



# The current Situation of Wind Project Development in France

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[www.dewi.de](http://www.dewi.de)



- **Introduction DEWI**
- **Status End of 2003**
- **Expectations**
- **Bottlenecks**

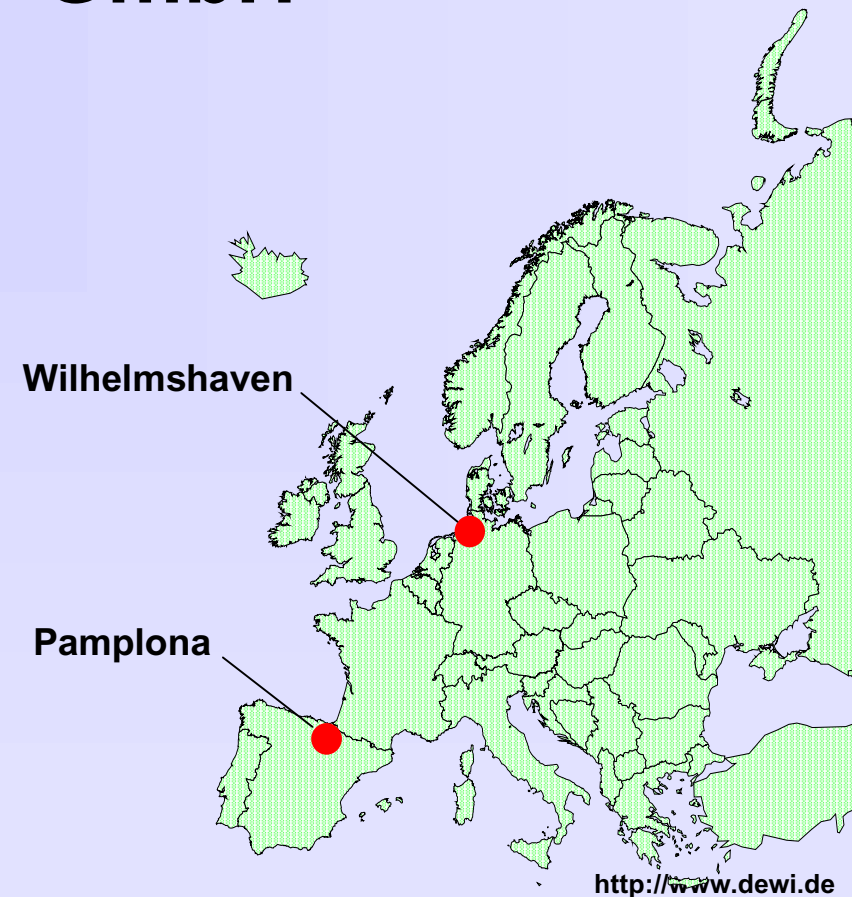
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# Deutsches Windenergie-Institut GmbH

