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# PRESENTATION OF THE RES EXPORT STRATEGY

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# PRESENTATION OF THE RES EXPORT STRATEGY

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President

EREC - European Renewable Energy Council

BREAKFAST MEETING

European Parliament, 26<sup>th</sup> November 2002

# Structure of the presentation

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- ◆ Presentation of EREC
- ◆ ALTENER project „RES Technology Export Promotion“
- ◆ Leading position of the European RES industry – present development of RES and future perspectives
- ◆ Action required for the development of a world-wide RES market
- ◆ RES Export Strategy

# European Renewable Energy Council

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Umbrella organisation regrouping:

- ◆ EPIA European Photovoltaic Industry Association
- ◆ ESHA European Small Hydropower Association
- ◆ ESIF European Solar Industry Federation
- ◆ EUBIA European Biomass Industry Association
- ◆ EWEA European Wind Energy Association
- ◆ EUREC Agency European Renewable Energy Research Centers Agency

# EREC's Objectives

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- ◆ To promote the use of RES in general
- ◆ To act as a forum for exchange of information and discussion on issues related to RES
- ◆ To provide information and consultancy on renewable energies for the political decision makers on local, regional, national and international level
- ◆ To launch policy initiatives to create a positive framework for renewable energy sources
- ◆ To promote European exports of RES equipment, products and services

# EREC projects (within Europe)

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- ◆ Development of an export strategy to identify export promotion measures for European renewable energy technology exports
- ◆ Information dissemination campaign on different aspects of renewable energy sources through the organisation of conferences, general-interest leaflets on RES and training courses
- ◆ Promotion of RES in the European Union and in Candidate Countries to the EU (policy evaluation, organisation of a policy conference)
- ◆ Definition of the concept of “sustainable communities”, identification of success factors and dissemination of the concept within Europe and in Candidate Countries
- ◆ Development of a White Paper and Action Plan for renewable energy sources and energy efficiency for the Republic of Cyprus
- ◆ Development of a computer model for the evaluation of compensation systems for renewable energy electricity

# EREC projects (outside of Europe)

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- ◆ **Euro-Caribbean RES Forum**  
Creation of a Forum for the development of renewable energy sources on islands in the Caribbean region for an island strategy in favour of sustainable development
- ◆ **ETC Russia**  
Assistance in the creation of an Energy Technology Centre in Russia, advice on political, economic, training and technical aspects related to RES
- ◆ **Participation in OPET Latin America**  
Participation in awareness raising activities for RES in Latin America, especially in Brazil, Ecuador, Bolivia and the Caribbean region
- ◆ **RES support in India and China**  
Policy advice, training and promotion activities (e.g. workshops, roadshows) for RES in India and China

# RES Technology Export Promotion

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- ◆ Cluster of 2 projects:
  - Project RES Export Strategy co-ordinated by EREC
  - Project JI Projects between EU and Czech Republic co-ordinated by AEBIOM

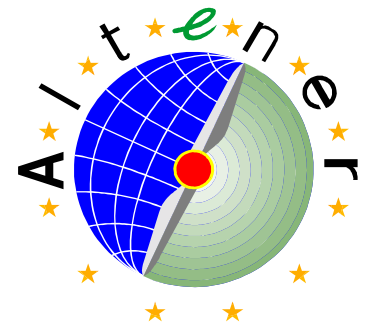
- ◆ Funded by the ALTENER programme

- ◆ 14 partners

- ◆ Objective

Identification of measures that best assist the EU RES industry to capture a significant proportion of the world market for renewable energy technologies

- ◆ Production of technology reports and a RES Export Strategy



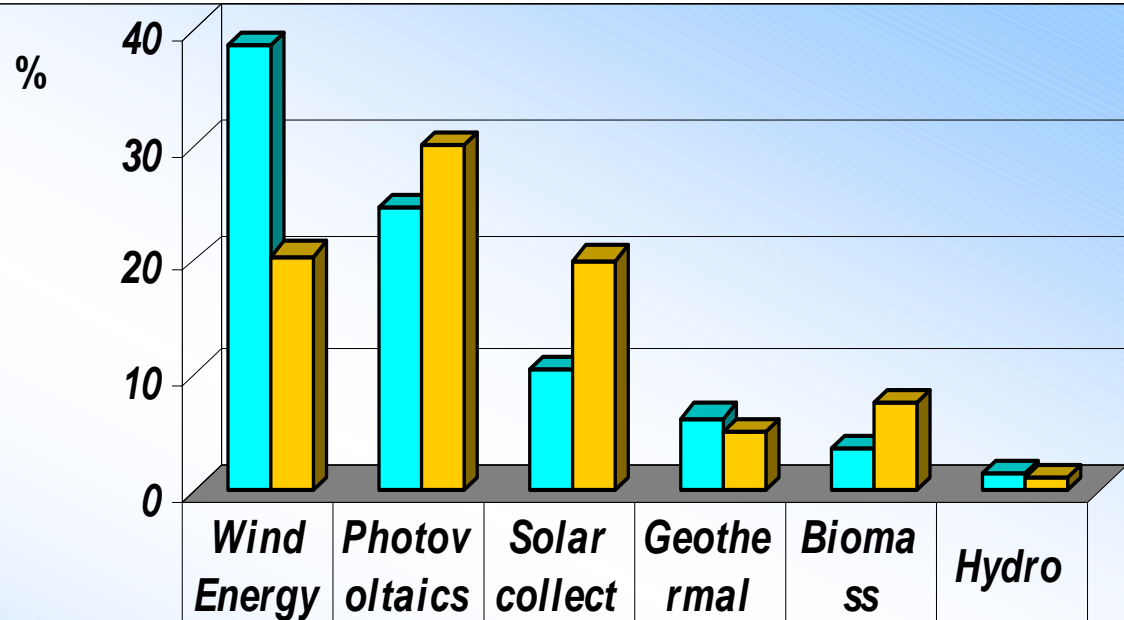
# Content of RES Export Strategy

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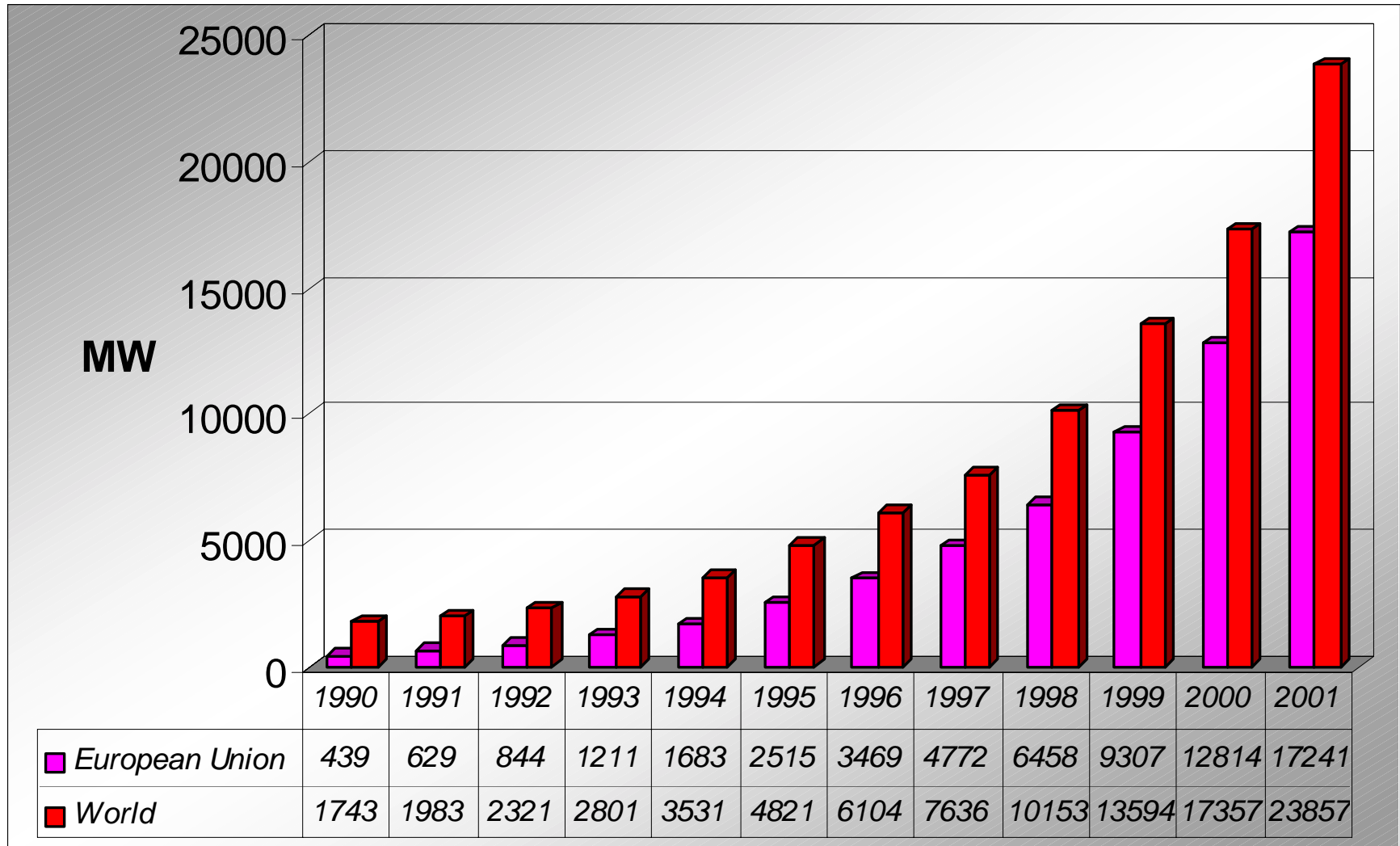
- ◆ **Current market situation of renewable energy technologies**
- ◆ **Existing support programmes in the field of export**
- ◆ **Target countries for future export activities**
- ◆ **Measures to promote export of EU RES industry**

