

DIRECT EMPLOYMENT IN THE WIND ENERGY SECTOR

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1. Introductory remarks and definitions

- A) Tremendous growth of wind energy capacity in Europe (+339% during 2000-2007), but unevenly distributed among countries.
- B) EU wind energy companies are world leaders in this business.



- What has the impact been on the employment levels in Europe?
- What types of jobs are more common?
- Is there a relation between n° of MW installed and n° of jobs created?

Direct *versus* indirect employment.

2. Methodology of the study

- Difficulties in the quantification of wind energy employment figures: lack of official statistics, fast structural change and variety of actors involved.
- Two possibilities emerge:
 - 1) data collection based upon surveys and other written evidence (economic registries, company annual reports). Direct employment only, but rich in details.
 - 2) data based upon estimated relationships between sectors: I-O approach. Direct and indirect employment, but high costs and rigid methodology.

This study is based on a survey among a wide variety of wind energy agents in the EU (+1,100 companies in 30 MStates). Information is **complemented by** earlier studies and by information available in the **national wind energy associations, official registries + annual reports of the companies**. Only direct employment has been measured.

Questionnaire in 5 languages (14 questions in three blocks). Initial mailing and telephonic follow-up. The collection phase lasted 6 months. **Complemented by** in-depth interviews, annual accounts + local registries+ outcomes from earlier studies.

3. Direct employment per EU country

Direct employment from wind energy companies in selected EU countries, according to the survey (early 2008 figures):

Country	N° of direct jobs	Country	N° of direct jobs
Austria	700	Ireland	1,500
Belgium	2,000	Italy	2,500
Bulgaria	100	Netherlands	2,000
Czech Republic	100	Poland	800
Denmark	17,000	Portugal	800 (3,000)
Finland	800	Spain	16,500 (22,000)
France	7,000	Sweden	2,000
Germany	38,000	United Kingdom	4,000
Greece	1,800	Rest of EU	400
Hungary	100	TOTAL	98,100 (105,100)

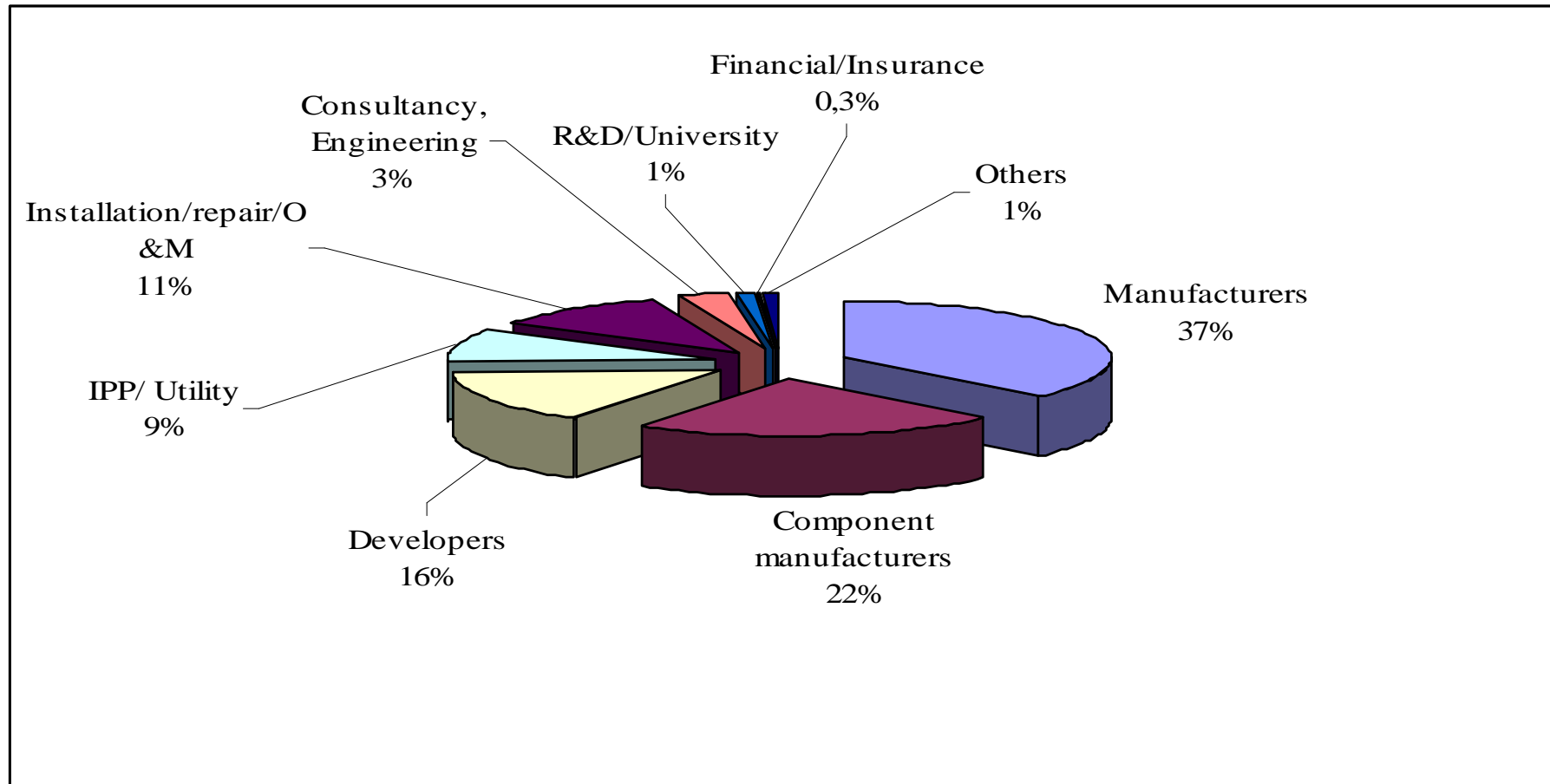
3. Comments on aggregate figures and comparison with other sectors