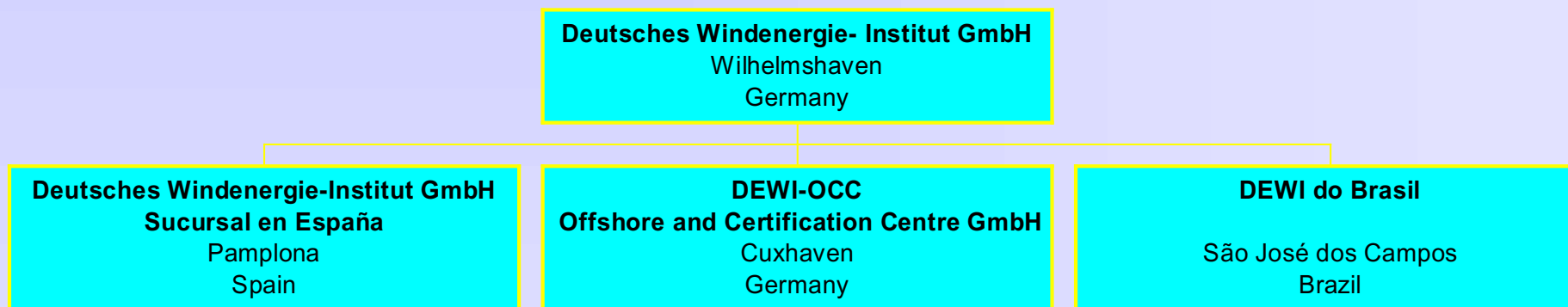


Deutsches Windenergie - Institut GmbH





# Organisation





## DEWI's Accreditations



DPT-PL-2394.00

**DKD**

DKD-K-28901



**DIN-EN 45.001 ⇒ ISO 17025**

**MEASNET**



**Danish Energy Agency**



# Measurements



Wind Offshore



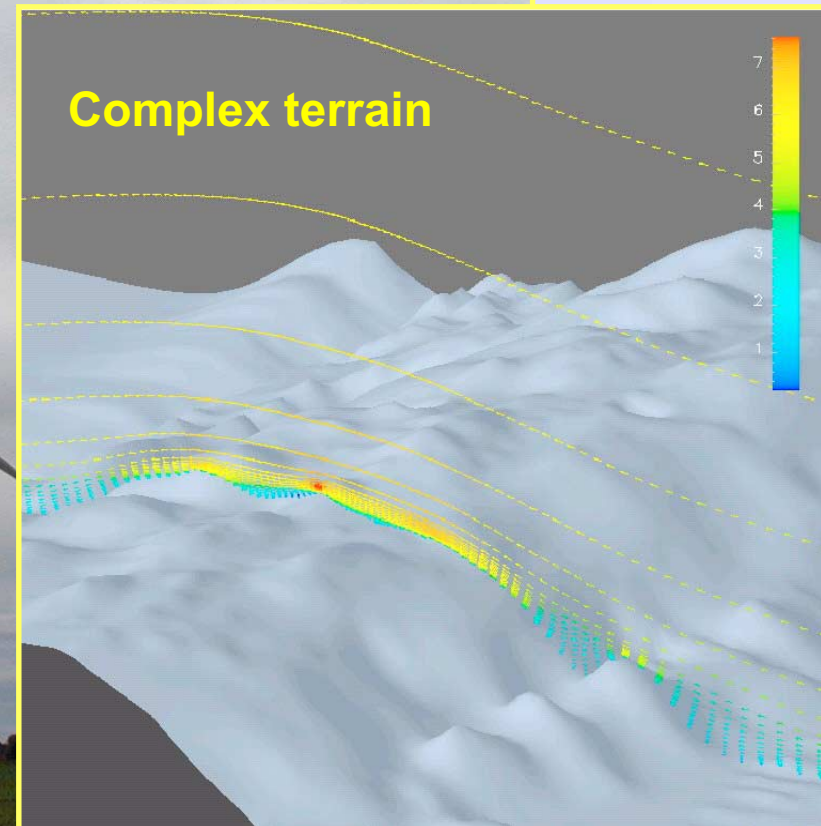
On-line monitoring



