

# ***Standardisation and Certification of Renewable Energy Projects***

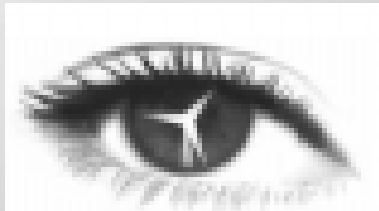
**Dr. Klaus Rave**

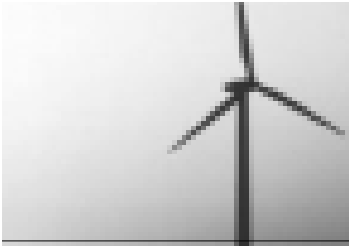
**Managing Director**

**Investitionsbank Schleswig-Holstein**

**Vice-President**

**European Wind Energy Association**

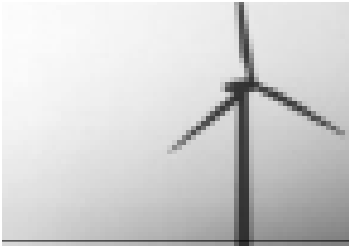




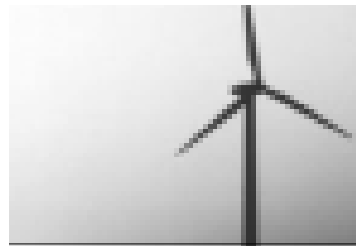
# Overview



- ✱ **Investitionsbank Schleswig-Holstein**
- ✱ **Schleswig-Holstein: pioneer to wind energy**
- ✱ **Structural barriers to renewable energy projects**
- ✱ **Classic financing instruments**
- ✱ **Financial barriers to renewable energy projects**
- ✱ **Alternative financing methods**
- ✱ **Photovoltaic projects**
- ✱ **Biogas plants**
- ✱ **Wind energy and its potential until 2020**
- ✱ **Hybrid system for Afghanistan (wind / solar)**
- ✱ **Lowering transaction costs: standards and certification**
- ✱ **EU-Project on certification needs in wind energy sector**



- **Public bank of the Land Schleswig-Holstein for economic promotion and infrastructure**
- **Loans, public funds and consultancy for energy efficiency, renewables, economic development**
- **Co-financer of more than 50 wind farms in the region**
- **Access to knowledge pool and competence centers in the wind energy sector of Schleswig-Holstein**



# **Schleswig-Holstein: Pioneer in Wind Energy**



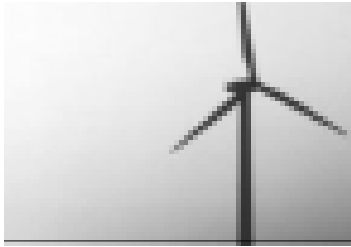
**30% wind power  
from more than 2,600 WEC  
on 1% surface**

**50% of power from  
renewables until 2010**

**Home to  
Vestas Germany /  
NEG Micon  
REpower, Nordex**

**Husum Wind Fair:  
470 exhibitors from  
22 countries with  
22,000 visitors**

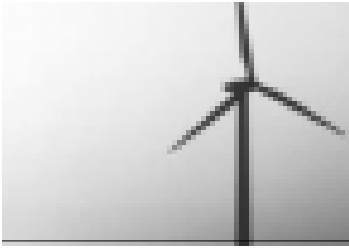




# ***Structural Barriers to Renewable Energy Projects***



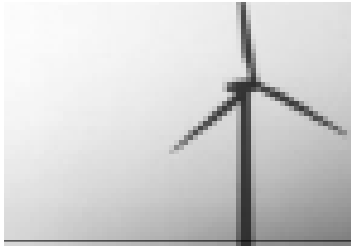
- **Economic, legal and political uncertainty**
- **Little knowledge about renewable technology and lack of acceptance**
- **Energy market: liberalisation?**
- **Market support mechanisms?**
  - **Feed-in tariffs for electricity from renewables**
  - **Purchase obligation or renewable quota for utility**
- **Market distortions**
  - **E.g. subsidies for conventional energy**
- **Purchasing power of potential end users**



