Community Power as a Key Driver for Wind Power

XXII Conferencia Catalana per un Futur sense Nuclears i Energeticament Sostenible

World Wind Energy Association

Founded in July 2001 in Copenhagen, Denmark,
Head Office since July 2003 in Bonn, Germany

The Members:

National associations, scientific institutes, companies, public bodies and individuals from currently **91 countries** on all continents

The Aims:

Promoting the worldwide utilisation of wind energy by

- being a communication platform for all wind energy actors world-wide
- advising national and international policies in favour of wind energy
- enhancing international technology transfer

The Activities:

- World Wind Energy Conferences
- Several working groups (sust. guidelines, repowering, hybrid, education, CDM)
- Advising governments, international organisations, etc. –

WWEA's international cooperation

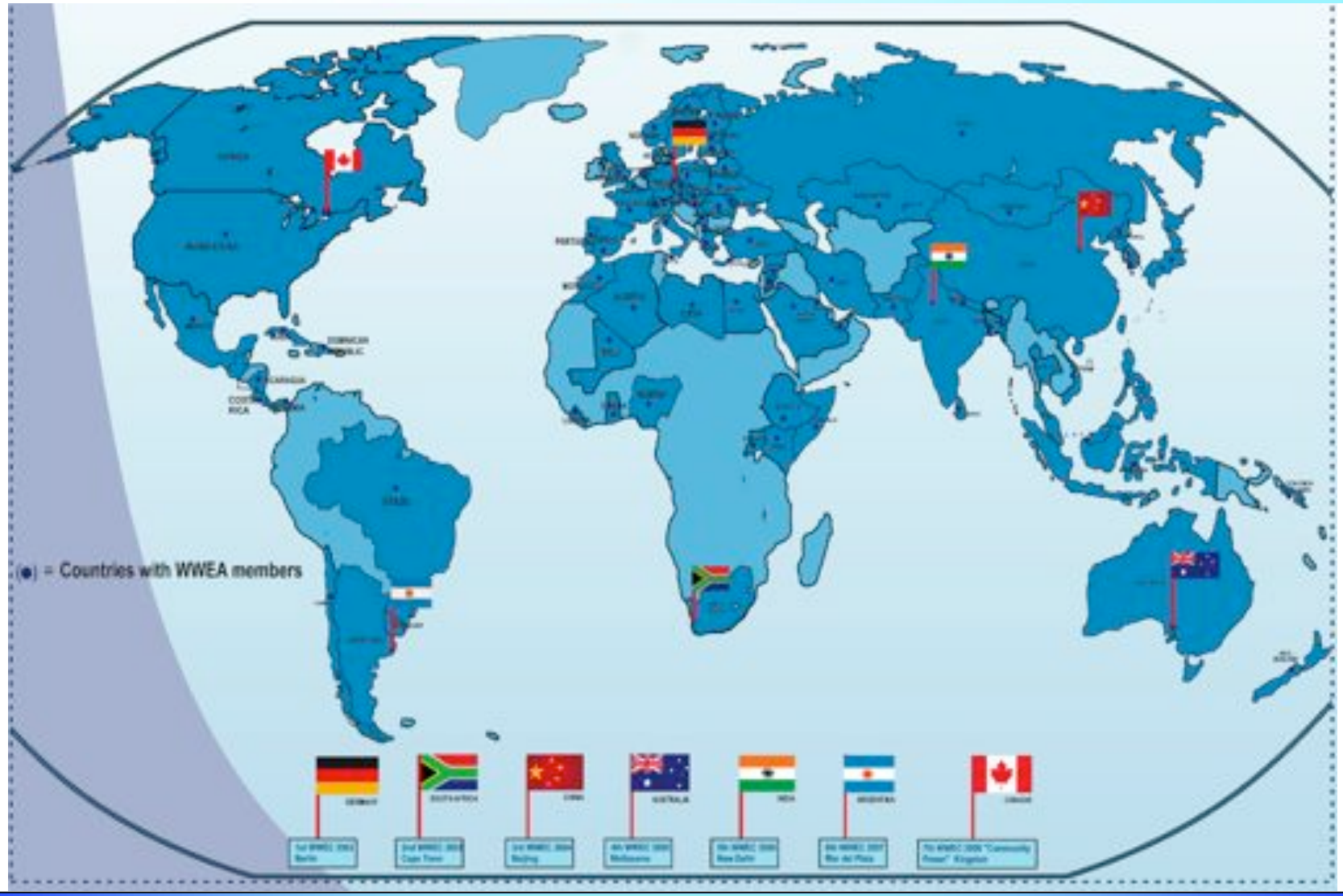
Cooperation with international organisations:

- WWEA has **Special Consultative Status at UN**, and works with other international organisations
- WWEA is member of REN21 Steering Committee
- WWEA has supported the establishment of the **International Renewable Energy Agency**

Cooperation with non-governmental organisations:

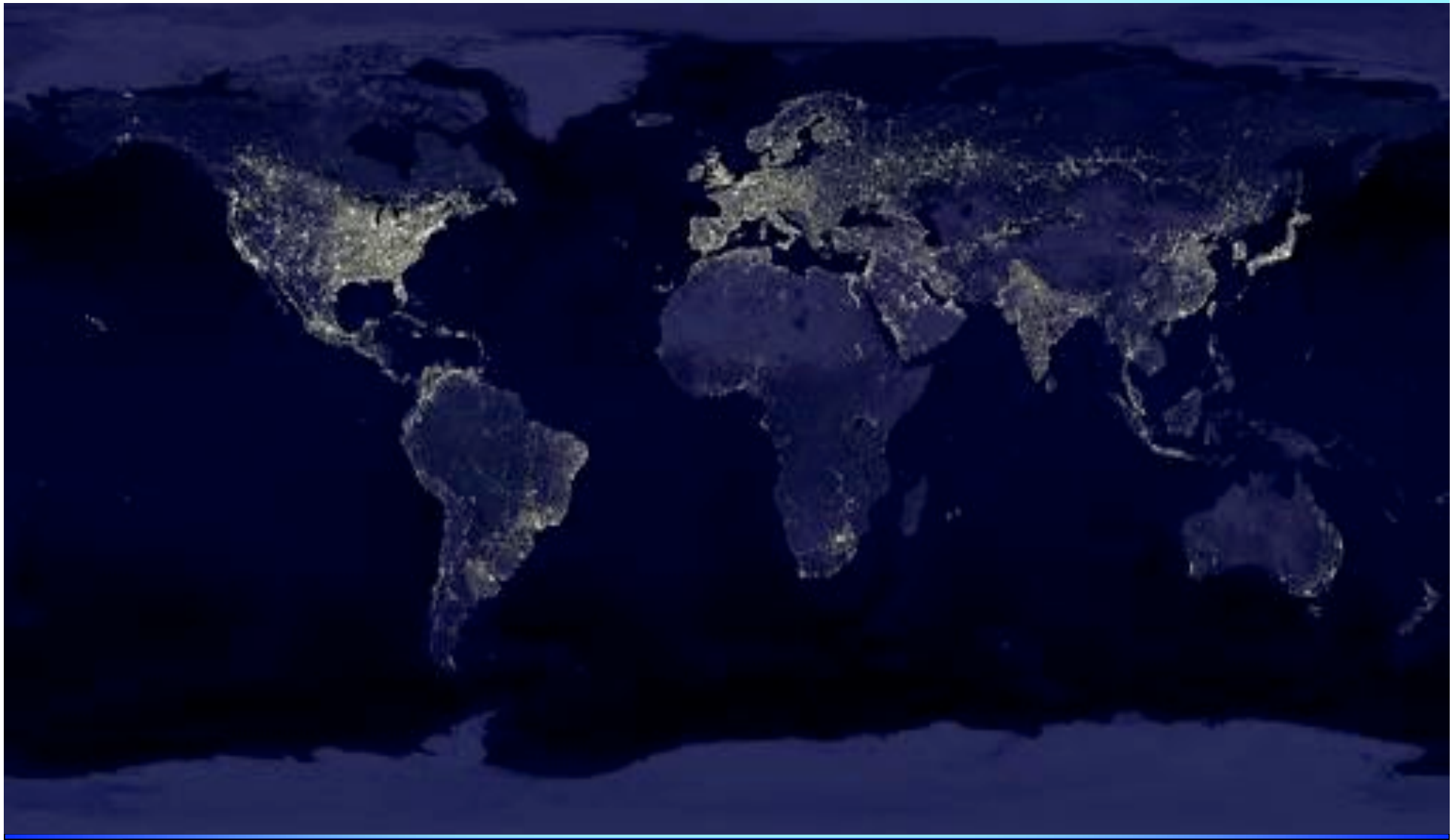
- WWEA has founded the **International Renewable Energy Alliance** with the International Solar Energy Society, the International Geothermal Association and the International Hydropower Association
- WWEA is member of the World Council for Renewable Energies
- WWEA is open for cooperation with all like-minded national, continental, international renewable energy associations/institutes etc.