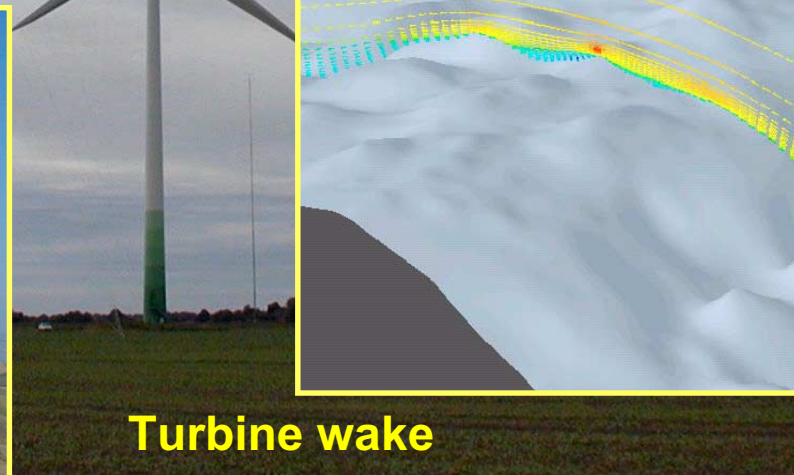
Load measurement in India



# Wind Potential and Site Assessment

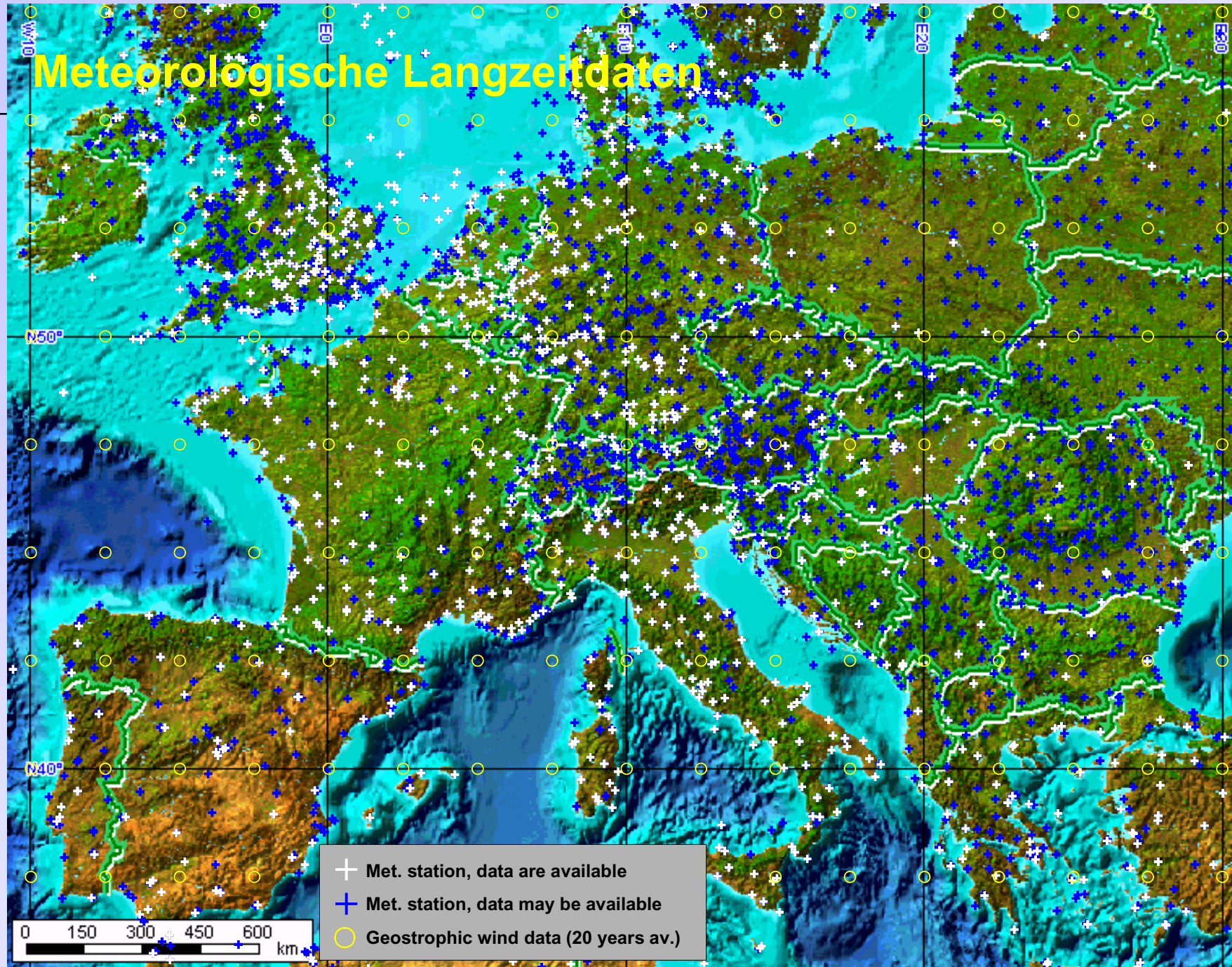


**SODAR in Spain**



**Turbine wake**

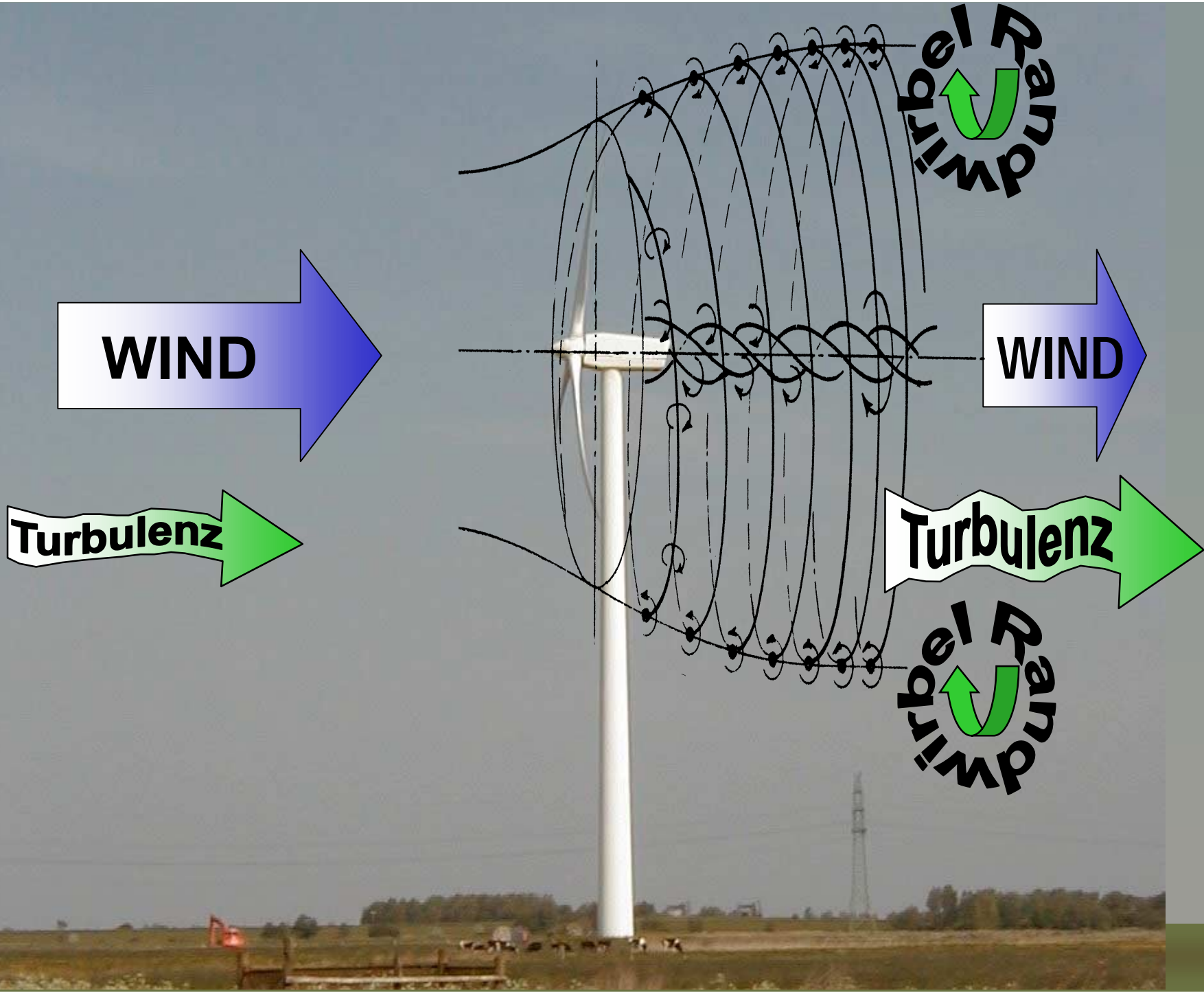
# Meteorologische Langzeitdaten



- + Met. station, data are available
- + Met. station, data may be available
- Geostrophic wind data (20 years av.)