# Average Annual Growth Rate by Technology

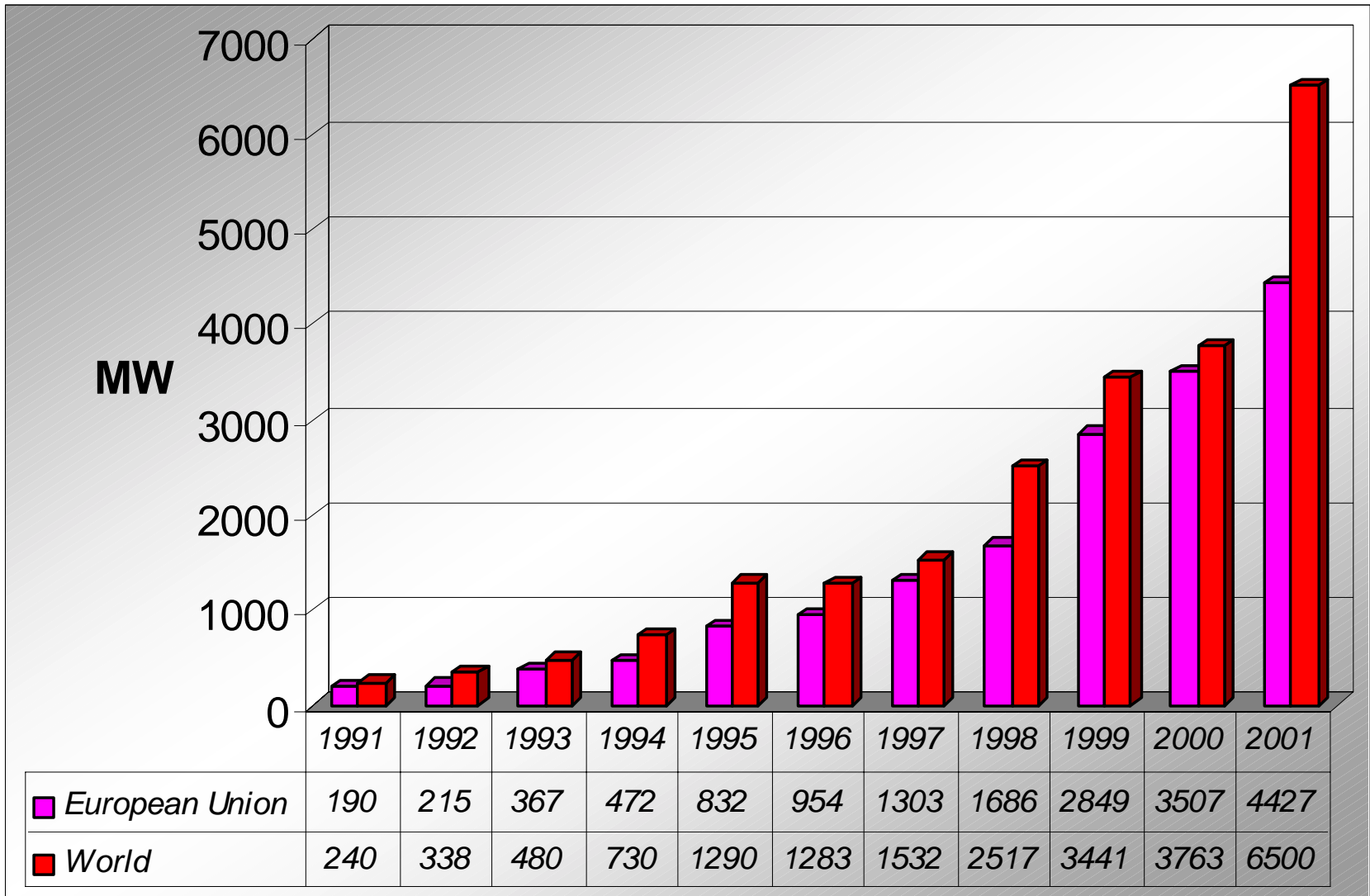


<span style="color: cyan;">■</span> <i>Real data 1995-2000 (%)</i>	<b>38,6</b>	<b>24,5</b>	<b>10,5</b>	<b>6,3</b>	<b>3,6</b>	<b>1,3</b>
<span style="color: gold;">■</span> <i>Average rates needed to achieve White Paper targets 1995-2010 (%)</i>	<b>20,3</b>	<b>30</b>	<b>20</b>	<b>5</b>	<b>7,6</b>	<b>0,9</b>

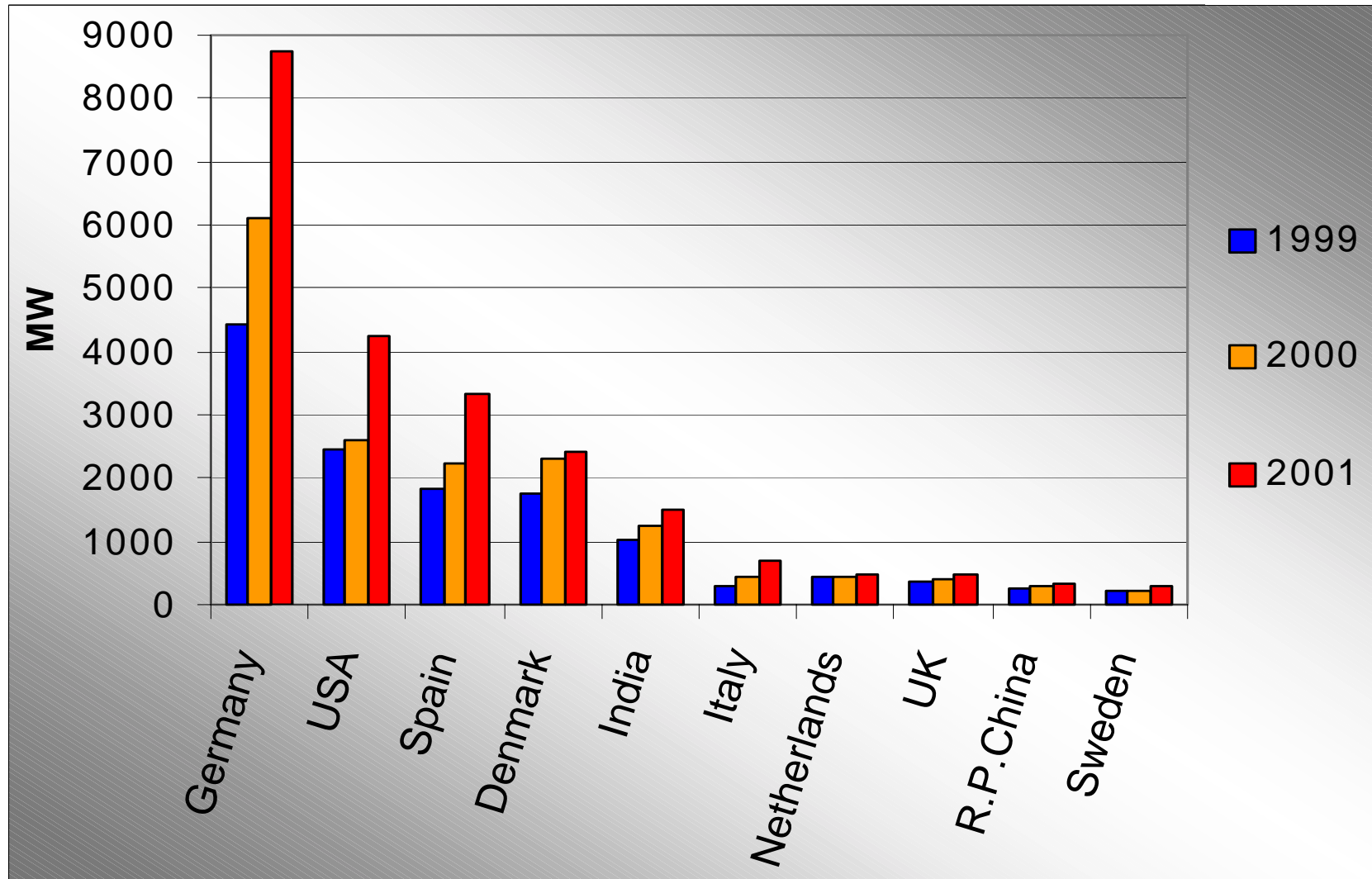
# Cumulative Wind Energy Installed Capacity