WWEA's members

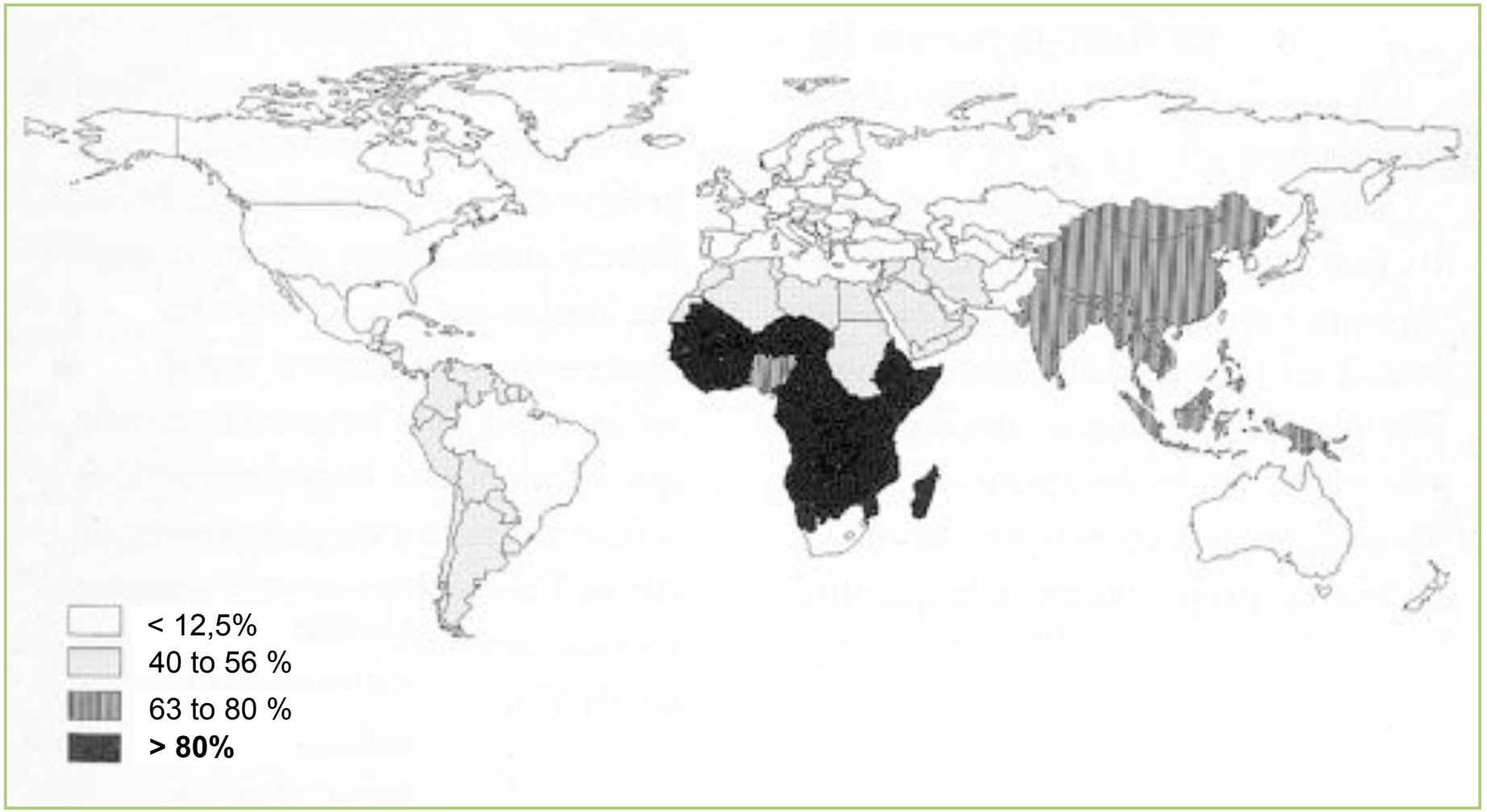


Why 100 % renewable energy?