# ***Classic Financing Instruments for Renewable Energy Projects***



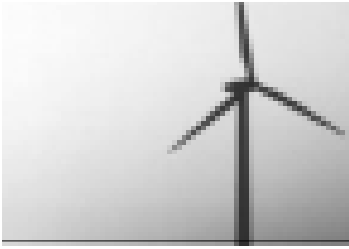
- **OECD**
  - equity, utility companies (balance sheet)
- **Germany**
  - private investment and local co-operatives
  - “Citizen wind parks” with high local content
- **Developing countries**
  - Micro lending for experience through small pilot projects
  - Public funding for development projects
  - Reform of export insurance / guarantees: level playing field
    - Premium for public good “clean air” vs. internalisation of negative externalities/social costs



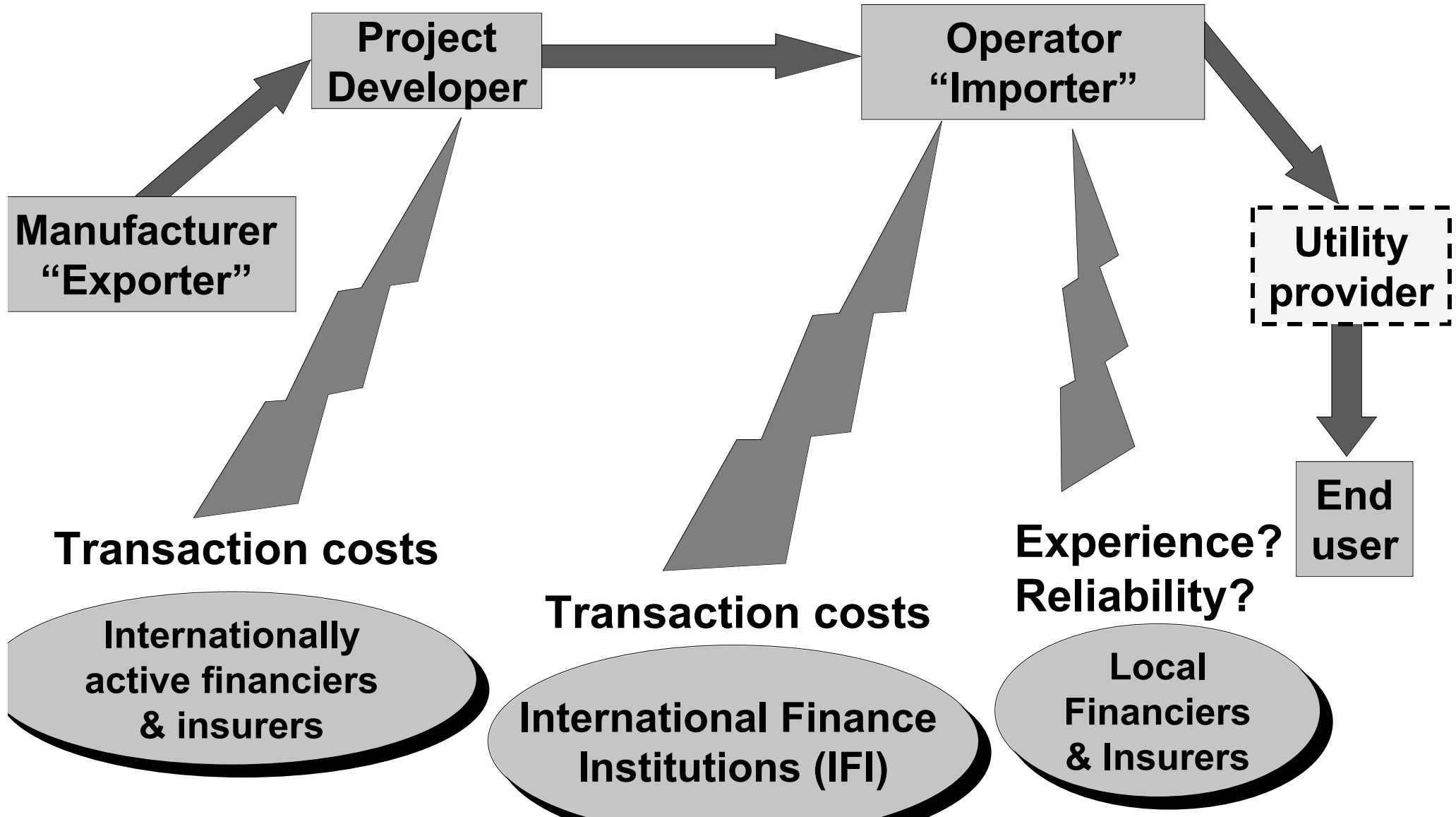
# *Financial Barriers to Renewable Energy Projects (I)*