# Annual Wind Energy Installed Capacity

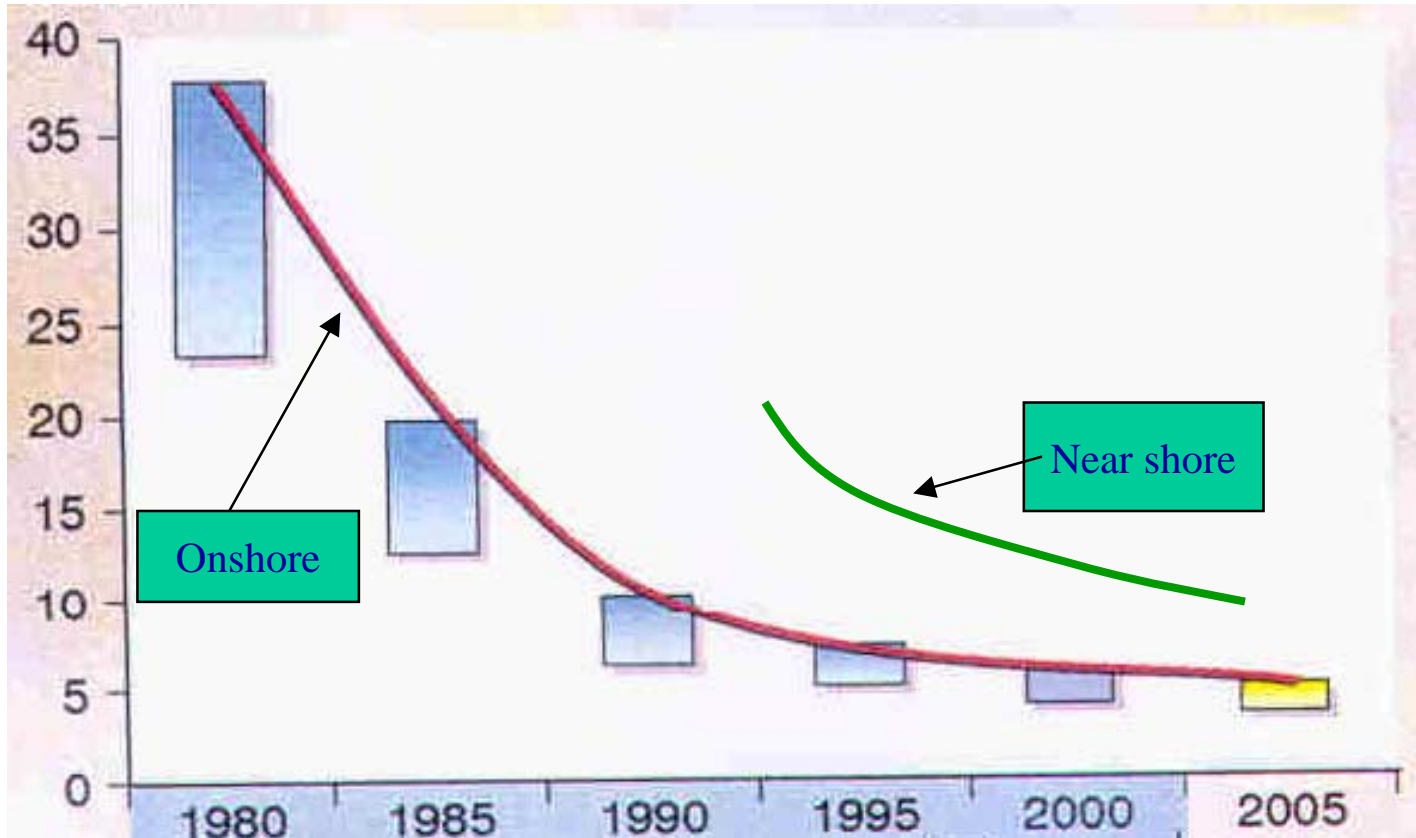


# The Top-10 Markets in the World

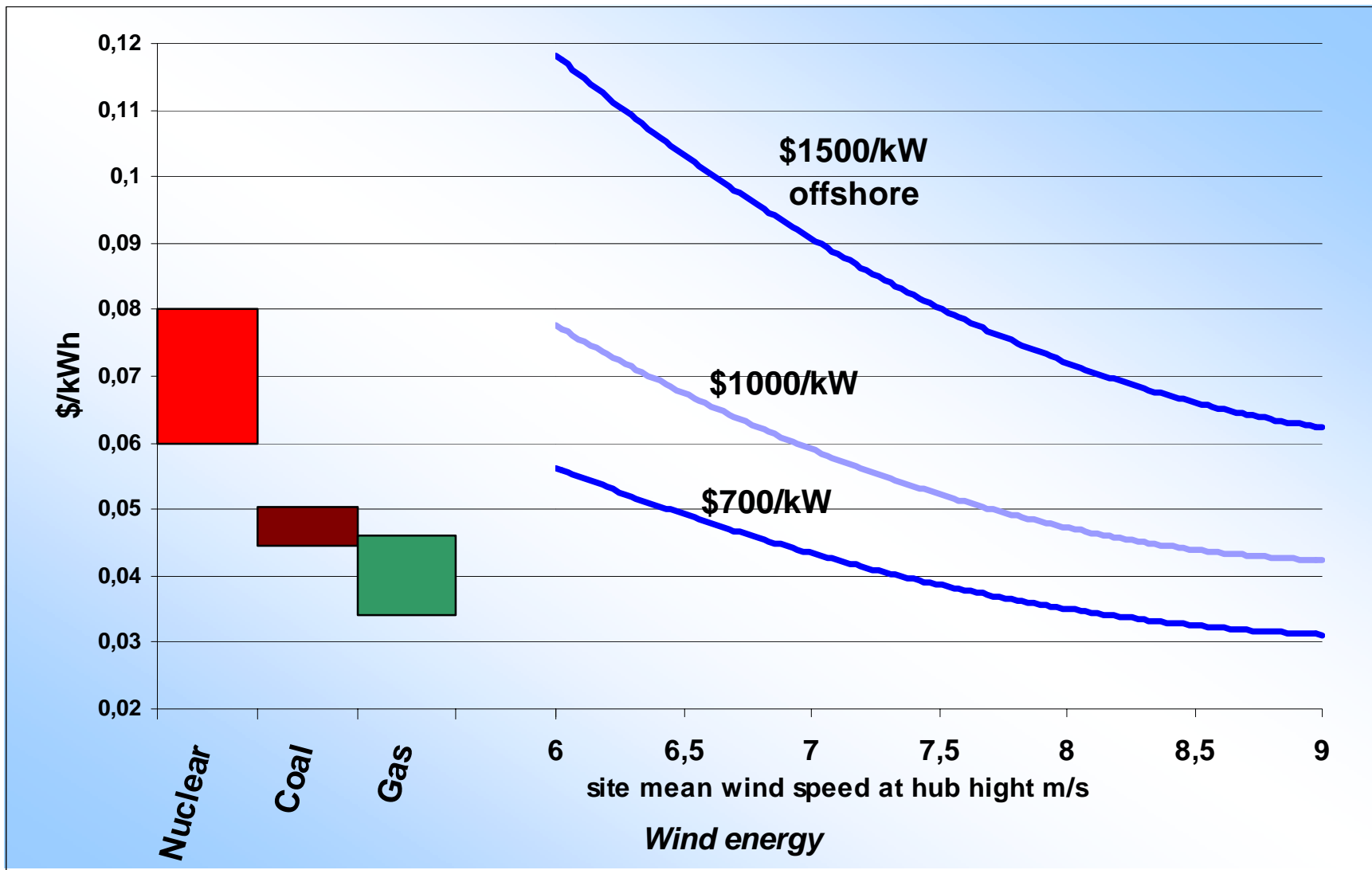


# Development of Wind Energy Generation Cost

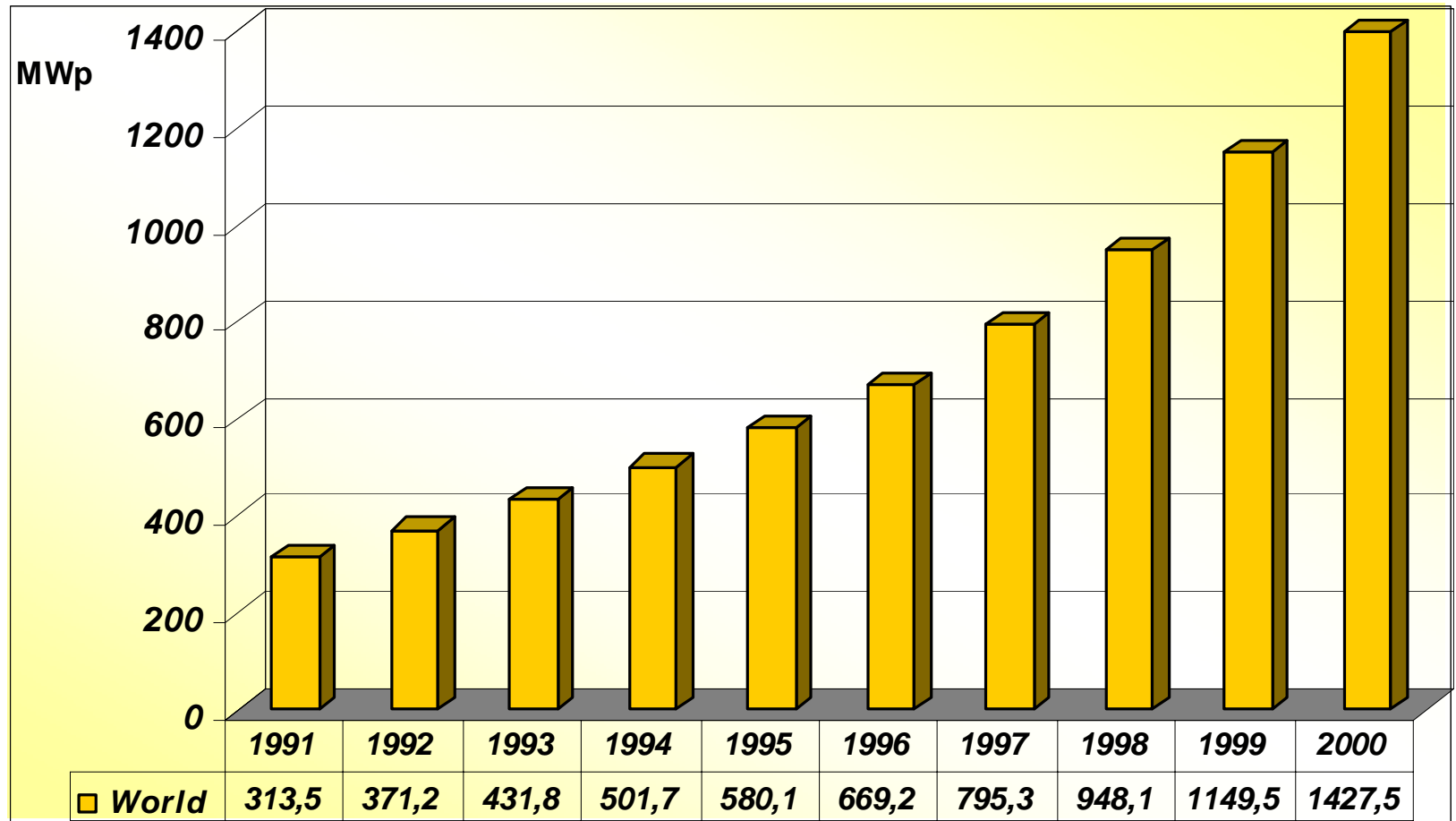
cEuro/kWh