0 150 300 450 600 km





Turbulenzintensität  $T_i = f(D)$

$T_i = 20\%$

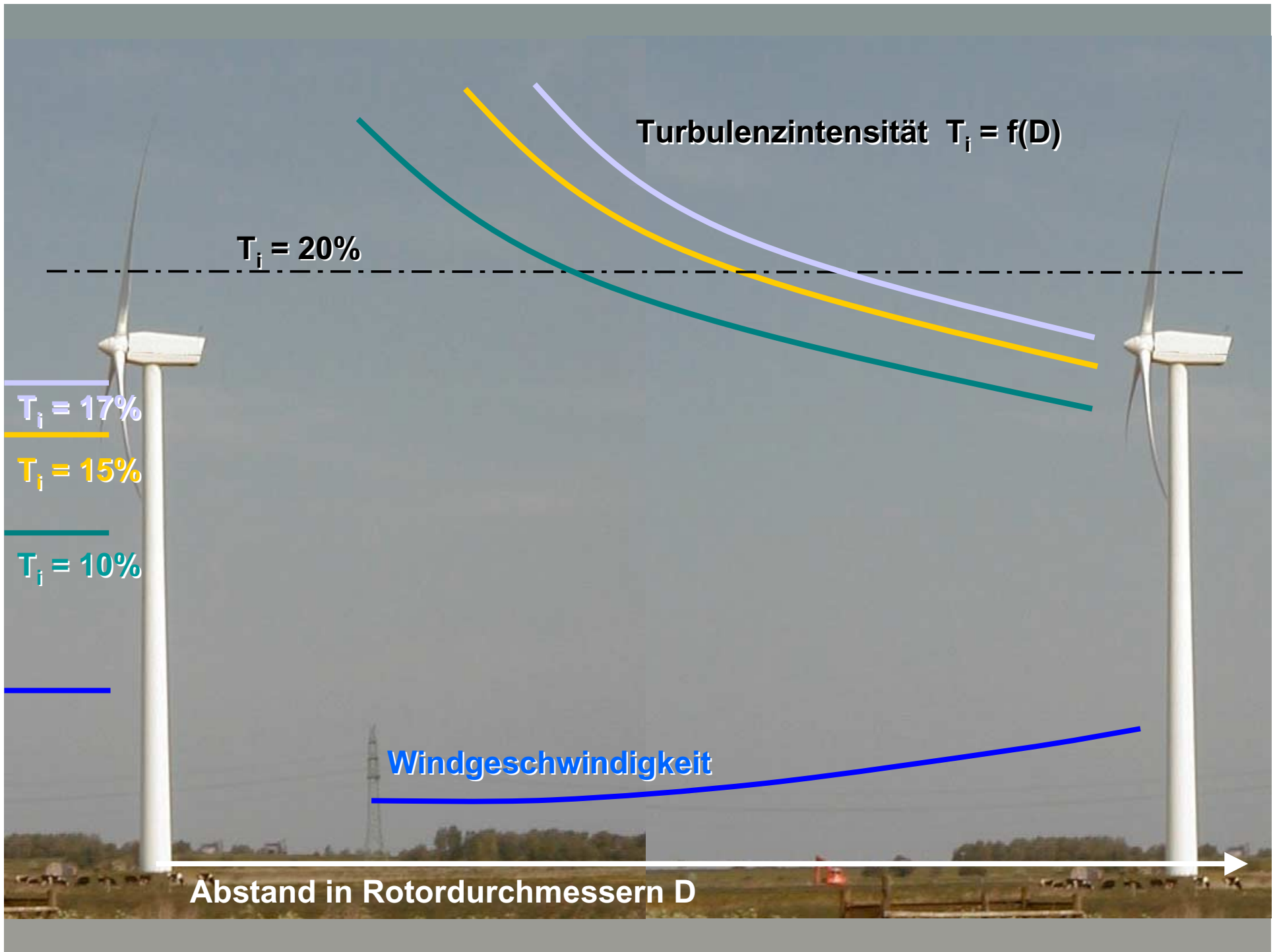
$T_i = 17\%$

$T_i = 15\%$

$T_i = 10\%$

Windgeschwindigkeit

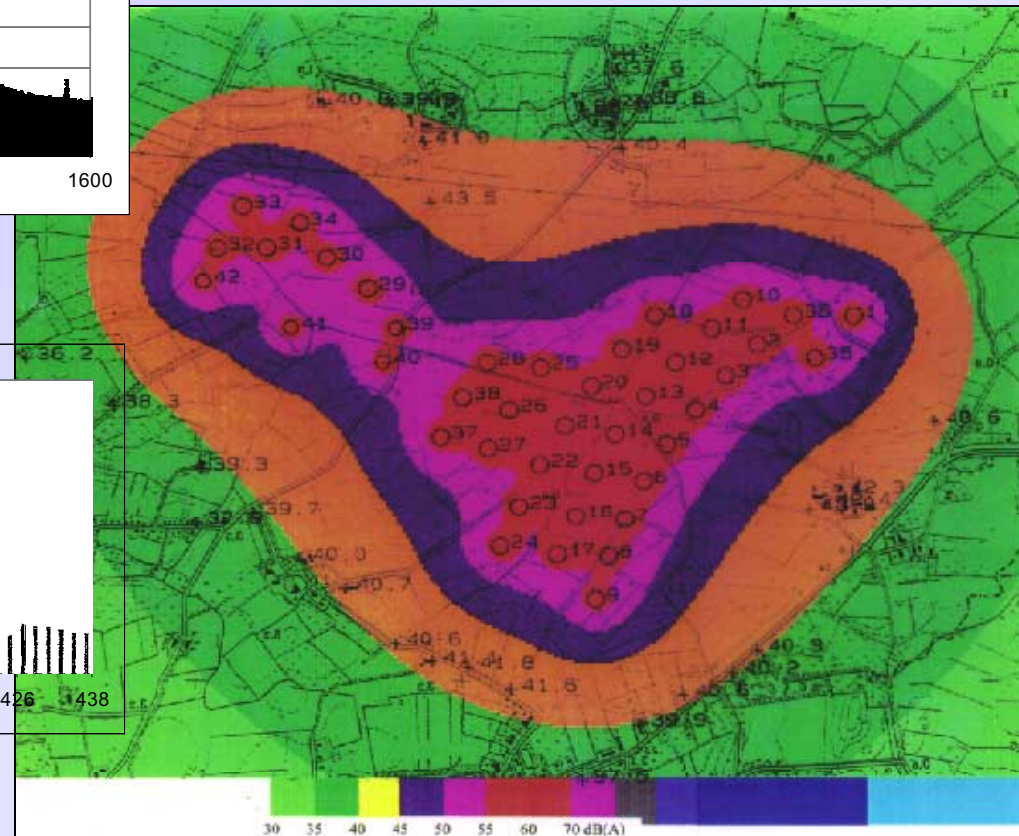
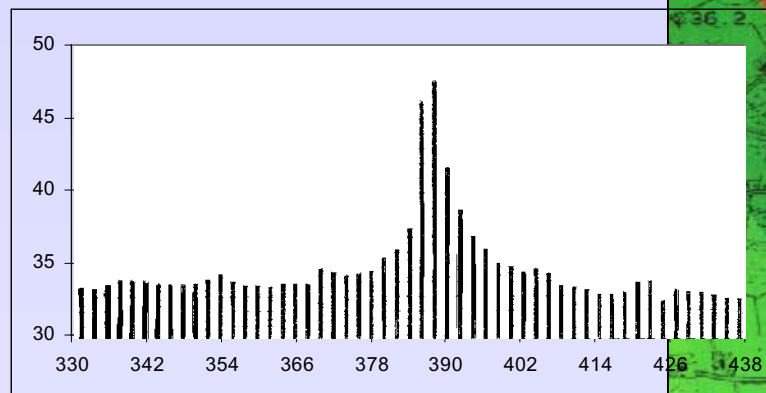
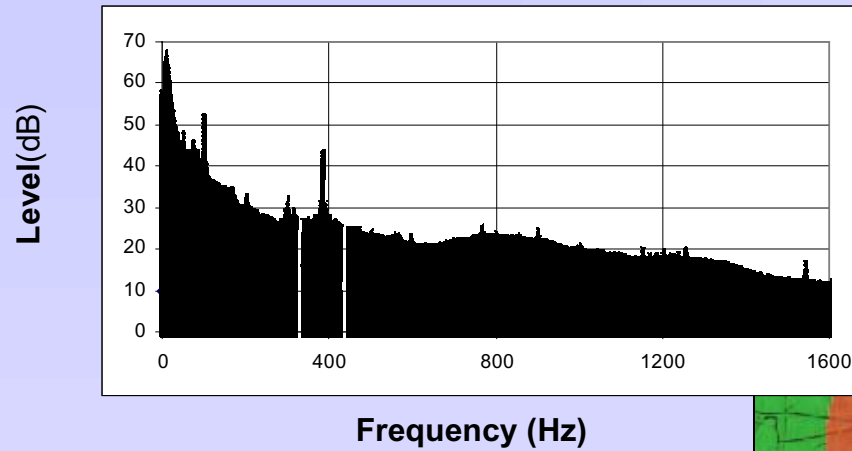
Abstand in Rotordurchmessern D



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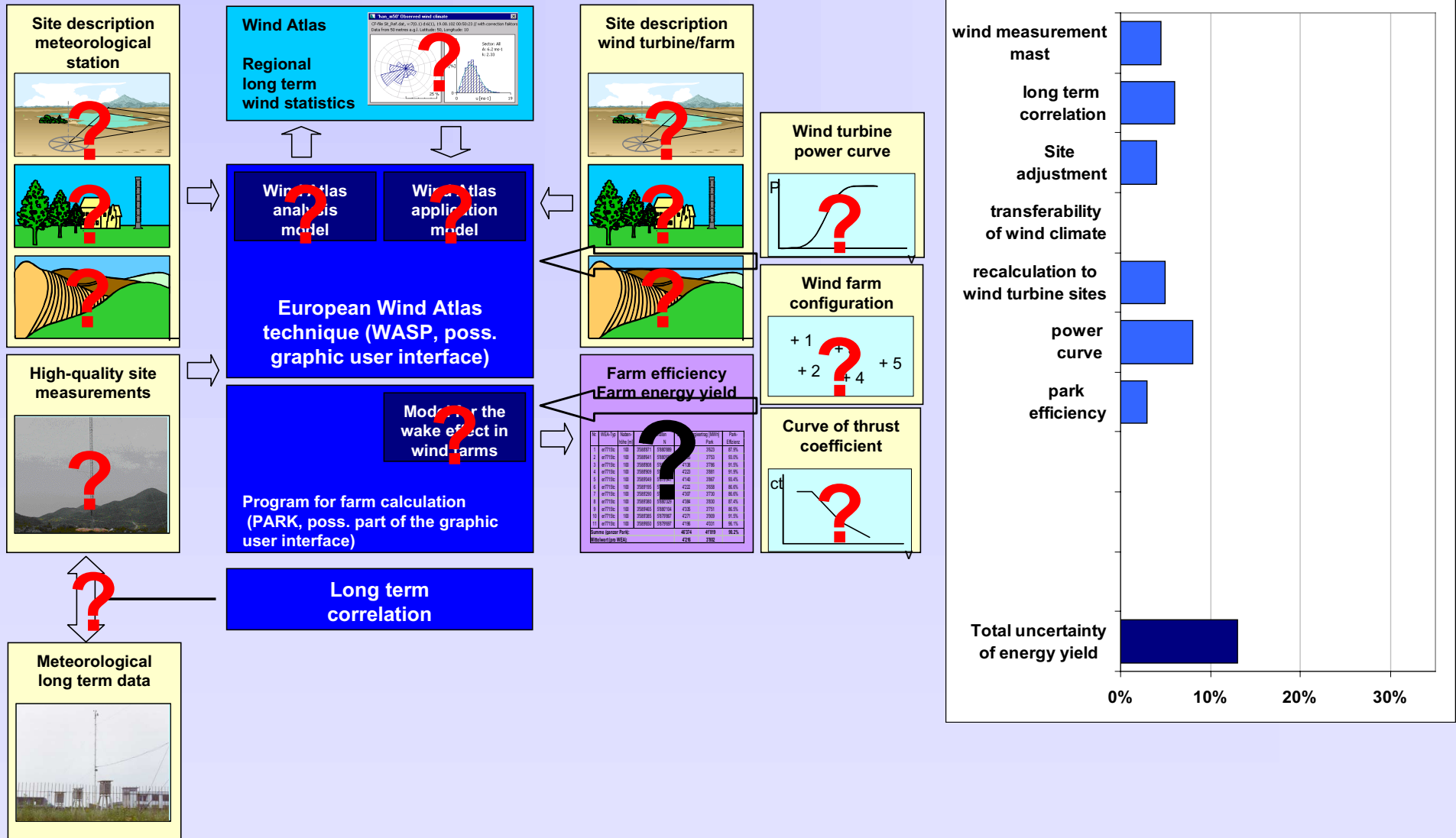
# Noise Measurements



