EU harmonisation of renewable energy support and tariff schemes – based on the most successful principles?

*European Energy Policy Seminar*
*INFORSE – EREF – EUFORES*
*Brussels, 15 June 2005*
0. The World Wind Energy Association

1. What are the most successful principles?

2. Should/could a EU wide framework be based on the most successful principles?

3. Conclusion – what to do
Founded in July 2001 in Copenhagen, Denmark

The Members:
National associations, scientific institutes, companies, public bodies and individuals from currently 70 countries on all continents, including many developing countries

The Aims:
Promoting the worldwide utilisation of wind energy by
- being a communication platform for all wind energy actors world-wide
- influencing national and international policies in favour of wind energy
- providing international technology transfer

The Activities:
- World Wind Energy Conferences (WWEC 2005 in Melbourne/Australia)
- Several working groups (sustainability guidelines, repowering, hybrid)
- Advising governments, international organisations, etc.

Head office since July 2003 in Bonn, Germany
Cooperation with international organisations:
- WWEA is accredited at the UNFCCC
- WWEA cooperates with further international organisations like UNEP, UNESCO, IEA, etc
- WWEA was member of *Renewables 2004* International Steering Committee and is member of REN21 Steering Committee

Cooperation with non-governmental organisations:
- WWEA is member of the World Council for Renewable Energies
- WWEA has formed an international renewable energy alliance with the International Solar Energy Society and the International Hydropower Association
- WWEA is open for cooperation with all like-minded national, continental, international renewable energy associations/institutes etc.
EU harmonisation: Based on most successful principles?

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The World Wind Energy Association
www.wwindea.org

Global Installation 1997-2004

World Wind Energy - Installed Capacity (MW)
<table>
<thead>
<tr>
<th>Country</th>
<th>Additional Capacity</th>
<th>Rate of growth</th>
<th>Total capacity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Germany</td>
<td>2019,7</td>
<td>13,8</td>
<td>16.628,8</td>
</tr>
<tr>
<td>Spain</td>
<td>2061,0</td>
<td>33,2</td>
<td>8.263,0</td>
</tr>
<tr>
<td>USA</td>
<td>370,0</td>
<td>5,8</td>
<td>6.740,0</td>
</tr>
<tr>
<td>Denmark</td>
<td>7,0</td>
<td>0,2</td>
<td>3.117,0</td>
</tr>
<tr>
<td>India</td>
<td>875,0</td>
<td>41,5</td>
<td>2.985,0</td>
</tr>
<tr>
<td>Italy</td>
<td>221,0</td>
<td>24,4</td>
<td>1.125,0</td>
</tr>
<tr>
<td>The Netherlands</td>
<td>170,0</td>
<td>18,7</td>
<td>1.078,0</td>
</tr>
<tr>
<td>Japan</td>
<td>390,2</td>
<td>77,1</td>
<td>896,2</td>
</tr>
<tr>
<td>United Kingdom</td>
<td>240,0</td>
<td>37,0</td>
<td>888,0</td>
</tr>
<tr>
<td>China</td>
<td>197,0</td>
<td>34,7</td>
<td>764,0</td>
</tr>
<tr>
<td>Austria</td>
<td>191,0</td>
<td>46,0</td>
<td>606,0</td>
</tr>
<tr>
<td>Portugal</td>
<td>223,0</td>
<td>74,6</td>
<td>522,0</td>
</tr>
<tr>
<td>Greece</td>
<td>124,0</td>
<td>34,0</td>
<td>489,0</td>
</tr>
<tr>
<td>Canada</td>
<td>122,0</td>
<td>37,9</td>
<td>444,0</td>
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<tr>
<td>Sweden</td>
<td>43,0</td>
<td>10,8</td>
<td>442,0</td>
</tr>
<tr>
<td>France</td>
<td>138,0</td>
<td>55,6</td>
<td>386,0</td>
</tr>
<tr>
<td>Australia</td>
<td>181,8</td>
<td>92,2</td>
<td>379,0</td>
</tr>
<tr>
<td>Ireland</td>
<td>152,9</td>
<td>82,2</td>
<td>338,9</td>
</tr>
</tbody>
</table>
Manufacturers World Market Shares 2004

- **Vestas**: 33.0%
- **Gamesa**: 18.9%
- **Enercon**: 15.6%
- **GE Wind**: 11.0%
- **Siemens (Bonus)**: 6.2%
- **Suzlon**: 3.8%
- **Repower**: 3.3%
- **Mitsubishi**: 2.0%
- **Nordex**: 2.2%
- **Others**: 2.4%
- **Goldwind**: 0.5%
- **Ecotécnia**: 0.9%
- **Fuhrlander**: 0.4%
- **Others**: 2.4%

**Wind Energy by Manufacturer**
Wind Energy - Installed Capacity 2004 (total: 47.6 GW)

- Europe: 73%
- America: 15%
- Asia: 10%
- Australia Pacific: 1%
- Africa: 1%
What are the most successful principles?