# Prices for Different Generation Technologies

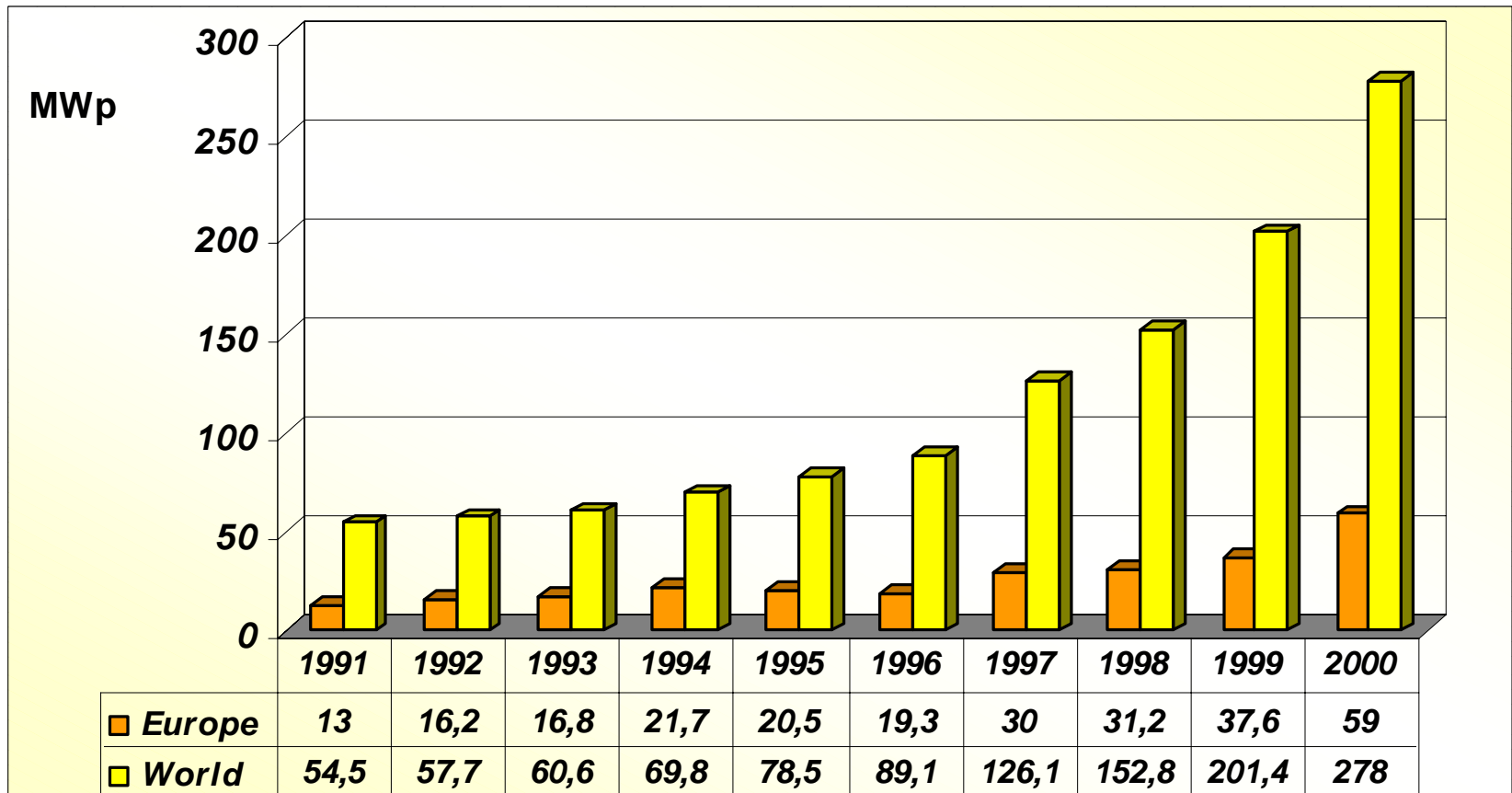


# Cumulative Photovoltaic Installed Capacity in the World



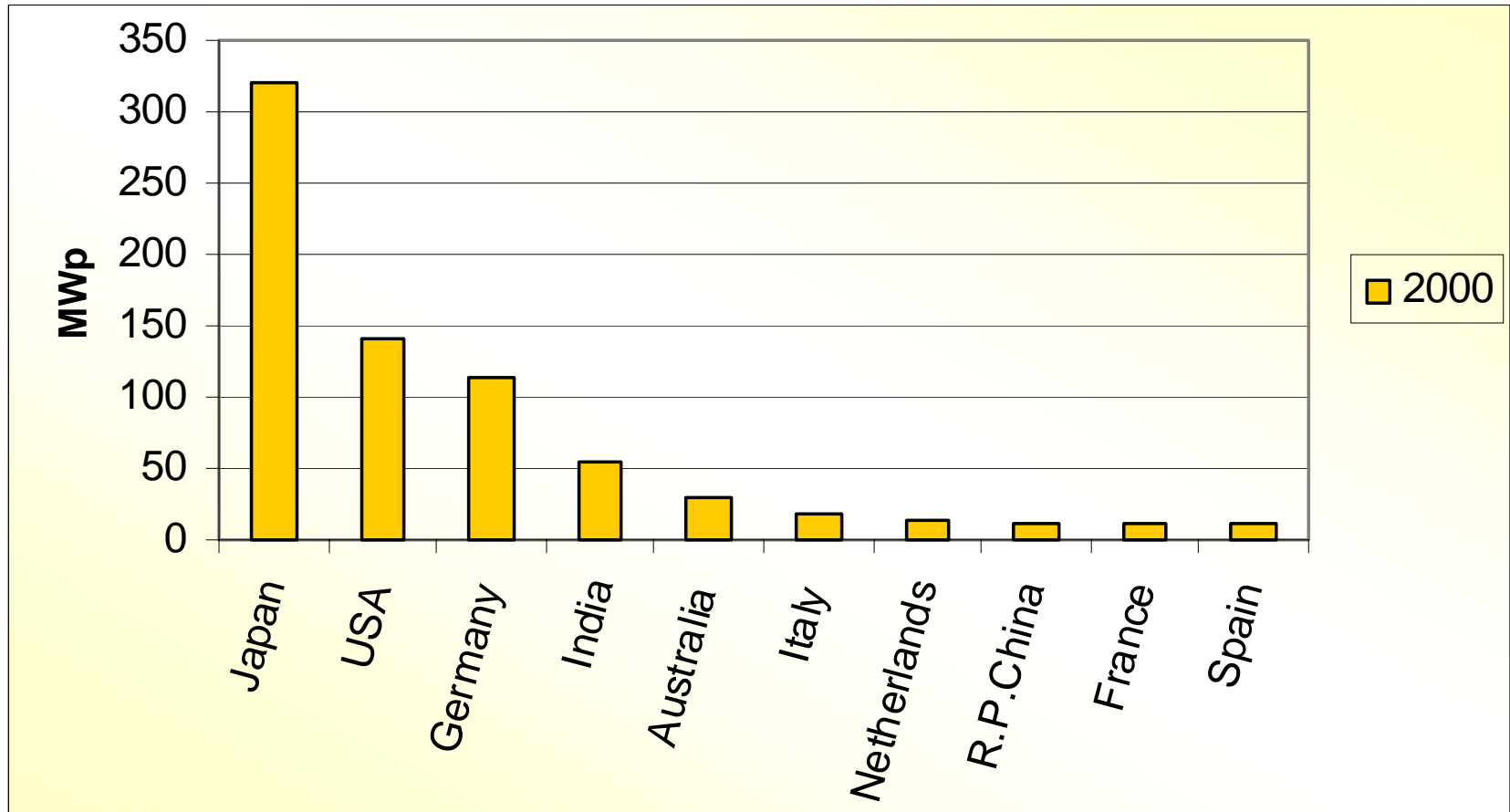
Source: The Future for Renewable Energy 2, Prospects and directions, Eurec Agency