The starting point: Mankind needs Energy

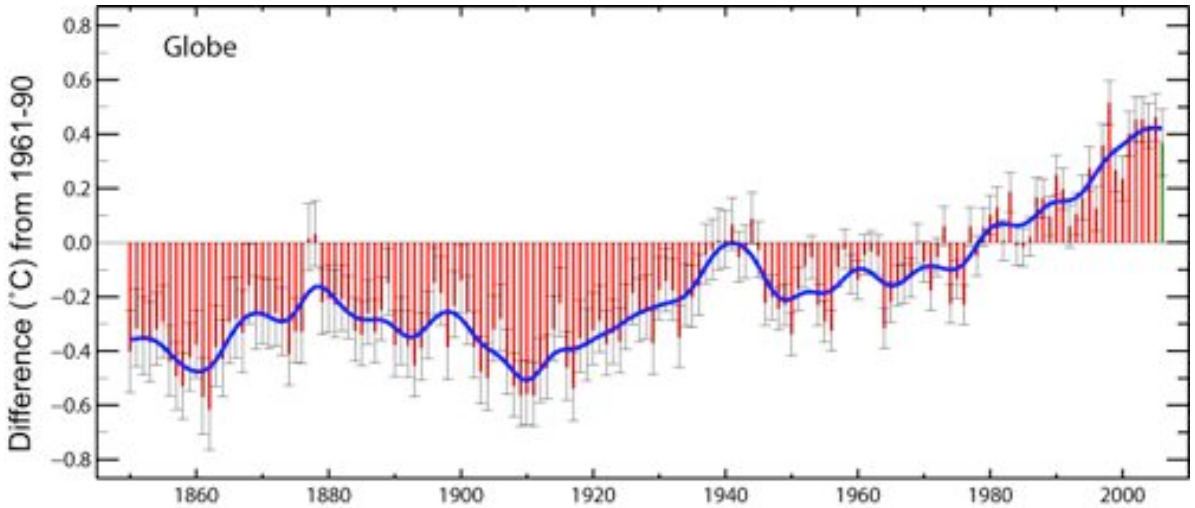


Percentage of population without access to electricity



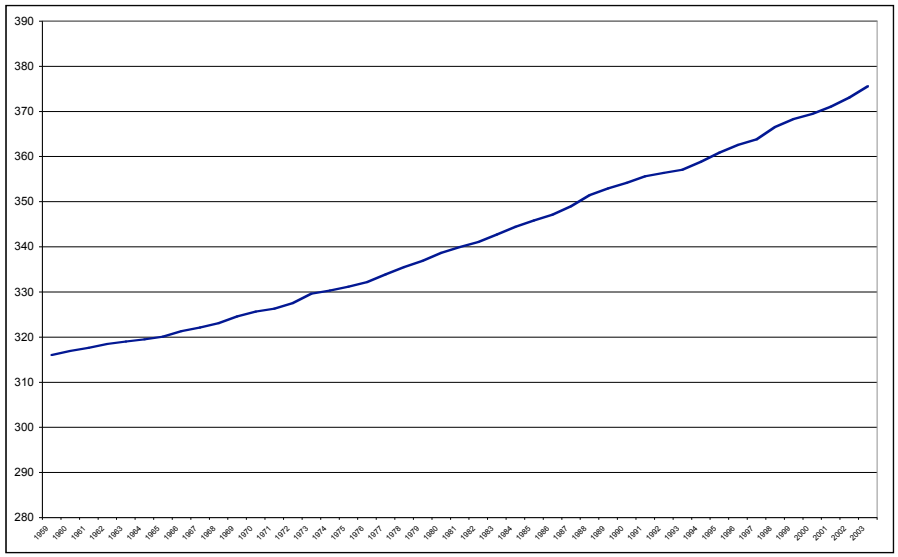
Source: Malifolkecenter

Consequences of Fossil Energy Utilisation



Global average temperature 1860-2005

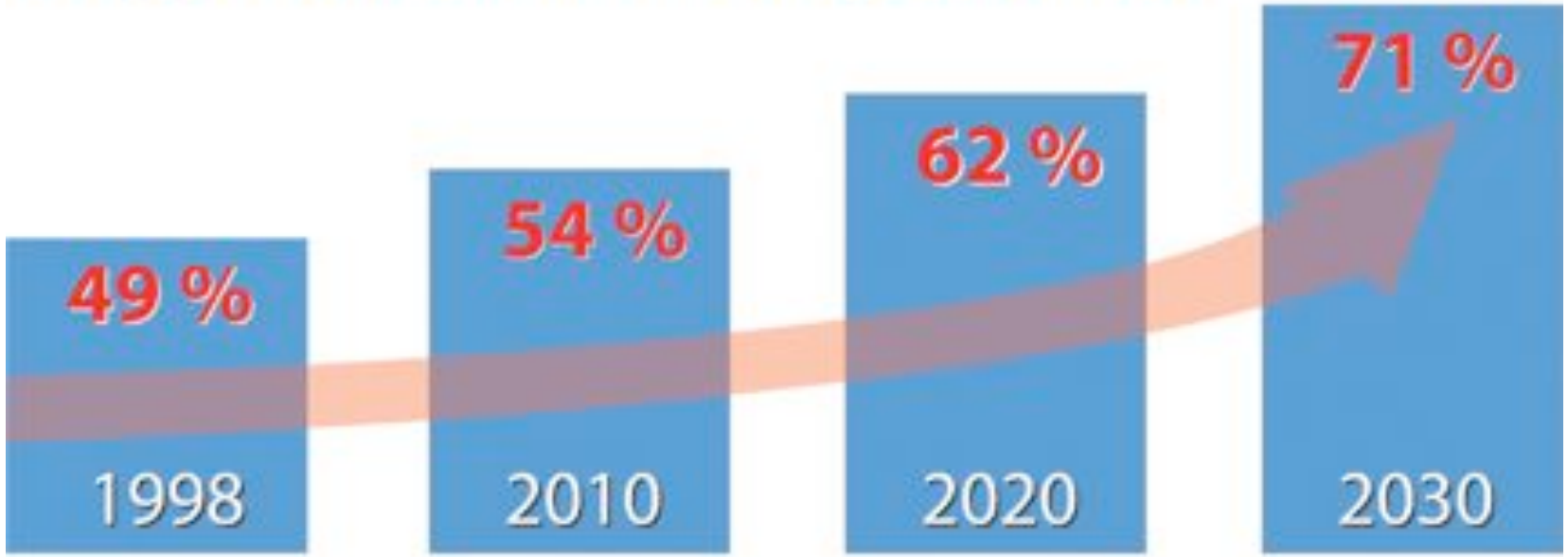
CO2 concentration 1959-2003 at Mauna Loa, Hawaii



Source: IPCC

The case of security of energy supply

Projected Import Dependance on Raw Materials for Energy Production in the European Union



The Dependance on Raw Material Imports will increase dramatically in Europe if current modes of Power Production are retained.

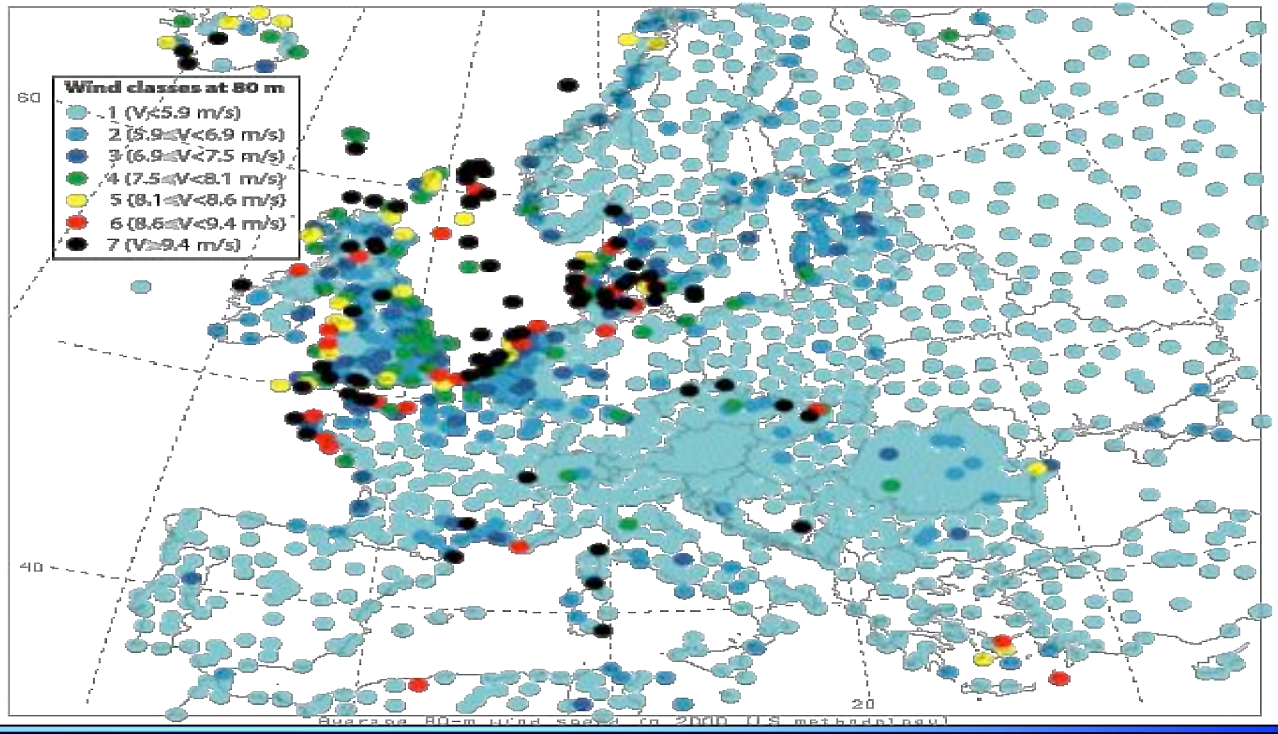
Source: European Commission

Emission free renewable energies like wind are the key technologies for sustainable development through their contribution to