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Uncertainties in Application of High Quality Measurement Data





## Technical Due Diligence - Bank's Engineer:

- **Wind Potential - Site Assessment**
- **Wind Farm Optimisation**
  - Energy Yield
  - Grid Connection
  - Acoustic Performance
- **Assessment of Wind Turbine Technology**
  - Track Record
  - Certification
  - Power Curve Assessment-Warranties
  - Maintenance and EPC Contracts
- **Financial Risk Assessment**  
Identification, Reduction and Quantification of Risks
- **Commissioning of Wind Farm**
- **Performance Verification**
- **Condition Monitoring**

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**16.40 Uhr. Frankreich. Windpark Bouin. Atlantik-  
küste. Härtesten für Technik. Schwerstarbeit für die  
Monteure. Schöne Aussichten für den Marktführer.**



Frankreich im Multi-Megawatt-Trend. Im Département Vendée drehen sich die ersten N80/2500 kW. Technik, die Nordex an den stürmischen Küsten Europas erprobt hat. Jetzt produzieren sie auch am Atlantik optimale Erträge. Höchstes technisches Know-how, weltweite Erfahrung und regionale Kompetenz: das Erfolgsrezept des deutschen Marktführers in Frankreich. [www.nordex.de](http://www.nordex.de)



Nordex AG, Bornbarch 2, 22848 Norderstedt, Deutschland  
Tel. +49 (0)40 - 500 98 100, Fax +49 (0)40 - 500 98 101

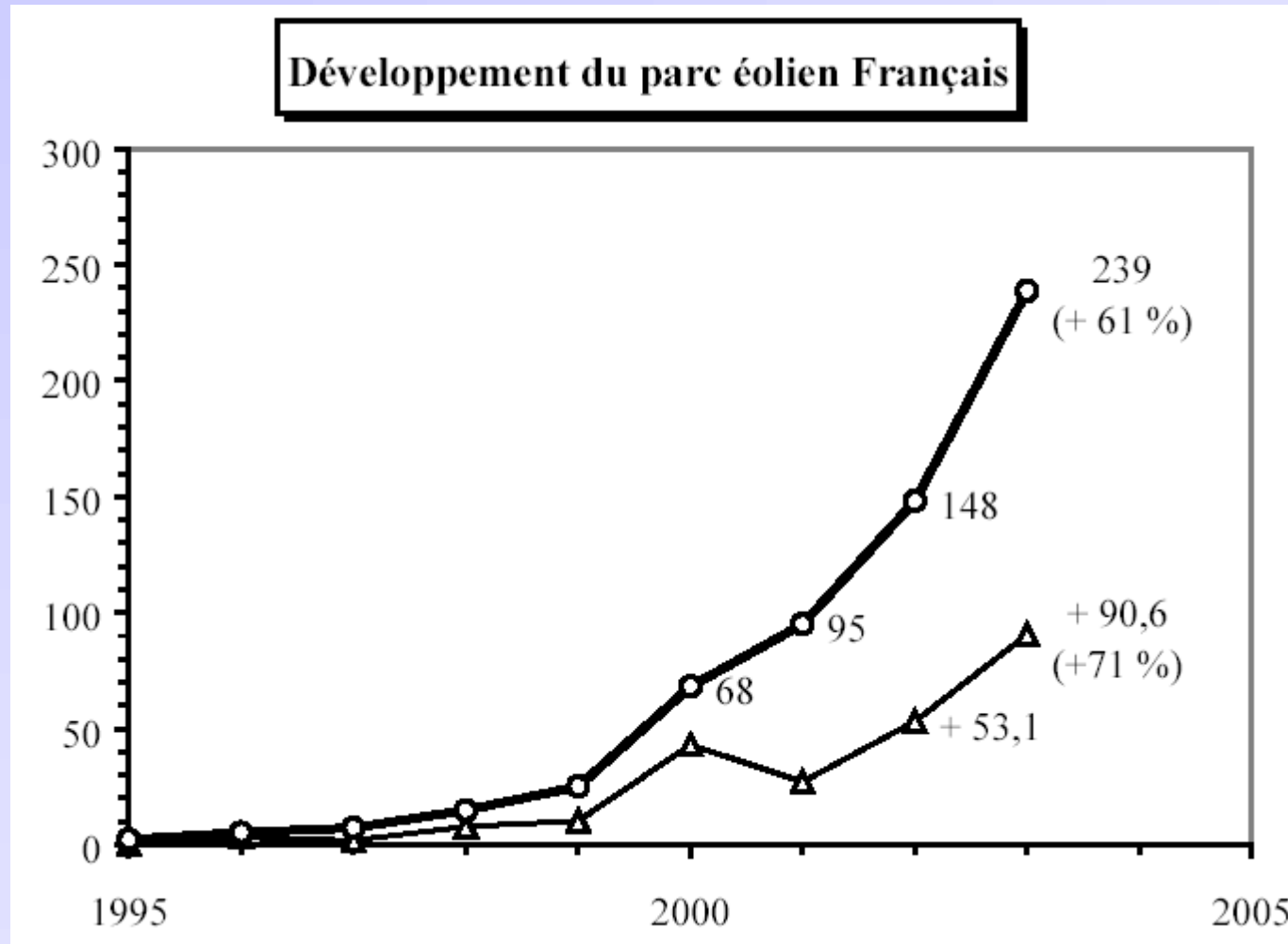
**2003. France. Bouin Wind Farm. The Atlantic coast. Endurance Test for the Bank. A tough Job for the Bank's Engineer. A fine outlook for DEWI.**

## Frankreich



- **Erfahrungsaustausch**  
mit Genehmigungsbehörden und Wirtschaftsförderung  
z. B. **AK Akustik (Genehmigungshindernis);**  
**Abstandsregelungen**
- **Delegationsreise**  
(Politik, BWE, VDMA, Industrie, DENA, DEWI)
- **Informationsveranstaltungen + Messestand+ Broschüre**  
(z.B. Fachtagung in der Haute Normandie im November 2003)
- **Kompetenzzentrum**  
**Testfeld Know-How-Transfer**
- **Schulungen/Kurse**  
**Kurzzeitkurse (Grundkurs/Spezialkurse)/ Langzeitschulung**