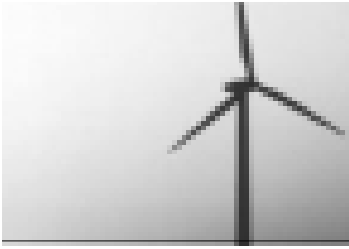
- **Disadvantages within the renewable energy sector**
  - Most project developers & manufacturing companies are small or medium enterprises (SME)
  - Difficulties for SMEs to achieve debt financing
  - Loans often with high interest rates / high equity ratio
  - Country knowledge?
  - International infrastructure for distribution?
- **Barriers within the financial sector**
  - Various risks (political risk, currency risk, long term commitment of local actors)
  - International Finance Institutions (IFI) and international banks high transaction costs -> only large projects
  - Reliability of local banking sector?



# Financial Barriers to Renewable Energy Projects (II)



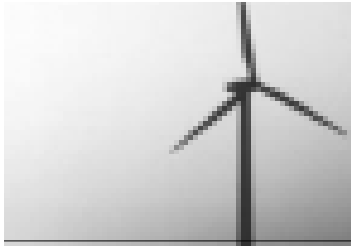




# ***Alternative Financing Methods for Renewable Energy Projects***



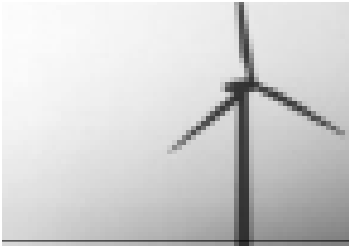
- **Energy as precondition for development**
  - **Horizontal integration in development policies**
    - E.g. UN programs on health, education (digital divide)
    - Water supply and purification through hybrid power plants
- **Decentral energy supply for off grid households**
- **Technology transfer**
  - **Creation of local employment and local know-how**
  - **Adaptation to local conditions**
- **Combination with trade of goods/services**
  - **Integration of electricity supply into supply of PCs, internet, phone etc.**



# Photovoltaic Projects



- **1 kW corresponds to 10 m<sup>2</sup>**
  - **Costs at 5,500 €/kW, above 1 MW 4,000 €/kW**
  - **Precondition for sustainable growth:**
    - **Fixed tariff for electricity produced**
      - **in Germany 20 years according to Renewable Energy Law “EEG”**
    - **Long term reliability PPA with commercial user, grid operator or utility**
  - **Amortisation between 15-20 years**
  - **Advantages of photovoltaic modules:**
    - **Easy installation**
    - **Low variation of solar radiation: low risks**
    - **No emissions -> permits for construction only (EIA)**
    - **Low service & maintenance requirements**
    - **20-25 years guarantee from manufacturer!**
    - **PV modules can be sold easily in case of bankruptcy**
- ⇒ Facilitated financing conditions!**