– secure energy supply
– climate change mitigation
– reduction of hazardous emissions, beyond CO2
– avoiding hazardous conflicts around limited fossil resources
– provision of stable energy prices
– stabilisation of economies as low-risk investment

Evaluation of Global Wind Power

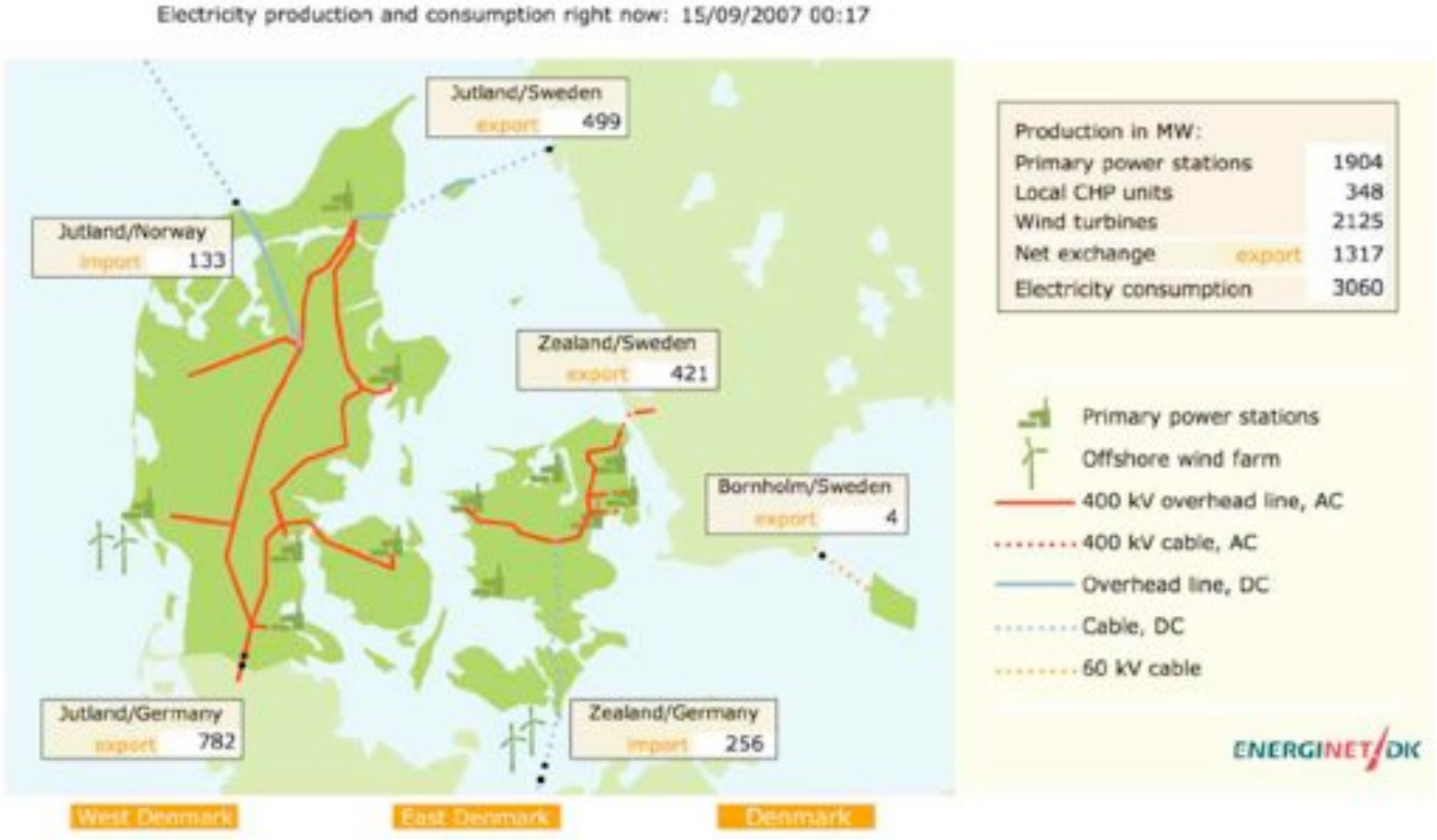
"Assuming that statistics generated from all stations analyzed here are representative of the global distribution of winds, global wind power generated at locations with mean annual wind speeds ≥ 6.9 m/s at 80 m is found to be ~72 TW (~54,000 Mtoe) for the year 2000. **Even if only ~20% of this power could be captured, it could satisfy 100% of the world's energy demand for all purposes** (6995-10177 Mtoe) and over seven times the world's electricity needs (1.6-1.8 TW)."



Source: Cristina L. Archer and Mark Z. Jacobson (Stanford University), 2005

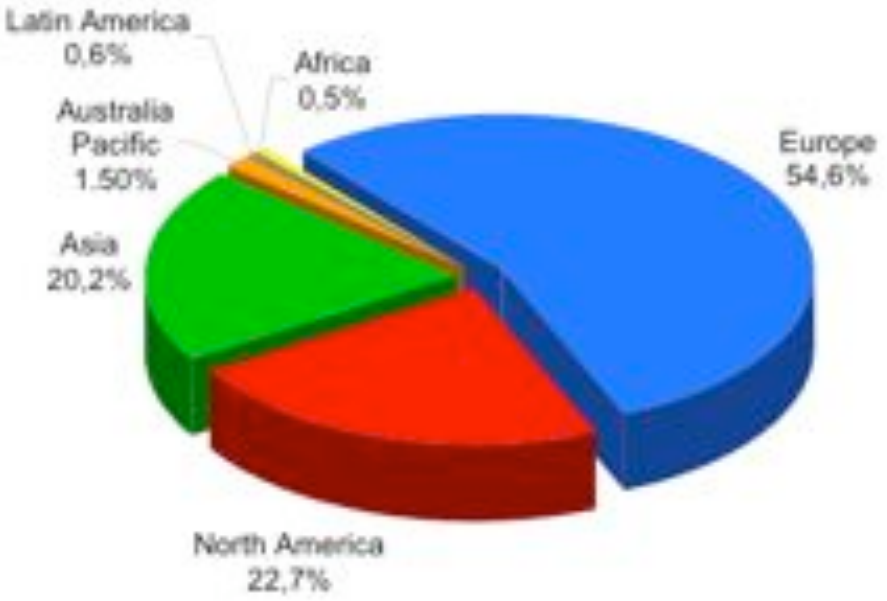
Share in global electricity consumption: > 1,5 %


Top 10 Countries (MW):
USA
25.170
Germany
22.247
23.903
Spain
16.740
China
12.210
India
7.850
9.587
Italy
3.736
France
3.404
United Kingdom
3.288
Denmark
3.125
3.160
Portugal
2.130
2.862
2007
2008


Electricity production and consumption right now: 15/09/2007 00:17
Jutland/Sweden
export 499
Jutland/Norway
import 133
Zealand/Sweden
export 421
Bornholm/Sweden
export 4
Jutland/Germany
export 782
Zealand/Germany
import 256
West Denmark
East Denmark
Denmark
Production in MW:
Primary power stations 1904
Local CHP units 348
Wind turbines 2125
Net exchange export 1317
Electricity consumption 3060
Primary power stations
Offshore wind farm
400 kV overhead line, AC
400 kV cable, AC
Overhead line, DC
Cable, DC
60 kV cable
ENERGINET.DK