# Annual Sales of Photovoltaic Modules

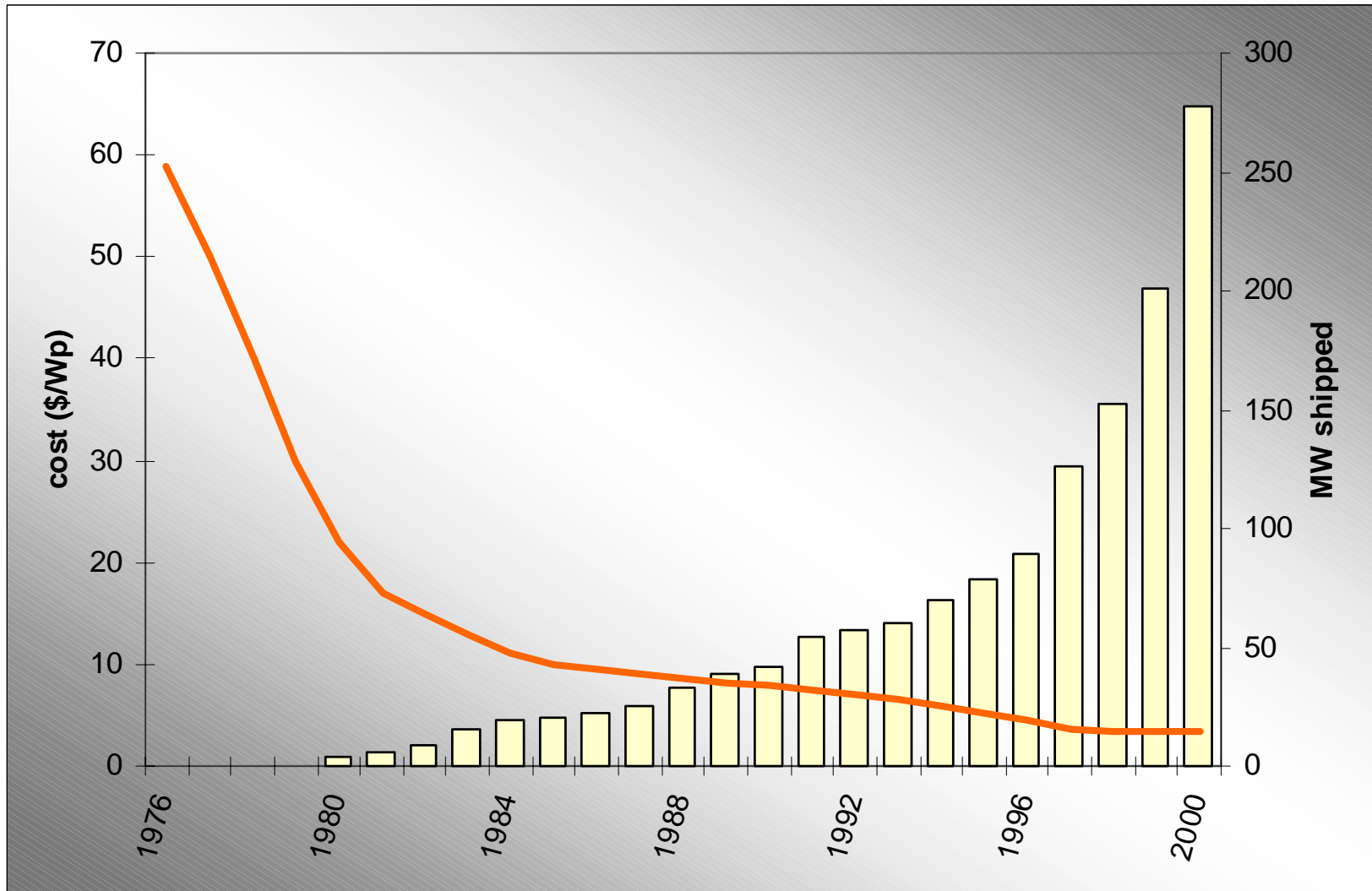


Source: The Future for Renewable Energy 2, Prospects and directions, Eurec Agency

# The Top PV Markets in the World (2000)

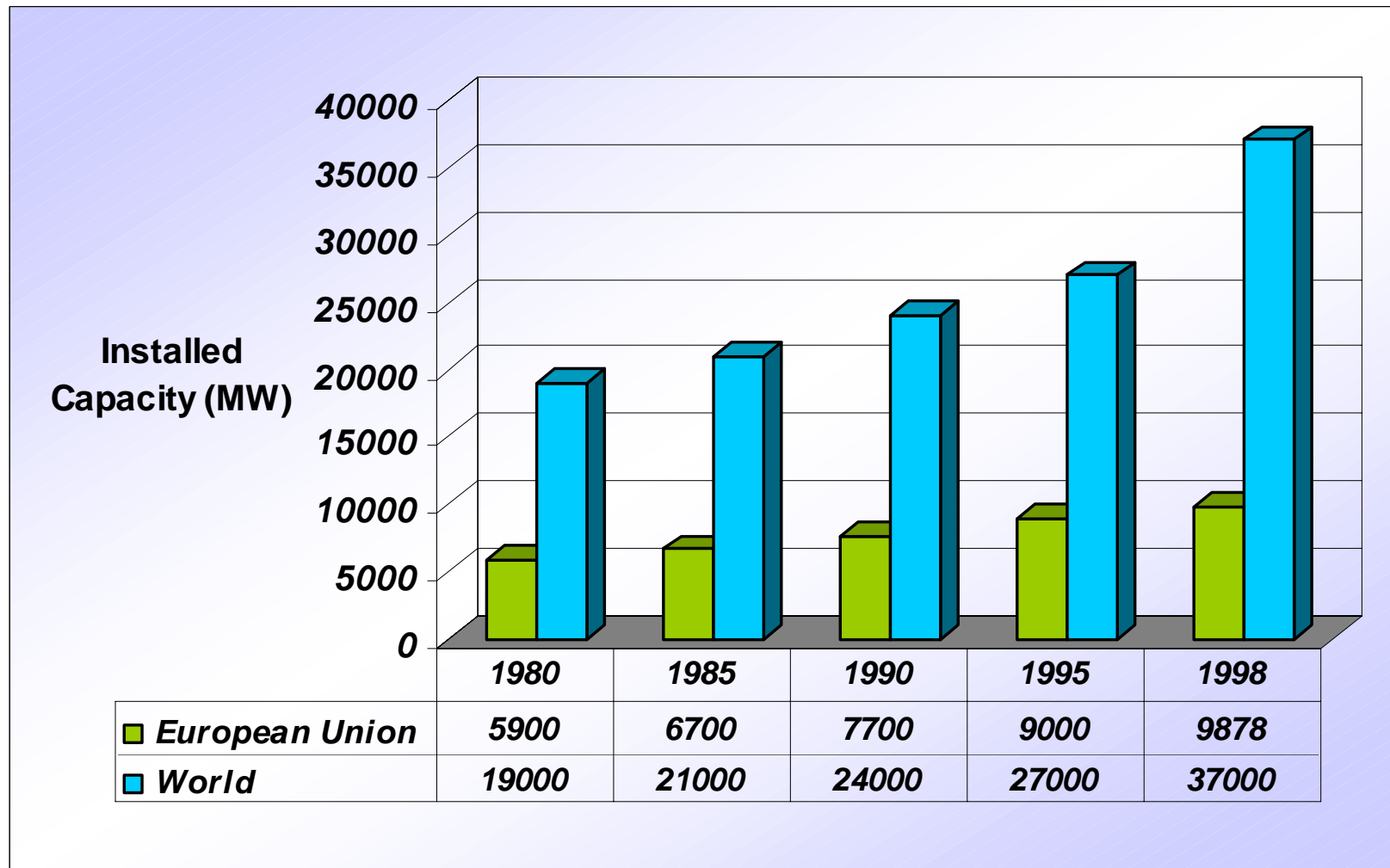


# The falling cost of PV as shipments increase

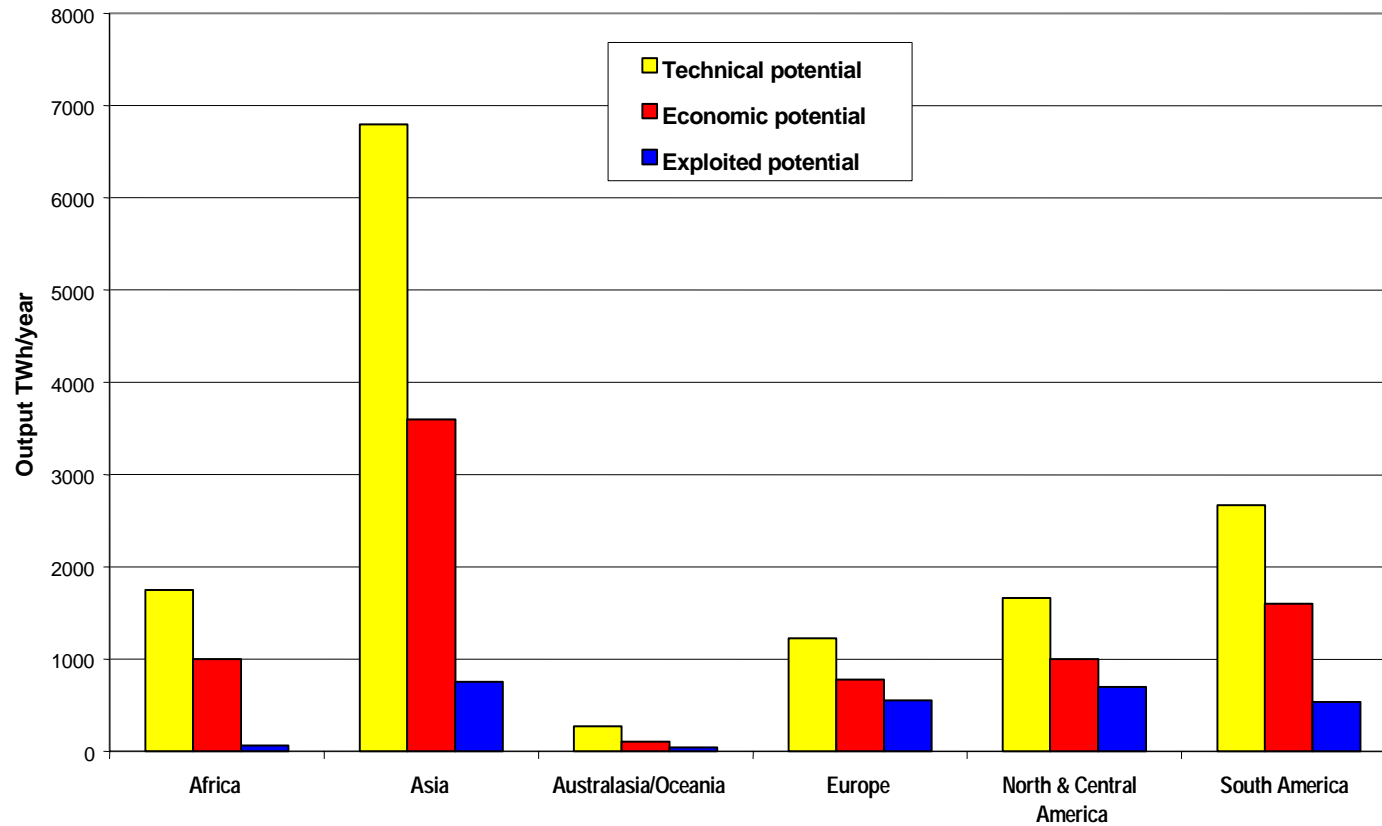


Source: Solar Generation (Greenpeace – EPIA)

