wake modeling
- Now assembling participants.
 - So far 30 interested participants in 12 countries
- Start in the second half of 2011 for duration of 3 years



For more information, visit www.ieawind.org
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IEA Wind organisational details

- IEA Wind is one of the more than 40 Implementing Agreements under International Energy Agency (IEA) Organization for Economic Co-operation and Development (OECD). It is attached to the Renewable Energy Working Party (REWP).
- The full, legal name of the activity is the IEA Implementing Agreement for Co-operation in the Research, Development, and Deployment of Wind Energy Systems.
- Benefits include:
 - Guide national governmental programmes and policies through information exchange
 - Develop skills, knowledge and improve wind R&D cost effectiveness and minimise environmental effects
 - Provide information and technology to reduce costs and increase the value of wind energy
 - Identify and publicise societal, economical and governmental benefits



References

- *End-of-term Report for IEA Wind*, July 2008.
- *IEA Wind Energy, 2009 Annual Report*, July 2010.
- Global Wind Energy Council (GWEC), February 2011
- IEA Wind task reports posted to www.ieawind.org



IEA Disclaimer

The IEA Wind agreement, also known as the Implementing Agreement for Co-operation in the Research, Development, and Deployment of Wind Energy Systems, functions within a framework created by the International Energy Agency (IEA). Views, findings, and publications of IEA Wind do not necessarily represent the views or policies of the IEA Secretariat or of all its individual member countries.