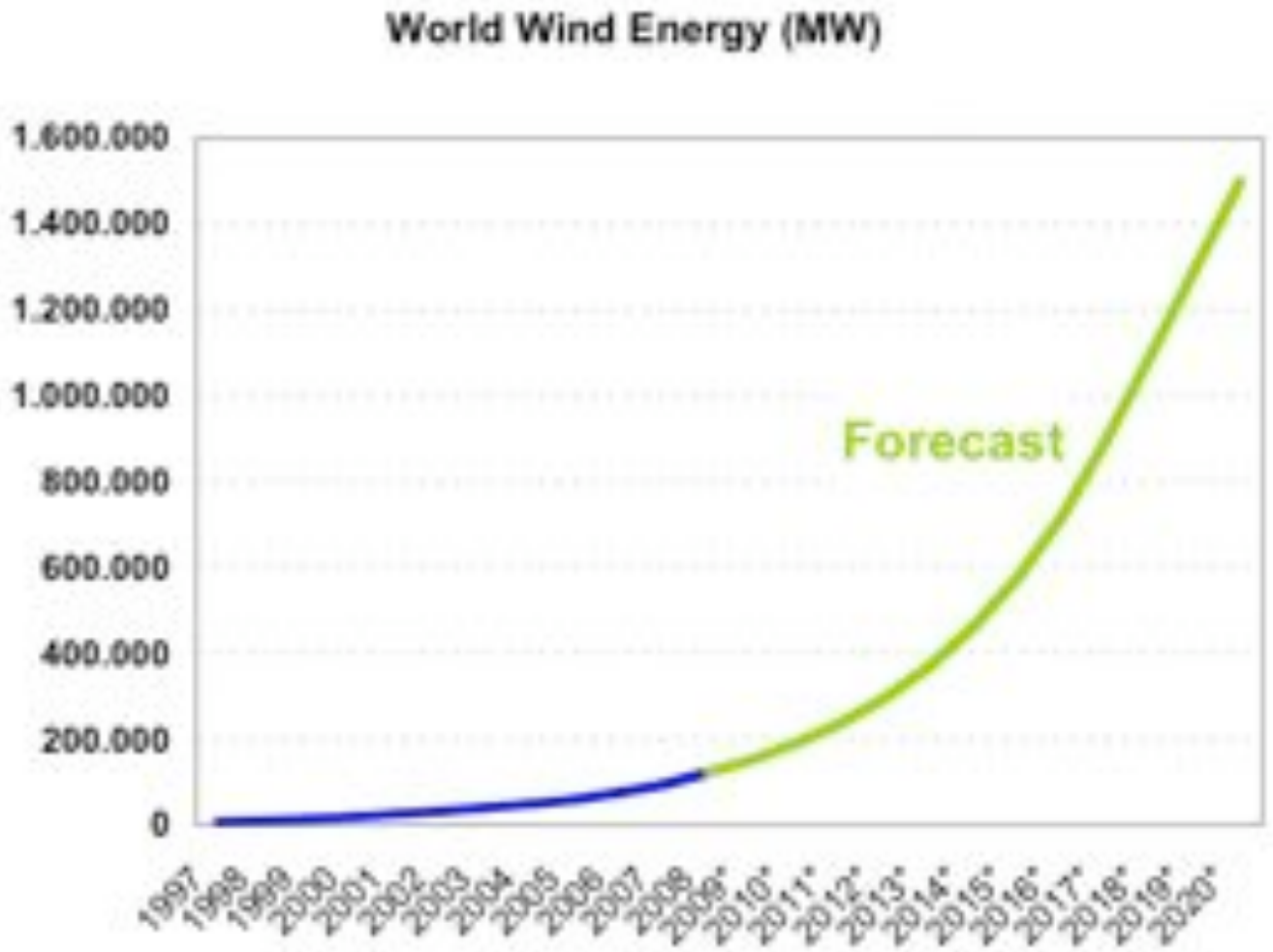
Country Share of New Installed Capacity, 2008

Continental Shares of Total Installed Capacity 2008



Continental Shares of New Installed Capacity (%)


Wind Energy Jobs Worldwide
700.000
600.000
500.000
400.000
300.000
200.000
100.000
0
660.000
*Prediction
540.000
440.000
350.000
300.000
235.000
2005
2006
2007
2008
*2009
*2010

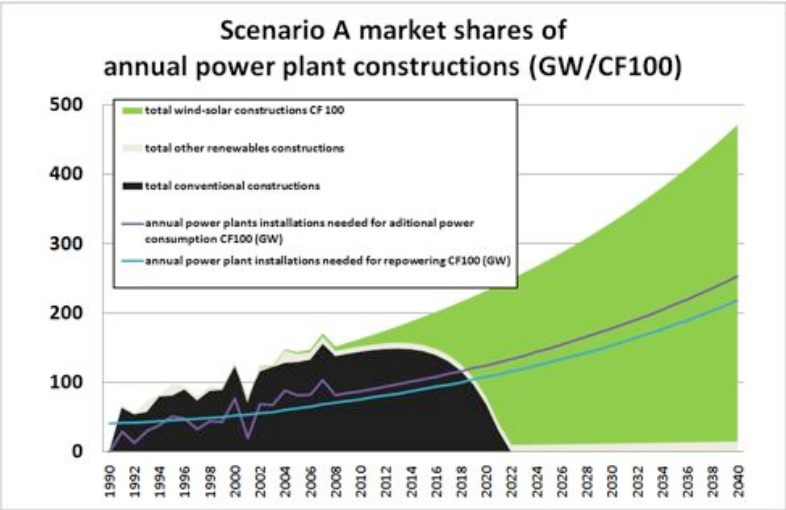

World Wind Energy (MW)
1.600.000
1.400.000
1.200.000
1.000.000
800.000
600.000
400.000
200.000
0
Forecast
1997
1998
1999
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009*
2010*
2011*
2012*
2013*
2014*
2015*
2016*
2017*
2018*
2019*
2020*

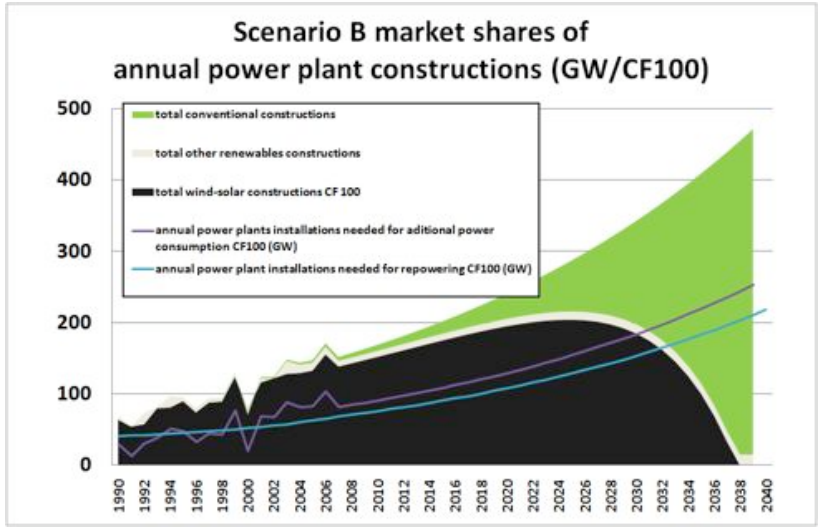
EWG/Rechsteiner: Wind Power – Green Revolution Scenarios