# ***Biogas Plants - General Issues***

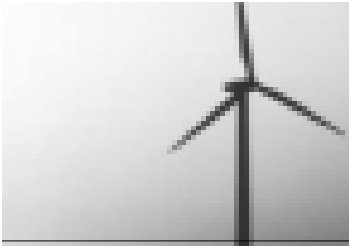


## ● **Biogas technology**

- High complexity of projects depending of substrate, technology, sold energy output and permit procedures
- Dependance on market instruments (tariff, PPA)
- Lifecycle 15-20 years, proven technology
- Schleswig-Holstein some 28 plants

## ● **Evaluation of projects on individual basis**

- Different concepts depending on manufacturer, project developer, operator etc.
- Output calculation difficult with changing composition of “fuel”



# ***Wind Energy – General Issues***



## **● Large variability in usage**

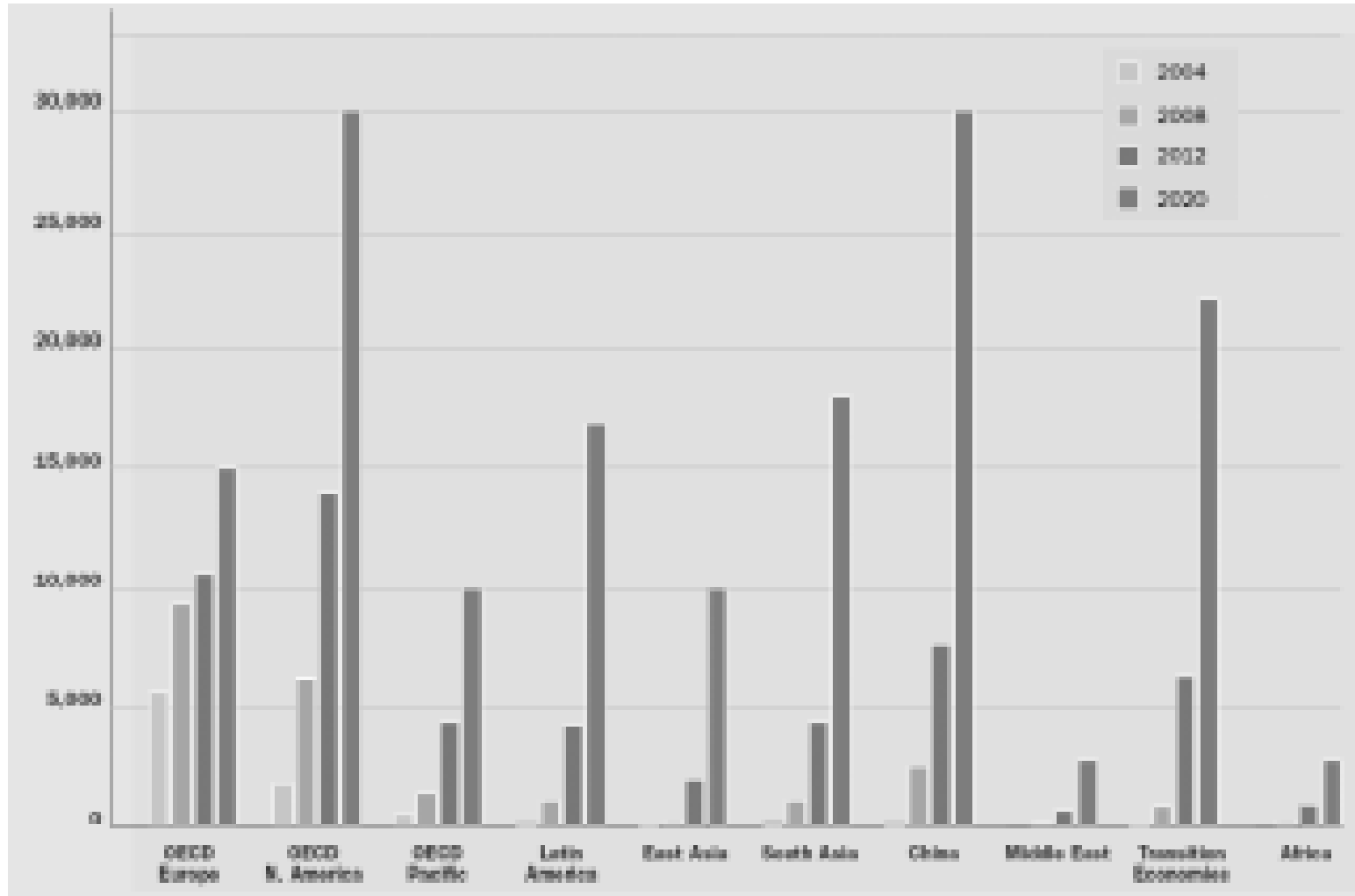
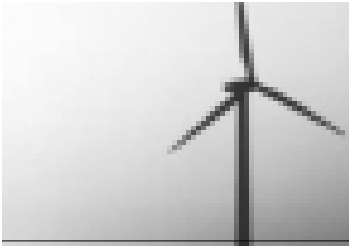
- From small kW turbines to large MW converters
- Usage in small and large projects, at different wind speeds
- Investments secured for long term through
  - Feed-in tariff or
  - PPA (commercial user / grid operator / utility)
- Proven technology with availability of 98%
- Crucial: project development with choice of site