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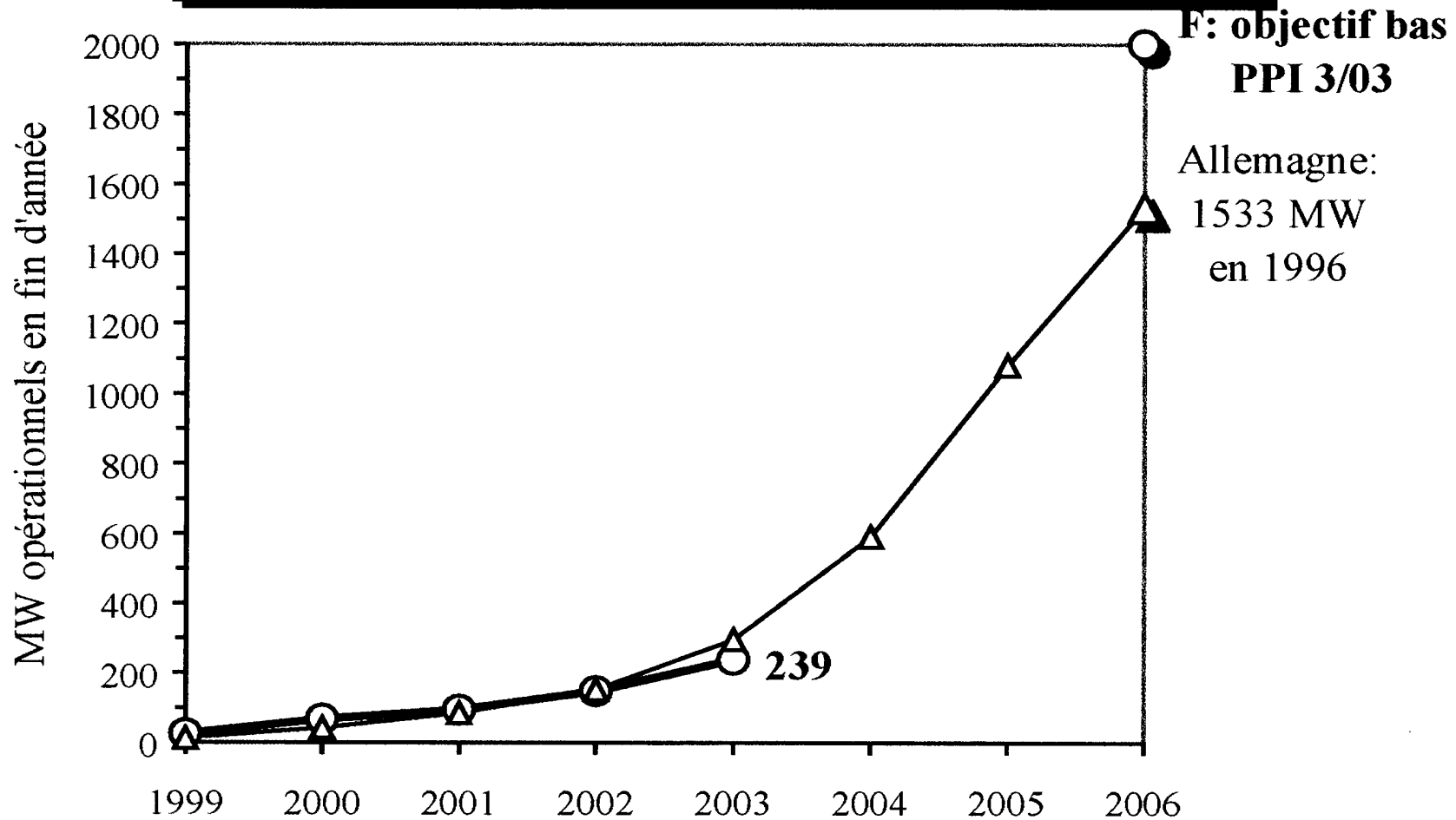
Source: B. Chabot – ADEME; Bilan et perspective du développement de l'énergie éolienne en France en 2003



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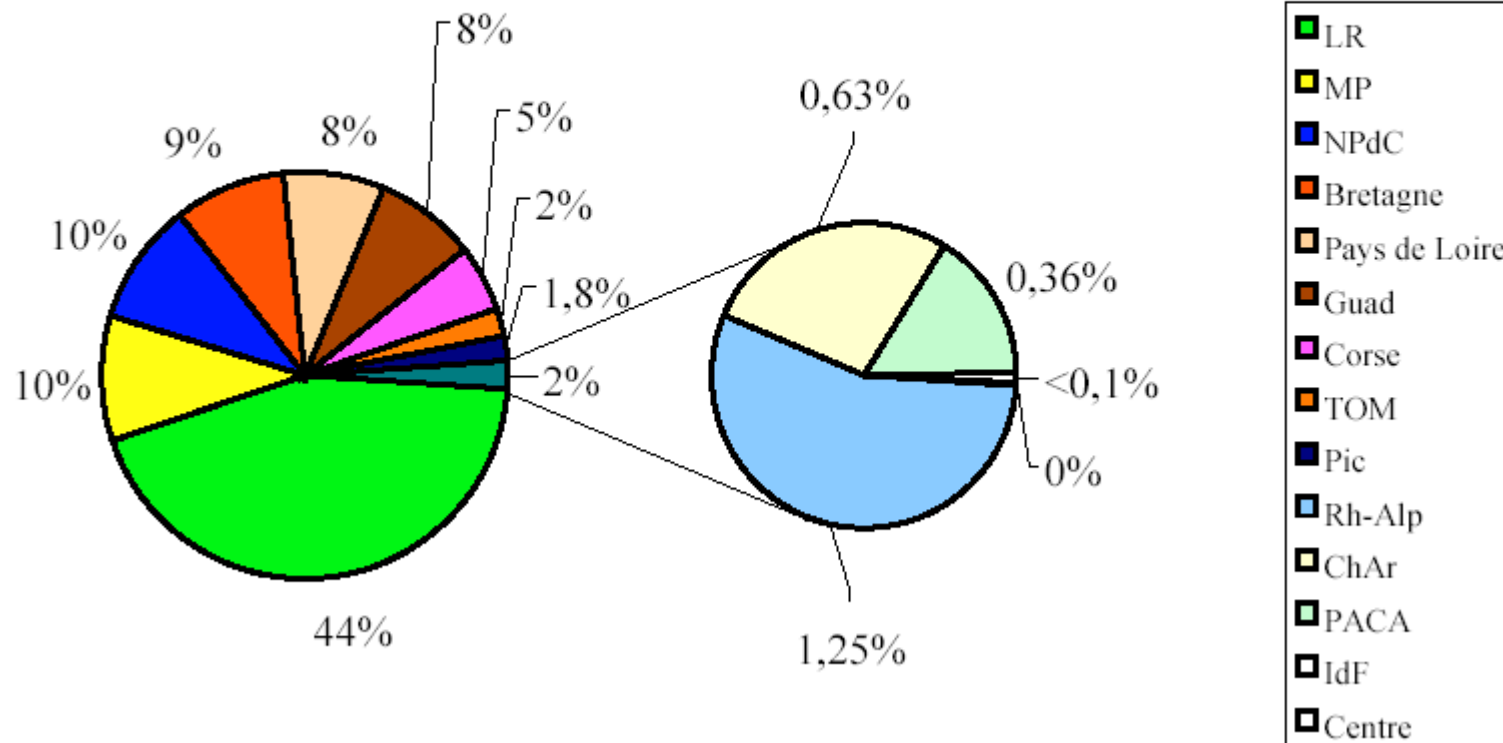
**Comparaison France - Allemagne avec 10 ans de décalage**