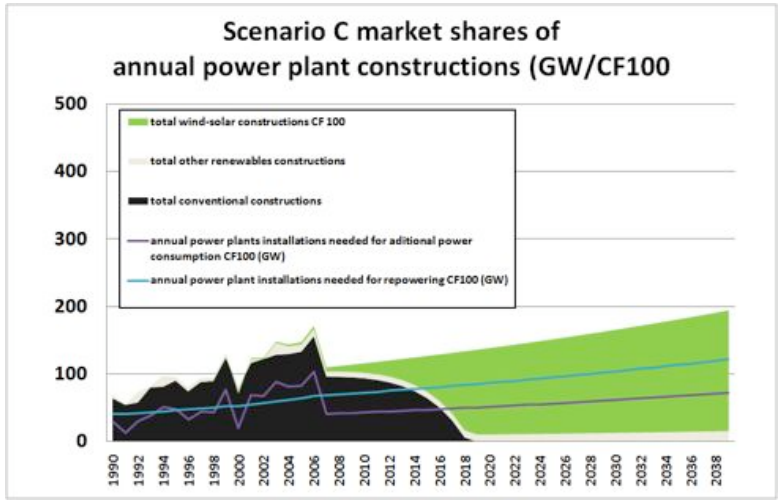
	Scenario A	Scenario B	Scenario C	Scenario D
world electricity generation growth rate 2007-2040	*3.6%*	*3.6%*	*1.8%*	*1.8%*
growth of annual additions of wind power	*30.4%*	*15.2%*	*30.4%*	*15.2%*
wind-solar power capacity in **2030** (GW) (CF25)	13,457	3,782	8,126	3,782
wind-solar power produced in **2030** (TWh)	29,471	8,283	17,796	8,283
other renewable [hydro, biomass, geothermal] power produced in **2030** (TWh)	5,120	5,120	5,120	5,120
non-renewable power produced in **2030** (TWh)	10,290	31,475	7,070	16,583
non-renewable power produced in **2040** (TWh)	0	23,780	0	6,714
peak year of non-renewable power generation TWh (and CO2-peak)	**2018**	**2032**	**2014**	**2022**
when will CO2-emissions for the first time be lowered compared to 1990 (Kyoto-benchmark)?	**2031**	**after 2040**	**2028**	**2038**