## **● Until 2020 feasible:**

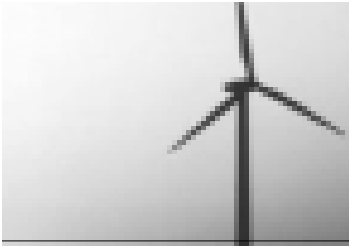
- 12% of global electricity demand from wind power
- 2.3 mio. jobs
- Avoidance of 10 mio. tonnes of CO<sub>2</sub>

**Source: “Wind Force 12” publication of EWEA/Greenpeace,  
download at [www.ewea.org](http://www.ewea.org)**

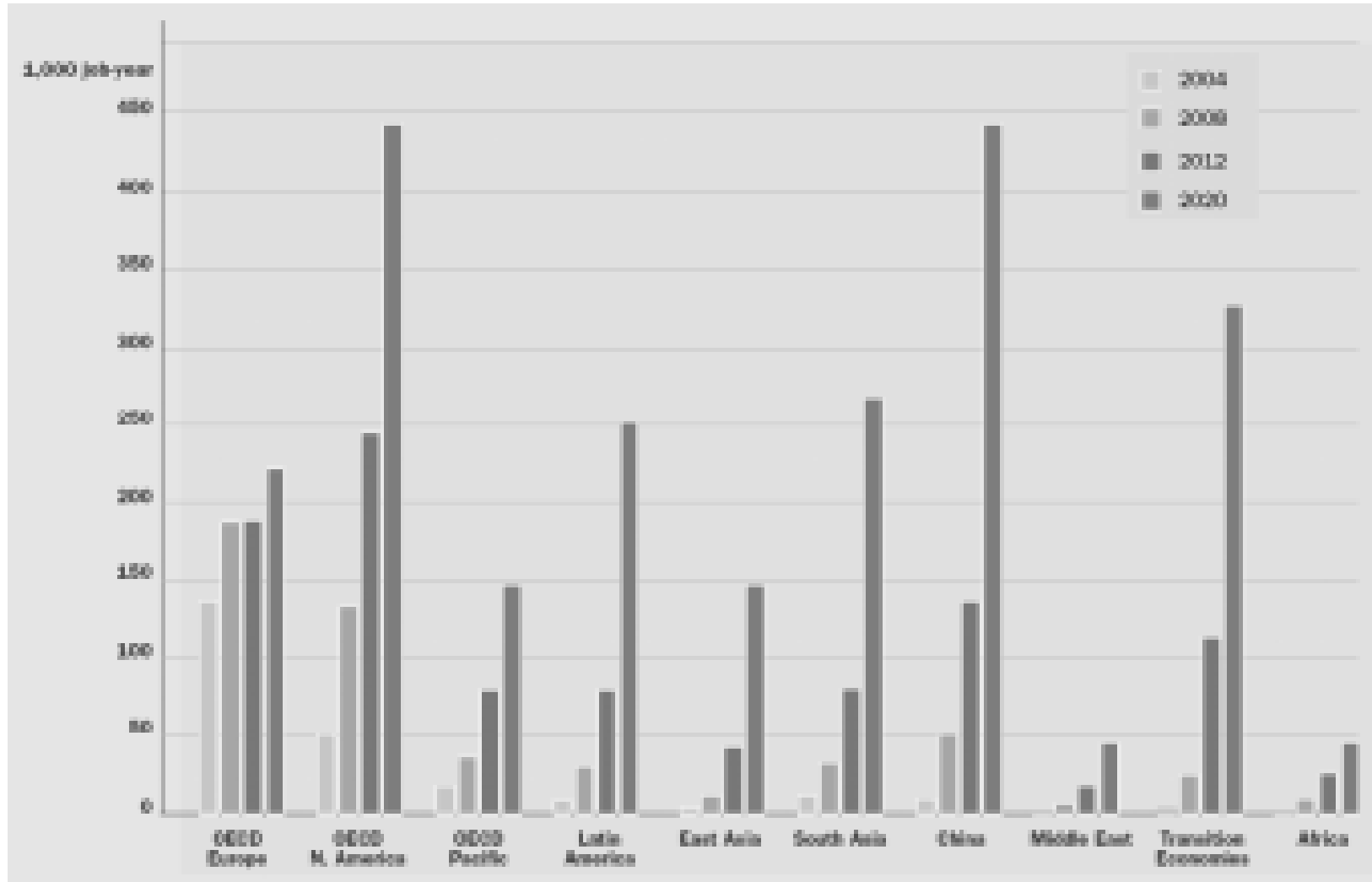
# Wind Energy – Potential until 2020



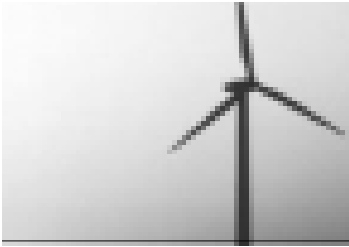
Distribution of annual installed capacity by region