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Répartition régionale des 239 MW en fin 2003

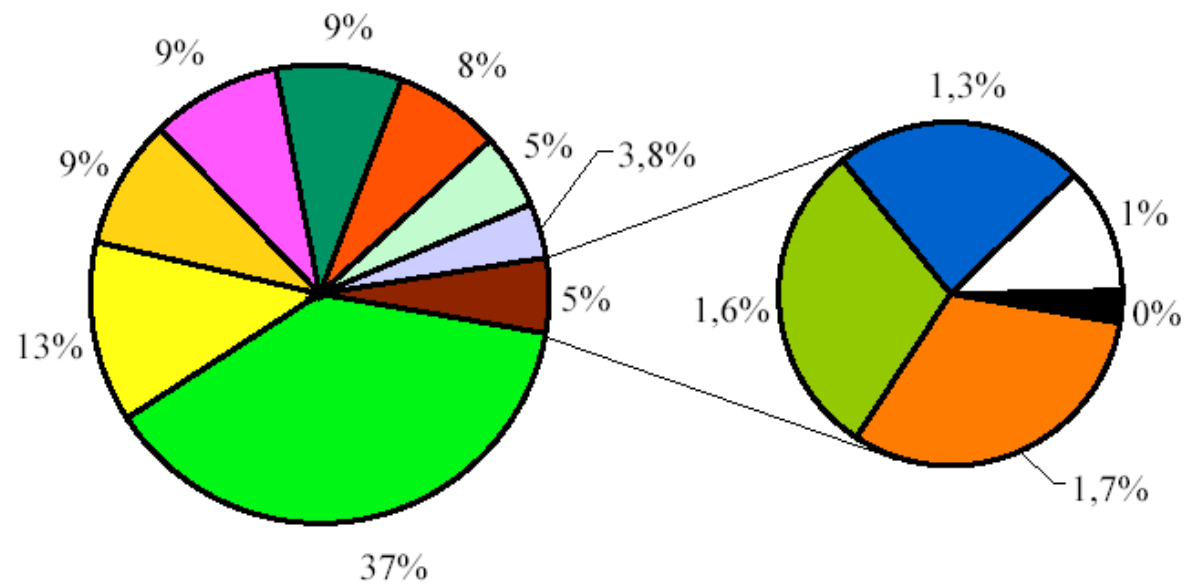
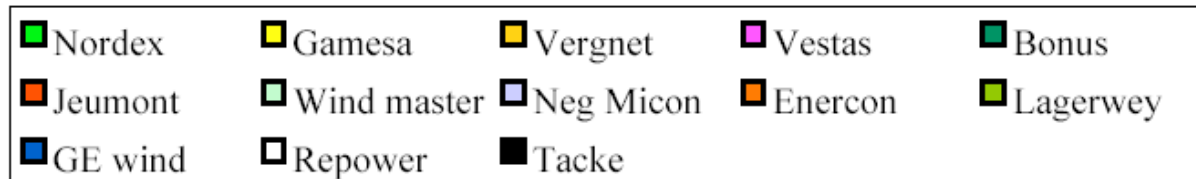


Source: B. Chabot – ADEME; Bilan et perspective du développement de l'énergie éolienne en France en 2003

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Répartition du parc de 239 MW en fin 2003



Source: B. Chabot – ADEME; Bilan et perspective du développement de l'énergie éolienne en France en 2003



## MW installés (2003) et en cours (2004)

-Systemes Solaire Jan-Feb 2004, No. 159

<b>Département</b>	<b>MW installés</b>	<b>MW en cours</b>
Bretagne	19,80	95,90
Basse-Normandie	10,80	
Champagne-Ardennes	1,50	
Haute-Normandie		4,25
Île-de-France	0,06	
Languedoc-Roussillon	104,58	58,10
Lorraine	9,00	
Nord-Pas-de-Calais	24,03	37,50
Midi-Pyrénées	23,60	
Pays-de-la-Loire	19,50	
Picardie	4,25	31,00
Poitou-Charentes		16,80
Prov.-Alpes-Côte-d'Azur	1,70	29,75
Rhône-Alpes	3,60	24,45

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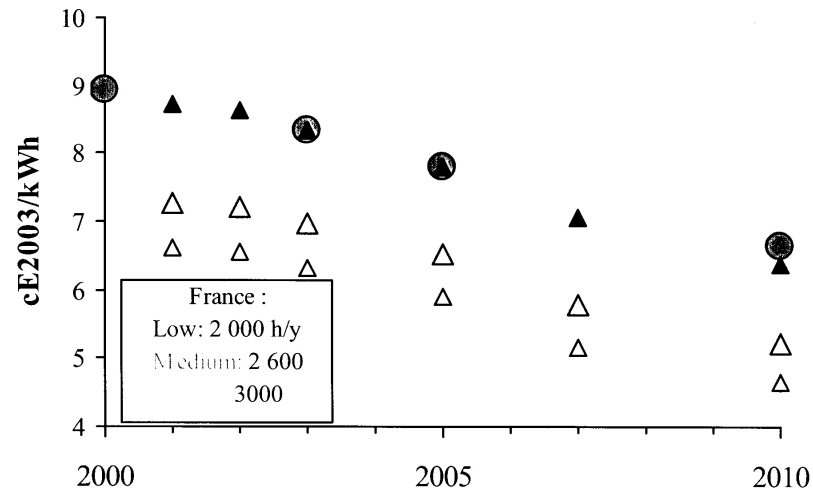
ADEME



Tariffs comparisons between Germany and France

Wind tariffs assessment in Inland Germany (on 20 years) and in France (on 15 years)