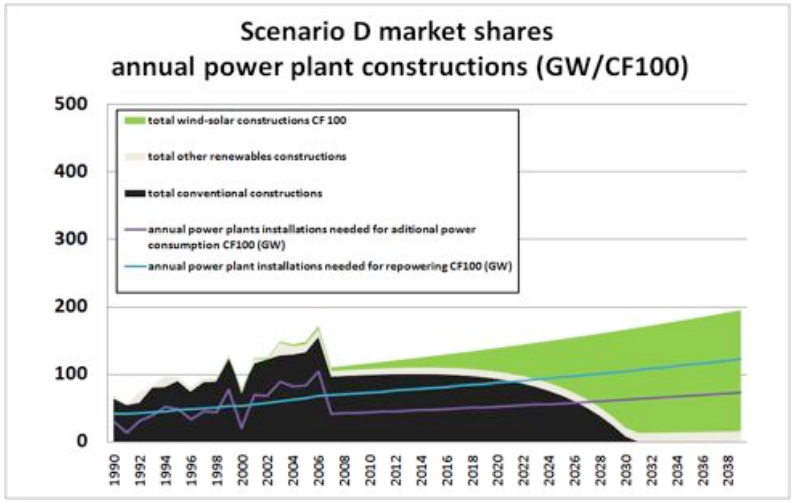
steady growth rates

EWG/Rechsteiner: Wind Power – Green Revolution Scenarios

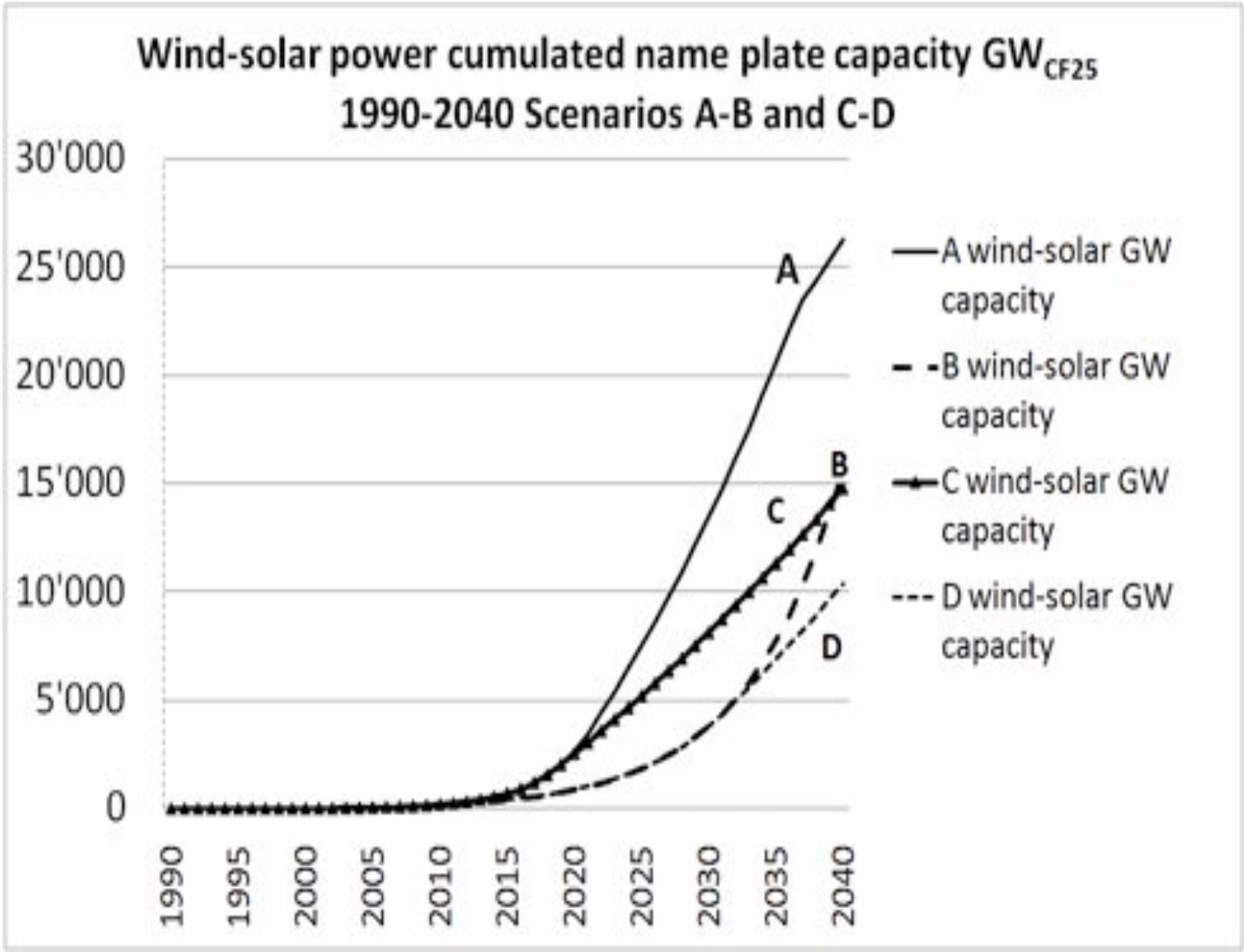




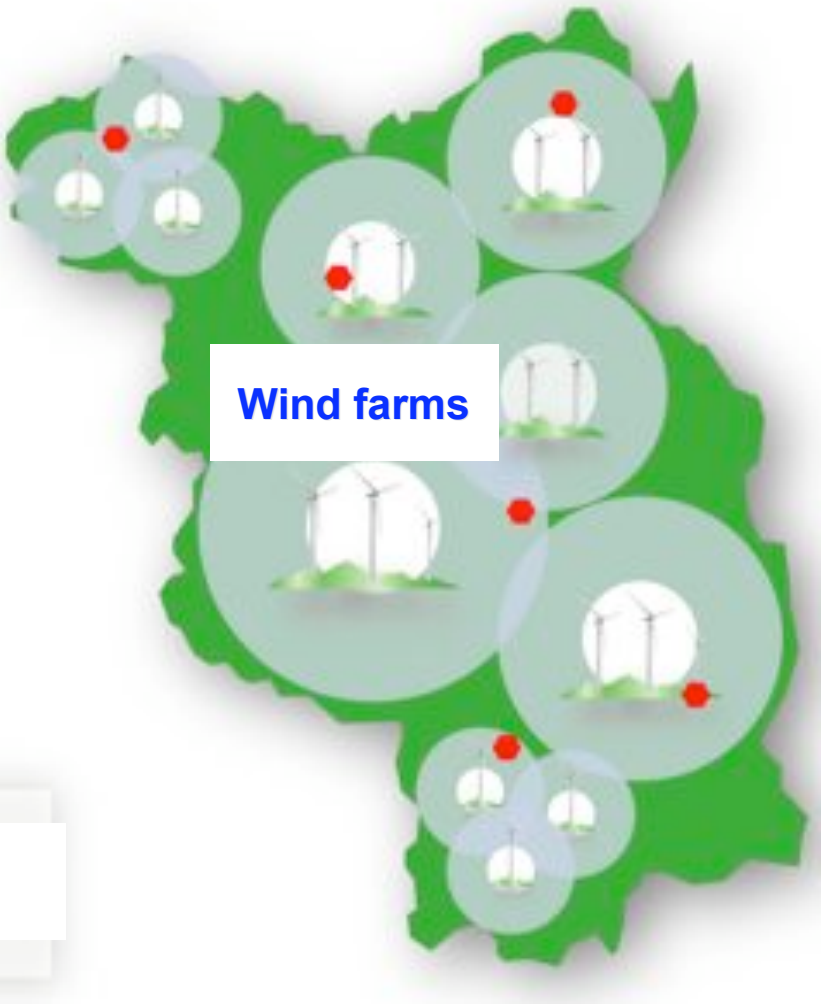




EWG/Rechsteiner: Wind Power – Green Revolution Scenarios



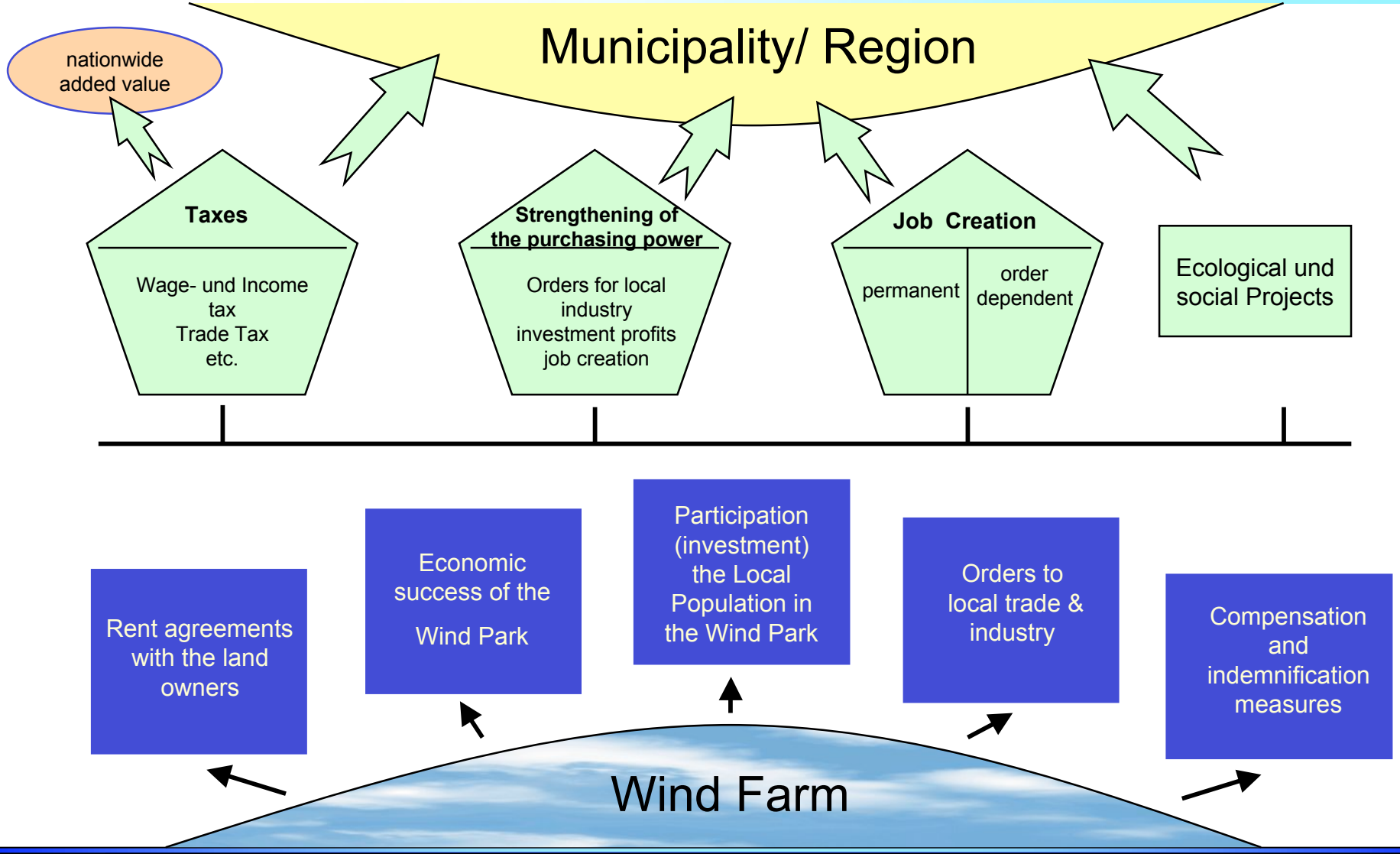
Decentralised renewable energy utilisation



WWEA Working Principle 2:

Local and rural communities and people should be involved and should benefit directly.

Wind benefits



Conventional Power System:
High risk for many, profit for few

Community Power based on renewable energy:
Low risk for many, profit for many

We cannot afford any more NIMBYs

let‘s go for

POOL = Please On Our Land

How to do it?