- There is a clear link between n° of MW installed and n° of jobs registered. Denmark, Germany and Spain account for 70% of the capacity installed and 72% of the total jobs.
- Being an early mover (e.g. Denmark) constitutes an advantage.
- The size of the market matters (France, UK..), also the proximity to well-established manufacturing centres.
- Some types of jobs (e.g. developers, utilities) have a strong local nature, while in others economies of scale play a more important role.
- Wind energy is a **predominantly-male business** (78% of the workforce *versus* 56% is the EU-average), possibly due to the nature of jobs —engineering, O&M-. High percentage of qualified workers..

Energy sector in Europe employs 2,6 million people (1,4% of total EU employment, in decline)
Electricity, gas, steam & hot water (NACE classif) employs 1,3 million approx (in decline).
Wind energy more labour intensive than other energy sectors grows while the others decline.

4. Direct employment by type of company

Direct employment by type of company, according to the survey (early 2008 figures):



Wind turbines and component manufacturers account for the lionshare of the jobs (59%). These are also the categories where companies are larger and thus employ more people.

5. Job profiles in the wind industry

Typical wind energy job profiles demanded by different types of industries (early 2008 figures):

Company type	Main job profiles
Manufacturers	Highly qualified chemical, technical, electrical, mechanical engineers Semiskilled and non-skilled for production chains. Health and safety.
Developers	Project managers; lawyers+ economists; environmental engineers, programmers and meteorologists. Other supporting staff.
Construction, O&M	Technical staff, specialists in transport of heavy materials, electricians, electrical and civil engineers. Semi-skilled and non-skilled for the building process.
IPP, utilities	Electrical, environmental and civil engineers. Technical staff for maintenance. Financiers, salespersons, marketing people.
Consultancies, R&D, others	Programmers, meteorologists, engineers, legal and policy experts; sociologists (a wide range of highly specialised jobs).

6. The shortage of workers and proposed solutions

- Insufficient number of EU graduates enter the labour market, specially in a context of economic expansion and accelerated growth of the wind industry. This problem is also reported in other scientific and technical fields.
- Shortage is particularly acute for positions that require a high degree of experience and responsibility: project managers, senior engineers. O&M and other technical staff are also very hard to find.



PROPOSED SOLUTIONS:

- Measures to promote workers mobility (between countries, regions and sectors).
- Measures to improve the technical profile of the educational system (university and pre-university levels). The creation of a EU-wide certification system could be useful.
- Dissemination measures, to better explain the opportunities offered by the sector (job fairs, training centres, improved dialogue between companies-educational system).

7. Final thoughts and conclusions

- **Change in the economic environment:** how will the financial crisis affect the wind energy sector and its job-creation capacity? –Little impact so far, but this could change in 2009-.
- **Change in the legal/ political circumstances:** In Europe, the approval of a new EU directive for RES up to 2020 constitutes a positive signal. In USA, President Obama wants to promote the “green energy” sectors. In the rest of the world, the appetite for electricity demand, high fossil fuel prices and a likely Post-Kyoto agreement will trigger new wind energy investments. All these elements are positive.
- **Change in the EU position as the main wind energy market.** USA, China, India and some others are growing very fast. This will push towards the installation of wind energy companies outside Europe. Will the EU remain world champion in this field? What will happen to manufacturing jobs in Europe?.

Generally, job prospects in the EU wind energy sector remain good, but there is a need to adapt the industry to the new global circumstances.



**THANK YOU VERY MUCH
FOR YOUR ATTENTION**

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