# Wind Energy – Employment Potential until 2020



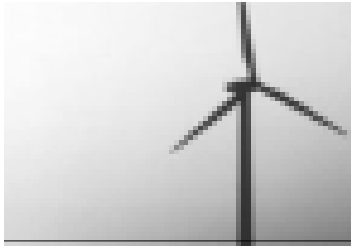
Distribution of employment by region



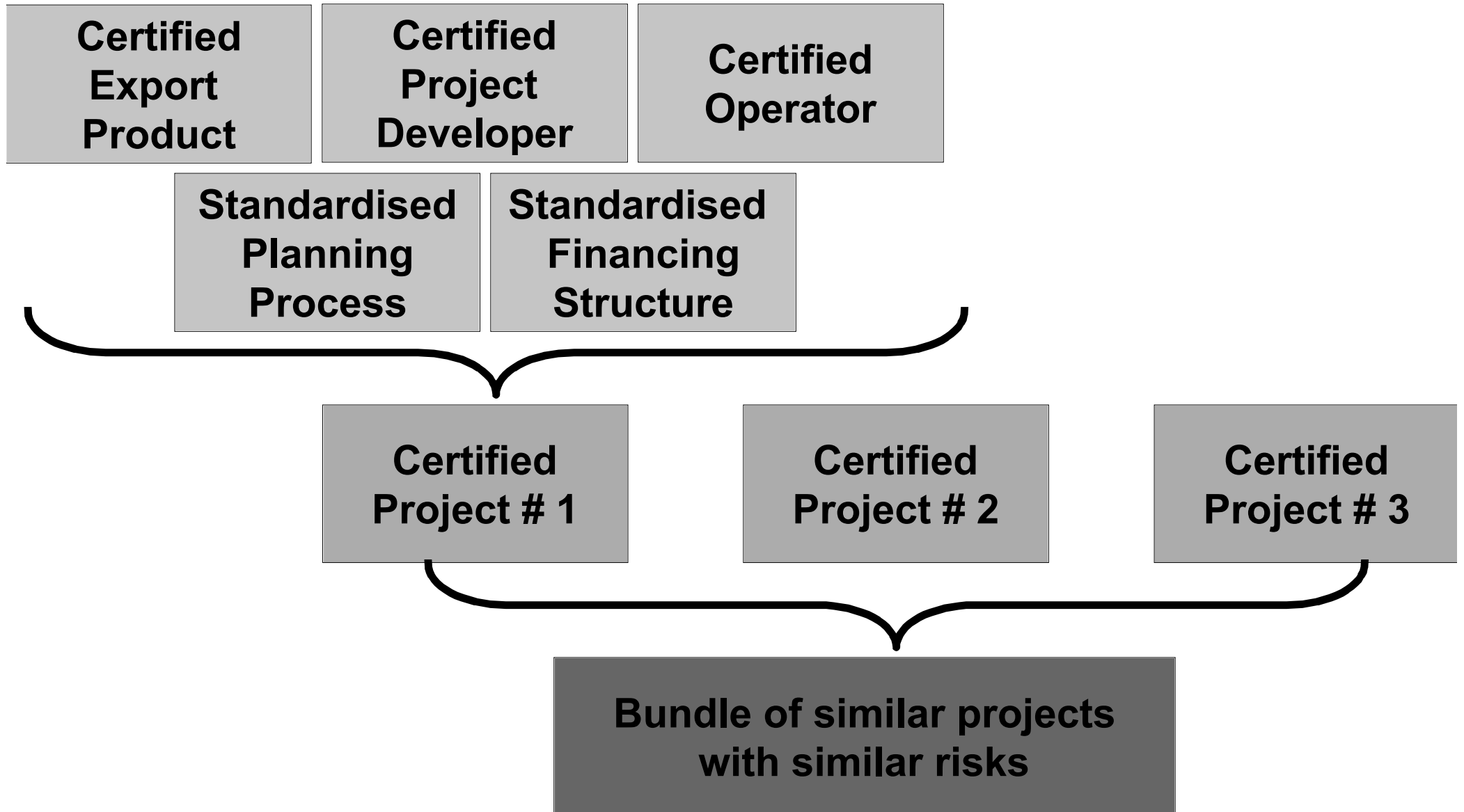
# ***Financing a Hybrid System for Afghanistan***



- **Pilot project for university north of Kabul (2005)**
  - Initiative of non-profit associations
  - Sponsoring through industry for market entry and good image
  - 50,000 € volume with high media attention
  - Wind energy converter 1.5 kW
  - Two solar modules of 1 kW each and a battery
- **Technology transfer**
  - Long-term cooperation with Tech. Univ. Hamburg intended
  - Training of two engineers in Germany
  - Transport of hybrid system to Afghanistan
  - Spare parts included in delivery
  - Operation and maintenance through local university
- **Long term goals on renewable energy projects**
  - Schools and hospitals to benefit from experience
  - For details see [www.zukunft-afghanistan.org](http://www.zukunft-afghanistan.org) (in German)