# Evolution of Installed SHP Capacities

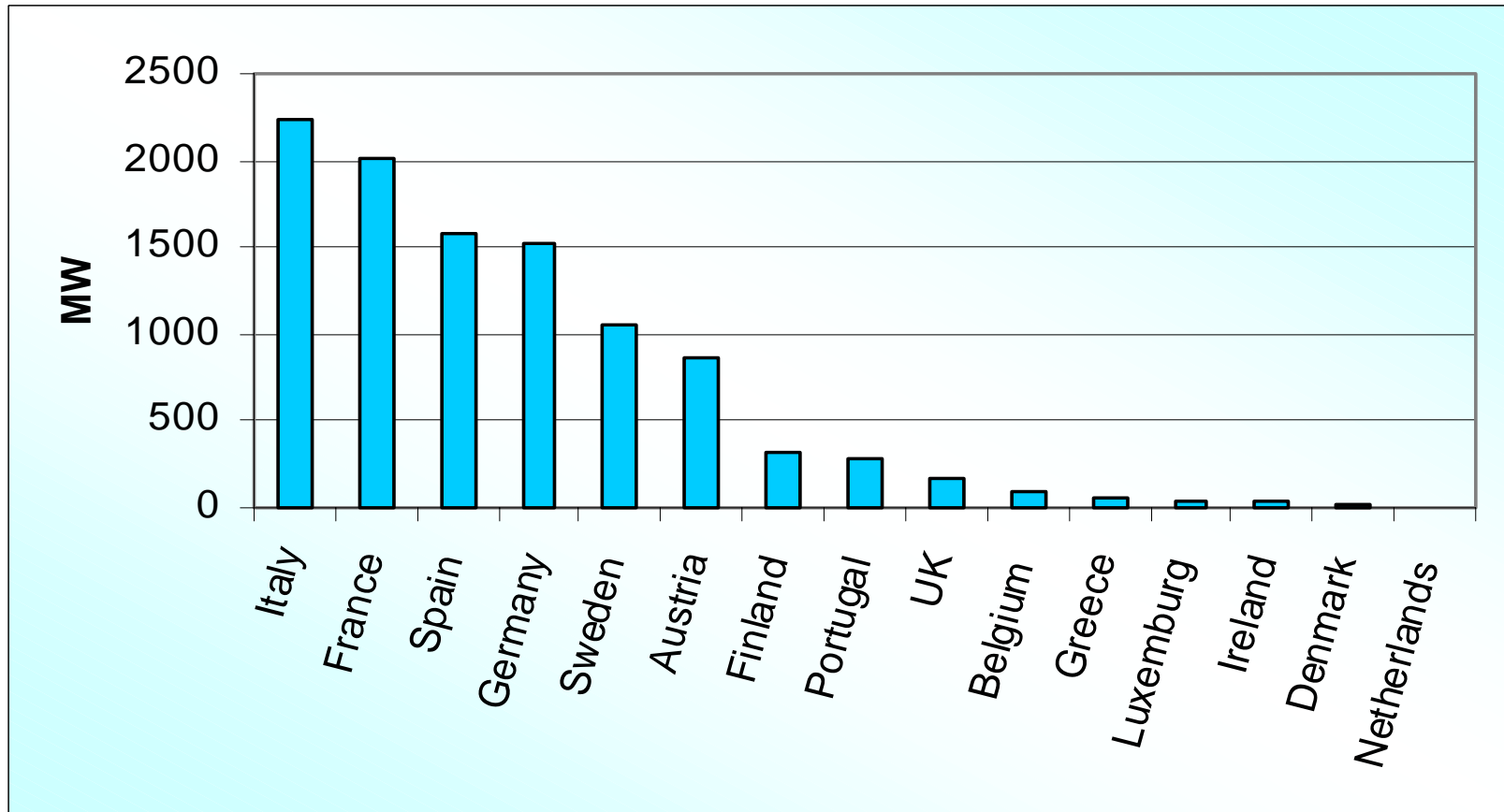


# Total Hydropower Potential by Continent



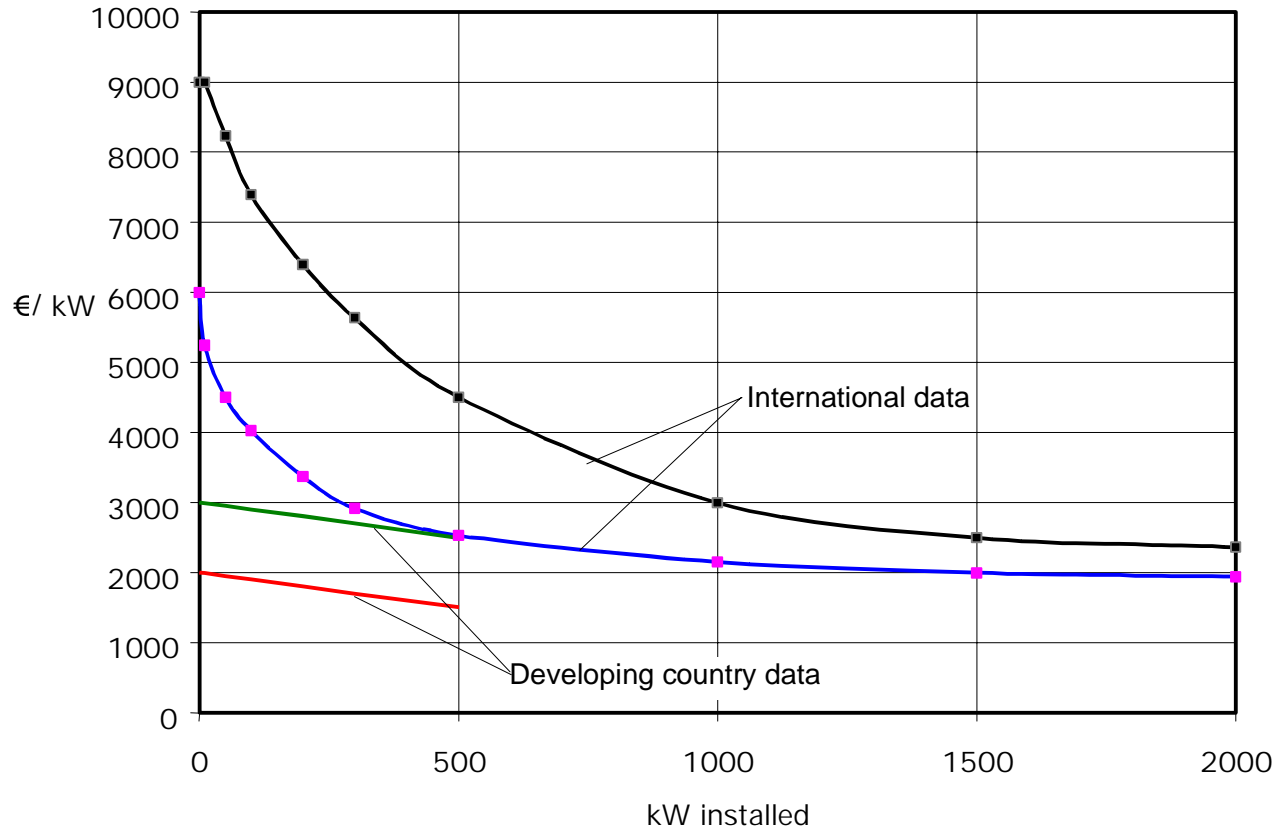
Source: ESHA

# Cumulative SHP Installed in the EU by Member State (2000)

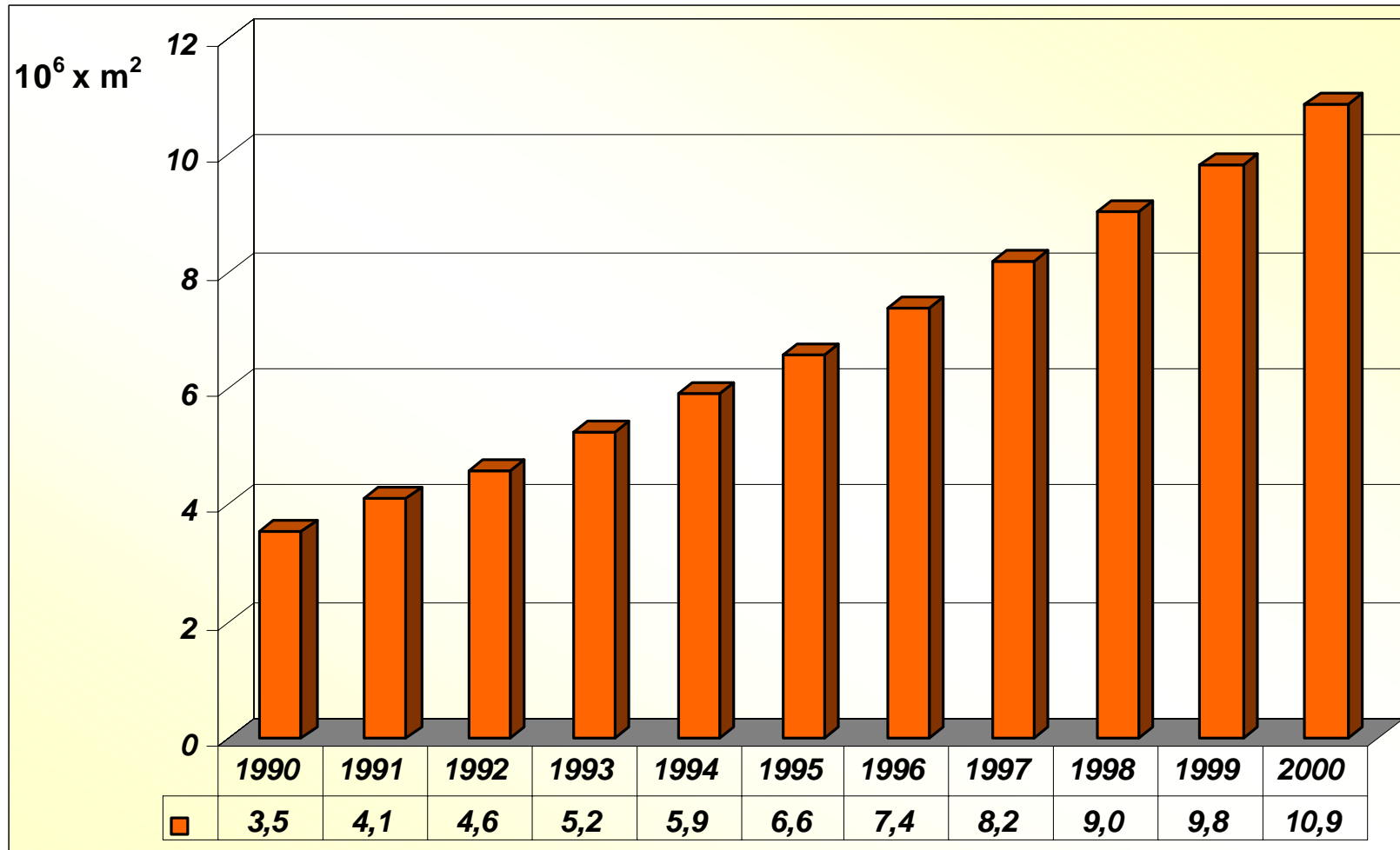