What are the criteria for the most successful principles?

Compliance with specific characteristics of renewable energy

Effectiveness for rapid and sustainable market development

Efficiency for cost reduction
Wind energy investments – what is characteristic?
Stefan Gsänger
EU harmonisation: Based on most successful principles?

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The price gap: No level playing field

Conventional Energies Subsidies:
~ 200-300 billion €/year

Climate disasters: ~ 65 billion €

External Costs

Who pays?
Consumer
(Power Prices)

General Public
Taxes,
Insurance,
Social Security

Global Loss of
Life Quality
Decentralised renewable energy utilisation

Regionally added value through utilisation of wind energy

Central power station

Wind farms
The case of security of energy supply

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

The dependence on raw material imports will increase dramatically in Europe if current modes of power production are retained.

Source: European Commission
Wind power costs pr. kWh with equal technological resource efficiency in three countries

Unit: 10 TWh electricity production

- Country 1
- Country 2
- Country 3
Specific investment structure:

high share of initially fixed cost (~80 %) & low share of operating cost

==> Capital cost (interest rates, different risks to be covered) are decisive for BANKABILITY

Hardly any relevant economic optimisation can be made after a project has been realised

==> Focus on equipment market
Wind energy investment – what is characteristic?

1. Price gap due to lack of level playing field –
   externalities and subsidies favouring fossil and nuclear

2. De-central and domestic energy supply

3. Different local resources at different generation cost

4. Specific investment structure –
   high share of initially fixed cost

5. Specific barriers as newcomer technology –
   new capacities to be created & integration required
The responses: Successful principles

1. **Close price gap:**
   Successful promotion schemes offer sufficient compensation to market distortions (sufficient and guaranteed price or premium).

2. **Make benefits of de-central energy supply become effective:**
   Local population to benefit directly from projects by high level of involvement, investment opportunities/community ownership in order to obtain local acceptance
   Create opportunities for successful small and medium sized enterprises

3. **Provide sufficient investment security and focus on equipment market**
   Competition on equipment side by bigger number of actors.

4. **Provide an efficient promotion scheme including site efficiency**
   Differentiated remuneration schemes.

5. **Provide access to market arena for newcomers and independent power producers:**
   Access to grid, smooth administrative procedures, human and industrial capacities, R&D funds
## Successful principles and promotion schemes

<table>
<thead>
<tr>
<th></th>
<th>Tradable certificate schemes</th>
<th>Guaranteed price schemes</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Closed price gap</strong></td>
<td>Achievable</td>
<td>Achievable</td>
</tr>
<tr>
<td><strong>De-central benefits to be effective</strong></td>
<td>Difficult to achieve</td>
<td>Easy to achieve</td>
</tr>
<tr>
<td><strong>Investment security/focus on equipment market</strong></td>
<td>Very difficult to achieve</td>
<td>Easy to achieve</td>
</tr>
<tr>
<td><strong>Site efficiency</strong></td>
<td>Difficult to achieve</td>
<td>Easy to achieve</td>
</tr>
<tr>
<td><strong>New actors’ access to market</strong></td>
<td>Difficult to achieve</td>
<td>Easy to achieve</td>
</tr>
</tbody>
</table>
Additional installations under guaranteed price schemes in EU in 2004:

5000 MW out of 5900 MW = 85 %
Stefan Gsänger

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Costs, profit, risk premium and price on a "unionwide" "Political quota-market" model.

Efficiency: Overall cost under different promotion schemes

Frede Hvelplund, Aalborg University, 2001:

Wind energy prices 2004:

Comparison Prices Promotion Schemes

Germany France Portugal Austria Spain Greece Netherlands Italy United Kingdom

Wind energy prices 2004:
Should/could the EU harmonisation be based on the most successful principles?

1. Is rapid renewable energy development the aim?

2. Are there (external) strategic arguments against implementation of successful principles? (impact on free market, decision making procedures, etc.)
Conclusion – proposal for a joint approach

1. EU harmonisation, if at all, must be based on EU-wide feed-in scheme

2. Detailed proposal for EU feed-in directive for renewable energy to be worked out (could be based in principle on successful national schemes)

3. Least-best option: EU-wide quota/certificate scheme has to be avoided
Thank you very much for your attention!