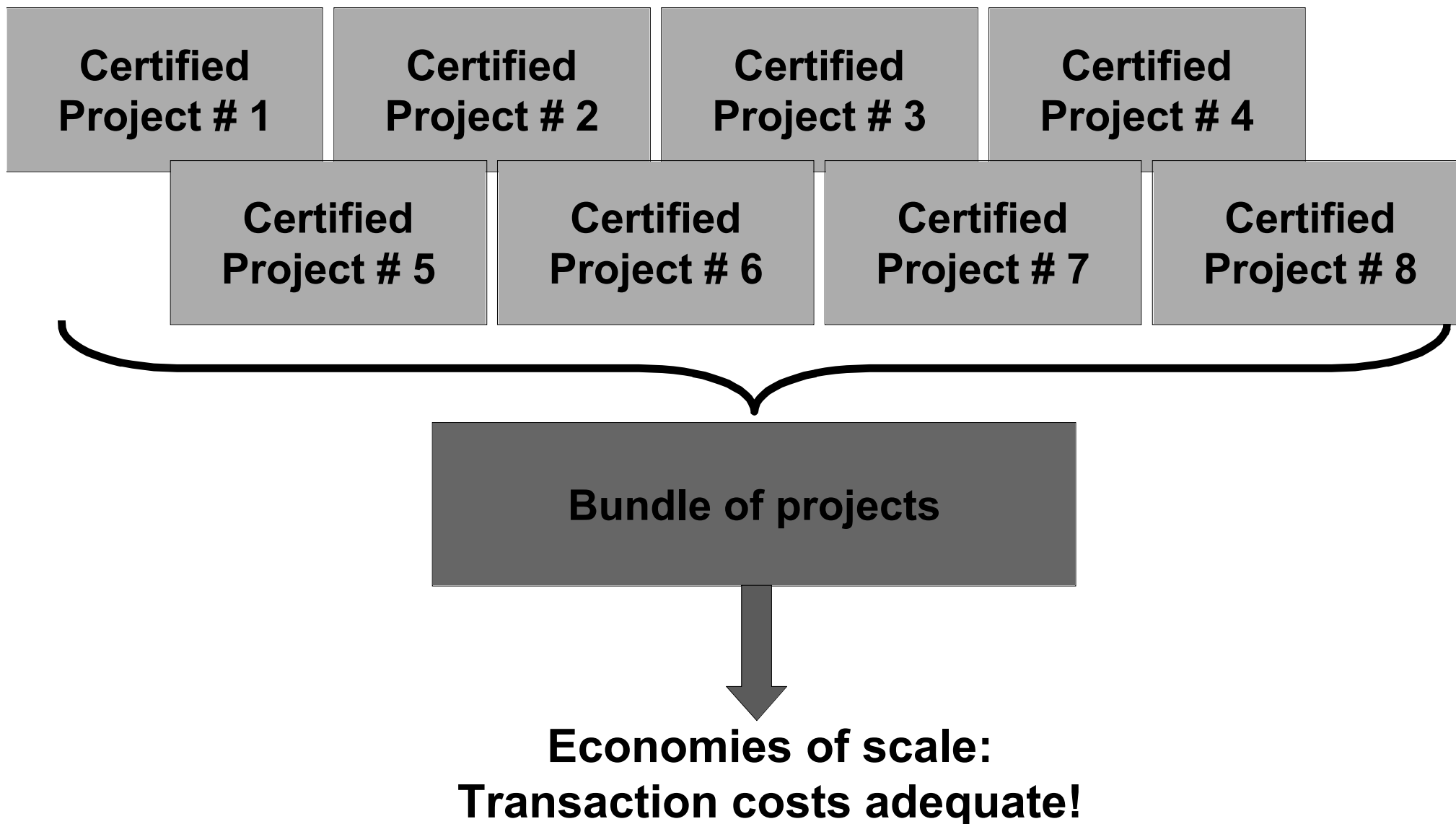
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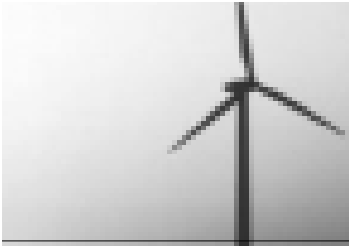






## *Lowering Transaction Costs: Standards and Certification (II)*





## ***EU-Project on Needs of Standardisation and Certification in Wind Energy Sector (I)***




- **Wind Energy R&D Network (WEN)**

- EWEA project 2002-2005 sponsored through EU
- Working group “Financiers & Insurers” exploring needs on standardisation and certification
- Defining future EU research funding policy for wind energy
- First Strategy Paper published on [www.ewea.org](http://www.ewea.org)

- **Certification of a project and/or its elements**

- “Rating” for individual project
- Aim: facilitate risk assessment and lower transaction costs for financiers and insurers



**Thank you  
very much  
for your attention.**

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