Different forms of community involvement:

- Cooperative ownership
- Municipal ownership
- Shares for local population

- Early and comprehensive involvement in planning process
- Creation of local jobs
- Tax payment
- Sponsoring local activities
- Further benefits

- …

The success stories:

The pioneer: Denmark: 200.000 families
Germany: 200-300.000 shareholders

Community projects are known in

Canada
USA
Latin America
South Africa
Australia
Scotland
South Africa
Spain
Sweden
…

Successful policy principles

1. Close price gap and create **level-playing field**
   <=> Post-Kyoto negotiations Copenhagen

2. Let local communities benefit directly of **de-centralised energy supply**

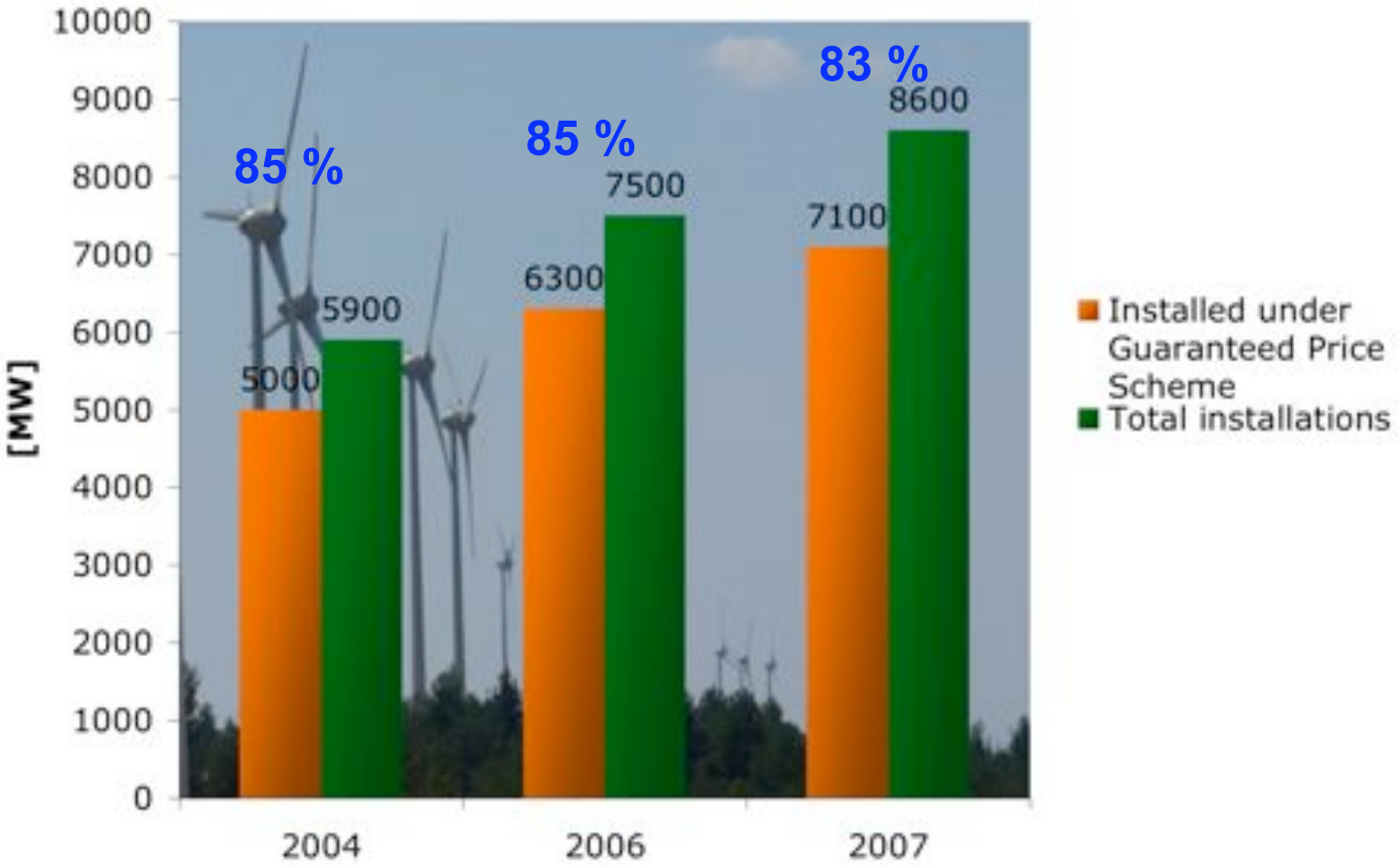
3. Provide sufficient **investment security** (high fixed-cost share of 80 %)
   <=> Financial crisis as an opportunity for low-risk investment

4. Provide an **efficient** promotion scheme

5. Provide **access** to market arena for newcomers, independent power producers, community based investment, administrative structures etc.

=> On national level well-designed feed-in tariffs!!!

Effectiveness by policy tools in the EU



7th World of Wind Energy Conference:

24-26 June 2008:

800 participants from 40 countries
200 presentations & Community Power workshop stream

WWEC2008 Resolution

The Conference calls on governments and the private sector **to recognise communities as key enablers and partners in the development of renewable energy and to give them the necessary support to achieve a smooth transition towards a renewable energy future**.

The Conference welcomes the proposal of a Green Energy Act in Ontario, of a national feed-in bill as presented today in the USA by Congressman Jay Inslee and of a feed-in bill in Michigan as well as the preparation of similar legislation in further states, provinces and countries which are based on the internationally proven successful feed-in principles.

In addition to this, and in the pursuit of renewable energy resources, the Conference resolves to pursue the following objectives, policies and actions:

1. remove all subsidies and enforce the internalisation of all externalities to achieve a level playing field;
2. until this is achieved, pursue compensatory regulatory frameworks such as sufficient and effective feed-in tariffs that encourage renewable energy developments, and that provide **sufficient financial security to promote long-term investment, especially for smaller, community-based investors;**
3. **raise the political and social awareness** to foster the political will towards the inevitable use of renewable energy, **especially by engaging and enabling individual citizens, community power proponents and the youth;**
4. create new human, industrial, administrative and financial capacities and strengthen appropriate supportive and dedicated structures and institutions for renewable energy;

WWEC2008 Resolution

5. increase energy supply security and system stability through a balanced supply mix of renewable energy and geographically distributed generation and increase interaction of local, national, regional and global networks and alliances that contribute to greater cooperation between renewable energy technologies such as International Renewable Energy Alliance;
6. reduce overall costs for energy supply through the increased deployment of renewable energy power as already proven successfully in various jurisdictions such as Brazil, Denmark, Germany and Spain;
7. call on all governments and the private sector to support the creation of a new independent **international renewable energy agency IRENA** as prepared by the German Government, already supported by numerous governments from around the world;
8. develop, use and expand appropriate national, regional and international financing mechanisms for the exclusive realisation of renewable energy, like **funds that are supporting community power** investment such as a community power fund;
9. **enhance developing countries** to get easier access to technology transfer in order to realise the full benefits of renewable technologies such as sustainable jobs through local manufacturing, **direct economic benefits through community based ownership** and accessible energy for increased wealth and productivity;
10. take into account the key role of renewable energies and to create the long-term frameworks for their full deployment for the success of **Post-Kyoto arrangements** and goals on mitigation of climate change; such new frameworks should especially be designed in order **to support smaller scaled, decentralised and community based investment**; (…)

Communities,
small and medium sized companies,
municipalities

have to be the
driving forces for renewable energy deployment

for better policies,
like feed-in tariffs, priority for renewable energy, etc.

Broad and international social movement
for decentralised renewable energy is necessary

„The crying need therefore is to look for renewable energy that alone can ensure sustainable development.“

Dr. APJ Abdul Kalam, President of India,
6 November 2006, during WWEC 2006

Join the World of Wind Energy

WWEC2009
World Wind Energy Conference and Exhibition

See you in Jeju island/South Korea, 23-25 June 2009

www.2009wwec.com