Source: ESHA, EurObserv'ER

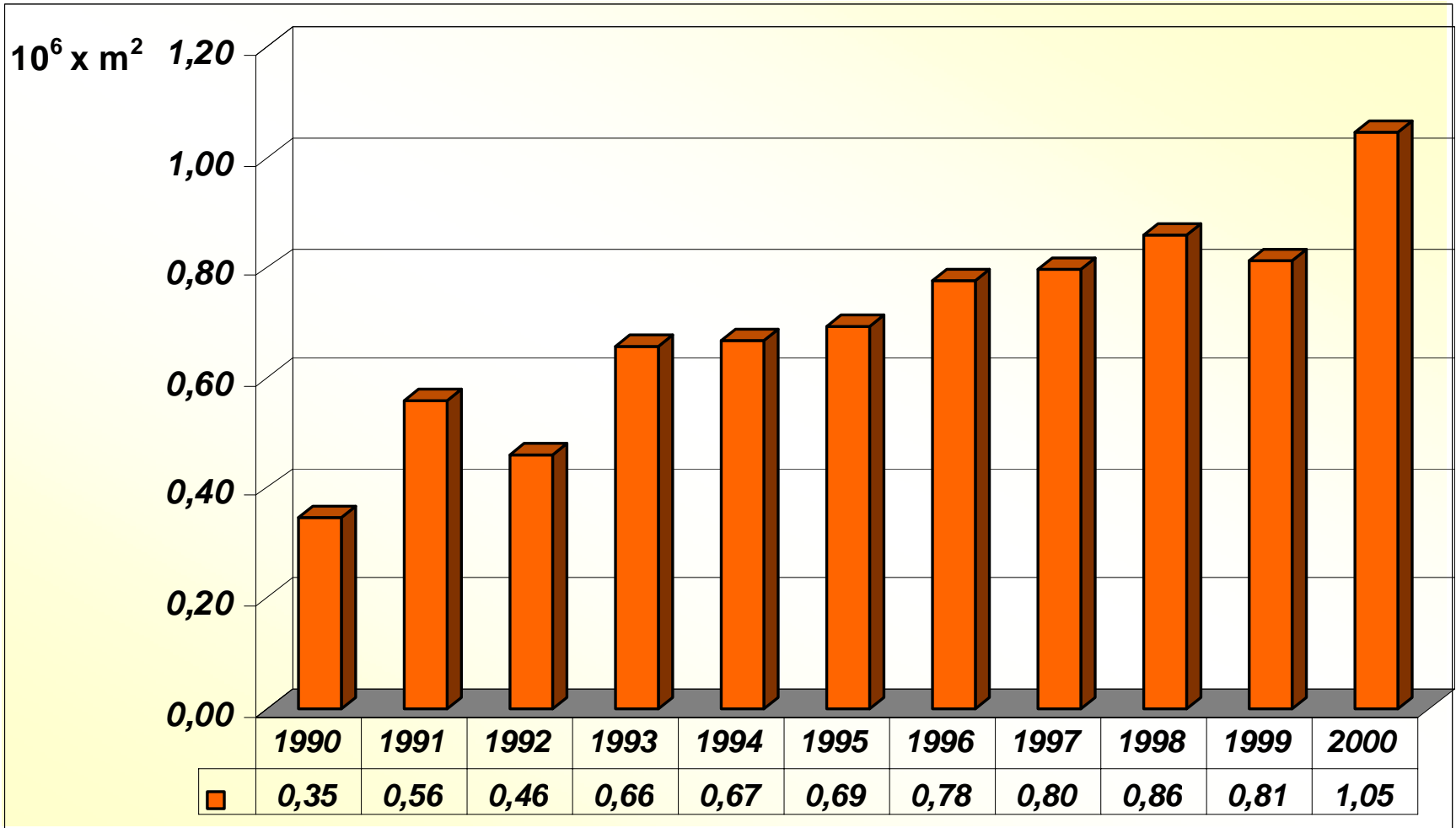
# Installed costs of mini-hydropower schemes



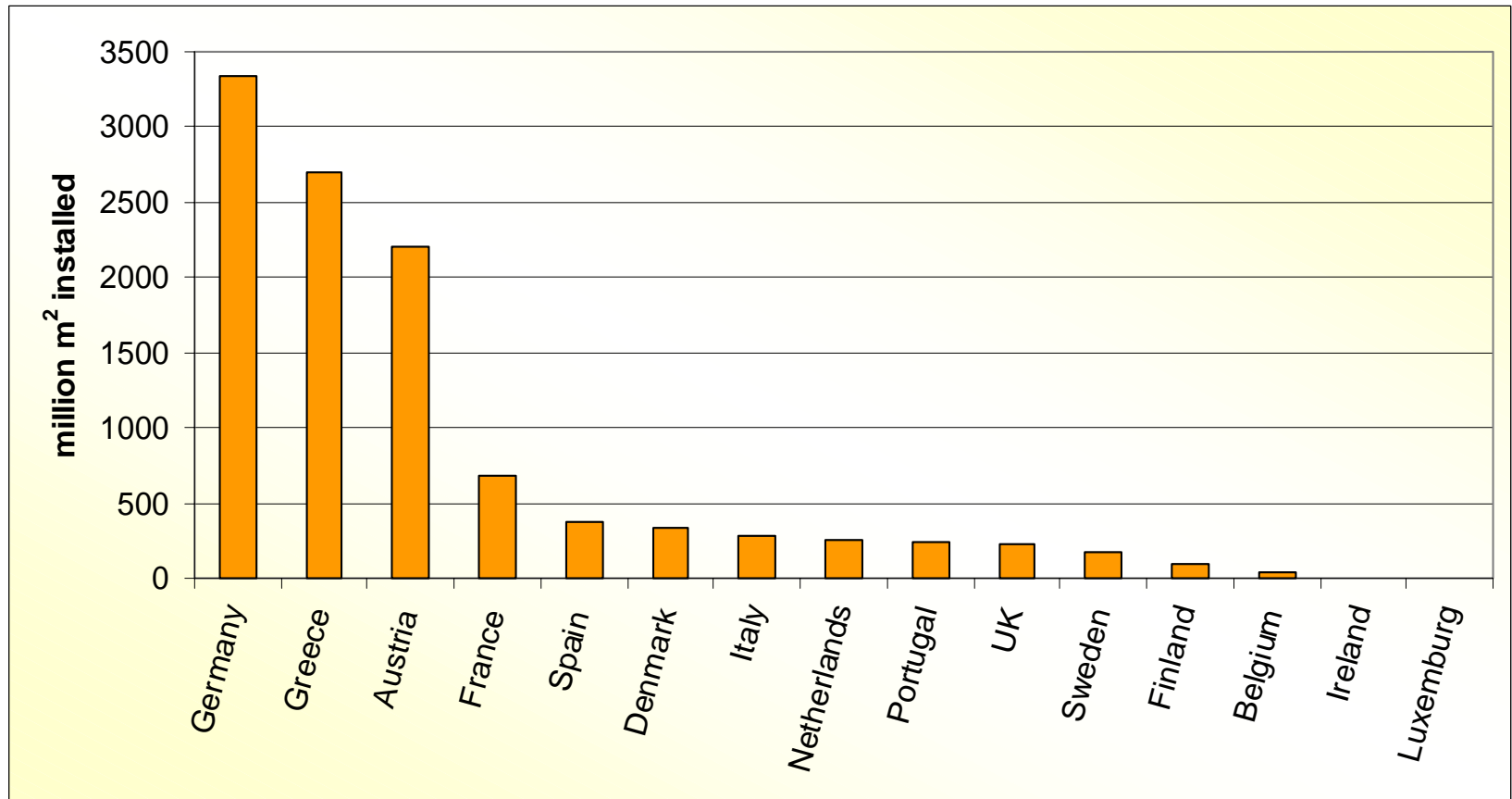
# Cumulative Solar Collector Surface Installed in Europe