● Germany - Inland ▲ France Low △ France Medium △ France Hight



Source: Germany: from BWE 23/7/03 press release ; France: B. Chabot - ADEME 2003

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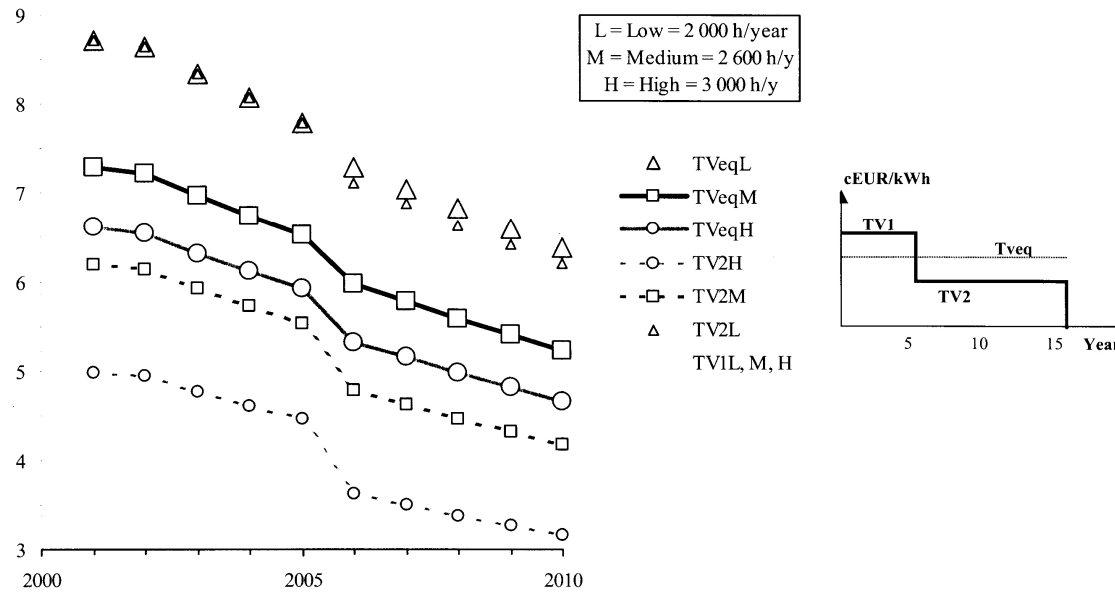
A D E M E



**Example of Tariffs Decrease (infl. rate: 2 %/year)**

Potential Decrease of Wind energy Tariffs (cEuro2003)

Note: The "1500 MW" threshold may happen from 2004



Note: actual tariffs may differ (ICHTTS and PsdA indexes may not vary as inflation rate)

Source: B. Chabot, ADEME, 2003

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## **Bottlenecks in the Wind Project Development in France**

- **Landscape and Protection of Historic Buildings and Monuments (Castles, Cathedrals)**
- **Distances to Roads, Lakes,.....**
- **Acoustic Noise**
- **Grid Connection**
- **Financing-Tax Credits**

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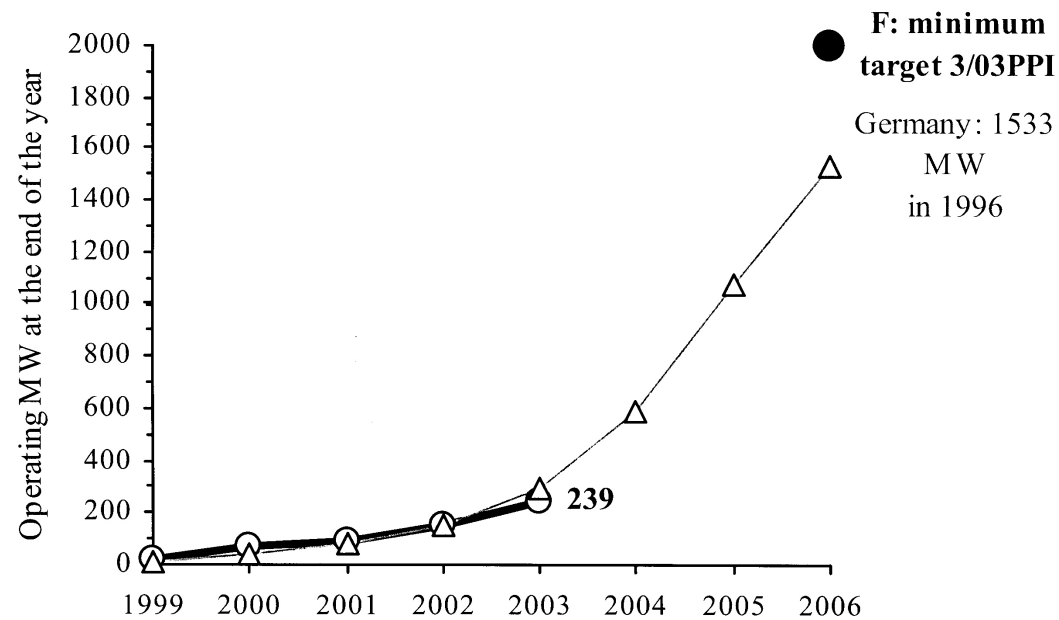


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Germany: "only" ten years ahead of France ?

Comparing Germany : 1989-1996 & France: 1999-2006



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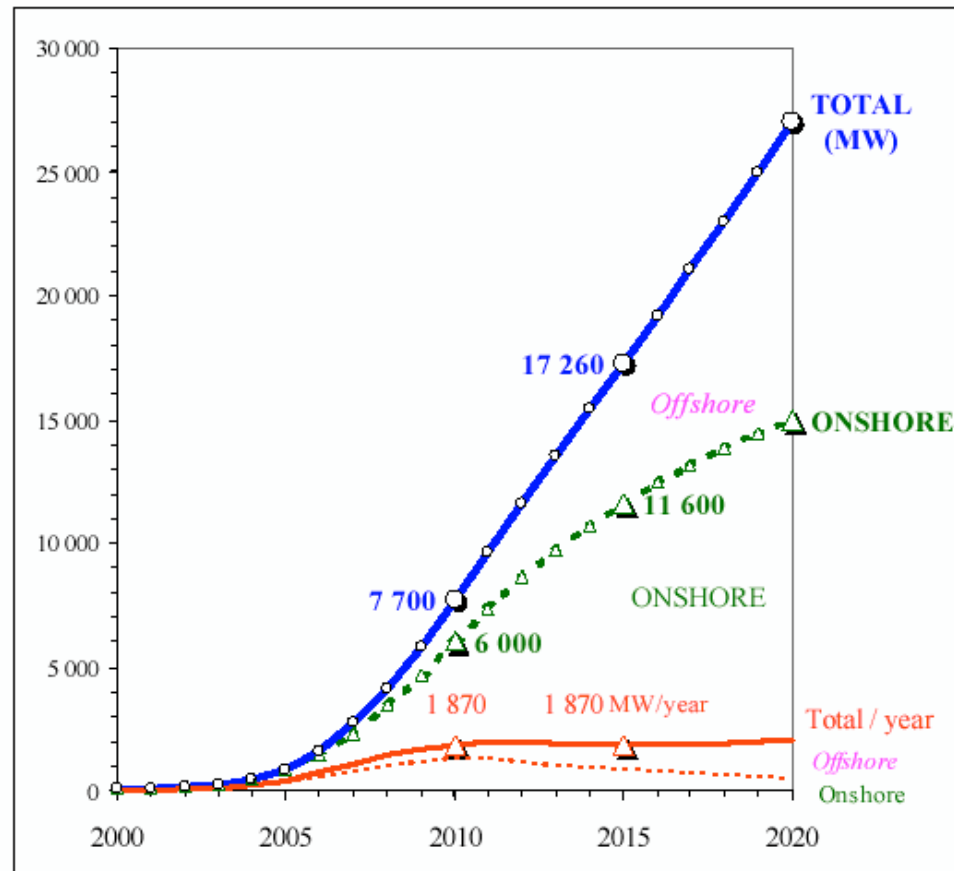


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France

## Potential Wind Power Development up to 2020



Source: B. Chabot, ADEME, Systèmes Solaires, mai-juin 2003, Paris