# Annual Solar Collector Surface Installed in Europe



# Cumulative Solar Thermal Collectors Installed in the EU by Member State (2000)



Source: EurObserv'ER, Solar thermal barometer

# Estimated annual installation of solar collectors in selected countries



Country	Total installed during 2001 (m <sup>2</sup> )
China	5 500 000
Turkey and Israel	700 000
Japan	300 000
Europe	1 500 000
Rest of the world	600 000
<b>Total</b>	<b>8 600 000</b>

Source: Solar Thermal Markets in Europe. Active Solar Thermal Industry Group (ASTIG). March 2002

# Present Structure of Bioenergy Techno-Economic System



	<b>Biomass Feedstocks</b>	<b>Conversion Technologies</b>	<b>Major Constraints</b>
Bioheat	<ul style="list-style-type: none"> <li>• Fuelwood</li> <li>• Wood wastes</li> <li>• Agro-residues</li> <li>• Municipal and various wastes</li> </ul>	<ul style="list-style-type: none"> <li>• Combustion</li> <li>• Gasification</li> <li>• Anaerobic Digestion</li> <li>• Landfill gas use</li> </ul>	<ul style="list-style-type: none"> <li>• Feedstock logistics</li> <li>• Feedstock cost</li> </ul>
Bioelectricity	<ul style="list-style-type: none"> <li>• Fuelwood</li> <li>• Wood wastes</li> <li>• Agro-residues</li> <li>• Municipal and various wastes</li> </ul>	<ul style="list-style-type: none"> <li>• Co-firing</li> <li>• Combustion</li> <li>• Gasification</li> <li>• Anaerobic Digestion</li> <li>• Landfill gas use</li> </ul>	<ul style="list-style-type: none"> <li>• Feedstock logistics</li> <li>• Feedstock cost</li> <li>• Suitability of new feedstocks</li> <li>• Technical improvements</li> </ul>
Transportation Biofuels	<ul style="list-style-type: none"> <li>• Sugar crops</li> <li>• Starch crops</li> <li>• Vegetable oils</li> </ul>	<ul style="list-style-type: none"> <li>• Fermentation to Bioethanol</li> <li>• Oil Esterification to Bio-diesel</li> </ul>	<ul style="list-style-type: none"> <li>• Feedstock logistics</li> <li>• Feedstock cost</li> <li>• Product logistics</li> </ul>

Source: The future for renewable energy, EUREC Agency, 2002

# Biomass Penetration in EU's Energy Markets



	Contribution	Market Penetration
Bioelectricity	64.8 TWh(e)/yr	2.8% of total electricity generation
Bioheat	38 Mtoe/yr	ca. 6% of total heat utilisation
Liquid Biofuels	< 1 Mtoe/yr	< 0.1% of total transportation fuel
<b>TOTAL BIOENERGY</b>	<b>44.3 Mtoe/yr</b>	<b>3.3% of total primary energy</b>

Source: European Commission (1995)

# Costs of bioenergy utilisation



Heat production	25 €/ MWh
Solid Biofuel production cost (pellets)	80 €/t
Power Generation (from solid, liquid, gaseous biofuels)	40-50 €/ MWh
Bioethanol	250 €/ t
Biohydrogen	1.500 €/ t
Biomethanol	200-250 €/ t

Source: EUBIA

# Environment Driven Markets (Mainly OECD Countries)

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## Market characteristics:

- ◆ No need for additional capacity
- ◆ Financially able to invest
- ◆ Renewable energy development only contributes with a very small part of the total budget for the whole energy sector. Political interest and obligation to reduce CO<sub>2</sub> emissions
- ◆ Renewable energy development is not very sensitive to variations in international fuel prices

# **Energy Driven Markets**

## **(Mainly Africa, Asia and Latin America)**

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### **Market characteristics:**

- ◆ **Immediate need for additional energy - especially electricity**
- ◆ **Capacity shortfall**
- ◆ **Dependence on fossil fuel imports**
- ◆ **Shortage of foreign currency**
- ◆ **Higher average increase in population, economic growth and energy consumption than OECD countries**
- ◆ **Very sensitive for variations in international fuel prices**

# **Actions to Facilitate the Large Scale Development of RES**

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**Main issue: Create a level playing field**

- ◆ **Energy prices do not reflect the true social costs of generation:**
  - External costs
  - Subsidies to ‘conventional’ generators
  
- ◆ **To Achieve the Benefits of Renewable Energy Generation, Some Sort of Market Intervention is Required:**
  - Capital Grants
  - Price-based Mechanisms
    - feed-in price
    - fixed premium
  - Quantity-based Mechanisms
    - quotas with tendering- NFFO
    - quotas with trading- green certificates

# **Actions Required for the Development of a World-wide RES Market**

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- 1. Establish firm targets for RES around the world**
- 2. Remove the inherent barriers and subsidies which penalise renewables**
- 3. Implement mechanisms to secure and accelerate the new market**

# Establish Targets

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- ◆ **Set national, regional and international targets and annual timetables for 2005 - 2010 - 2020**  
**For the electricity sector such targets should be set as a percentage of consumed electricity**
- ◆ **Ensure that the “Clean Development Mechanism” and “Joint Implementation” under the Kyoto protocol are “clean and green”**
- ◆ **Make technology transfer programmes consistent with climate protection**

# Remove Barriers and Subsidies

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- ◆ **Streamlined and uniform planning and permitting systems**
- ◆ **The costs of grid infrastructure development and reinforcement to be carried by the grid management authority**
- ◆ **Recognition and remuneration for the benefits of “embedded” generation**
- ◆ **Removal of discriminatory transmission and access tariffs**
- ◆ **Halt all direct and indirect subsidies to fossil fuels and nuclear energy**
- ◆ **Incorporate a “polluter pays” pricing system**

# **Implement Mechanisms to Secure and Accelerate the New Market**

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**The most important elements in attracting investment to “green power” are that the renewable energy market is clearly defined, stable and provides sufficient returns to investors**

**Available options include:**

- ◆ Setting the purchase price or the demand volume for renewable energies (minimum prices, quotas or portfolio standards)**
- ◆ Establishing mechanisms for support and investment in new technology, industrial development and resource mapping**
- ◆ Establishing priority procurement for renewable energy capacity and priority dispatch for produced energy**
- ◆ Setting fiscal and taxation incentives to accelerate market development**

# Overview of international finance

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- ◆ International Financing Institutions
  - World Bank
  - Global Environment Facility
  - European Bank for Reconstruction and Development
- ◆ United Nations
  - UNDP
  - UNIDO
  - United Nations Economic and Social Commissions
- ◆ Climate Change Programmes (JI, CDM)
- ◆ EU Programmes (e.g. EUROPAID, COOPENER)
- ◆ National export institutions (programmes, export credit agencies, etc.)

# Why is there a need to promote RES export?

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- ◆ **Many RES companies interested in export, some need help to get started, some need to be educated in export matters**
- ◆ **Majority of RES companies are SMEs with limited resources**
- ◆ **Markets are evolving rapidly – up-to-date information is a must**
- ◆ **Co-ordinated EU marketing initiatives (e.g. trade missions) bring synergies**
- ◆ **Markets of interest to industry are distributed around the world – balanced action of sector as a whole is needed**
- ◆ **Lack of investment fund inhibit growth and exploitation of markets**
- ◆ **Minimisation of risk for investors**

# Target countries for export activities



## SELECTION CRITERIA

### A. Funding

1. Availability of project finance (World Bank, Aid Agencies, etc.)
2. Local financial incentives towards the specific technology (e.g. no import duties)
3. Availability of export credit guarantees
4. Reasonable average income per capita

### B. Government

5. Politically and economically stable
6. Government committed to develop the specific technology
7. Economically strong enough to support the development of the technology (e.g.: the ability to pay energy tariffs above a minimum level)
8. Supportive legal and regulatory framework in place
9. Open to foreign investment and imports
10. Reliable licensing and patent protection laws

### C. Market size

11. Plentiful resource of a specific technology
12. Strong demand for the power
13. Limited local resources and skills to provide renewable energy equipment/services
14. Limited international competition already active in-country

# Examples of target export markets (not exhaustive)

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## ◆ Existing export markets with high future potential

- Brazil
- China
- India
- Japan
- Poland
- South Africa
- United States

## ◆ Future export markets

- Cuba
- Morocco/Tunisia
- Russia
- South-East Asia (Indonesia, Philippines, Thailand)
- Tanzania

# Measures to promote EU RES exports

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1. Create a level-playing field for RES in target export countries – policy advice
2. Adaptation of international finance programmes to RES projects (esp. export credit agencies)
3. Market research on potential markets
4. Trade missions
5. Identification of partners in target export markets & establishment of contacts
6. Overview of procurement announcements
7. Reduce tax barriers for RES products
8. Monitor and develop statistics of EU RES export activities

# Conclusion

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Co-ordination of existing activities and initiatives on EU level is absolutely necessary to actively promote RES, thereby

- ◆ Strengthening the EU RES industry
- ◆ Creating jobs & economic welfare
- ◆ Contributing to sustainable development and implementation of the Millenium Development Goals.

We remain at your disposal for any further questions!

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