

**M.Sc. INTERNATIONAL BUSINESS**

**INTERNATIONAL INDUSTRY ANALYSIS - IB 22**

**SPRING SEMESTER MAY 2001**

**ANALYSIS OF THE  
EUROPEAN WIND TURBINE INDUSTRY**

**AUTHORS**

**Germán Senosiáin**

**Stephen Whittle**

**Hannu Lamp**

**Jonas Lautrup**

**TUTOR**

**PETER LOTZ**

**ADVISOR**

**NIELS PETER JENSEN**

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## Executive Summary

The main purpose of the project was to describe and analyse the current and future structure of the wind turbine industry in Europe by looking at the key drivers, including supply, demand and public policy. Further aims were to analyse the intensity of competition and conduct and to identify key success factors that are important for wind turbine manufacturers to survive in the long-term.

Although the wind turbine industry is a truly global industry, this project was delimited to the European marketplace and its relevant constituents, with a special focus on Spain, Germany and Denmark, mainly because the region has until today accounted for the majority of the worldwide growth and that it was perceived to have common characteristics and drivers, like public policy.

Prior to the analysis, we defined the industry while taking into account both demand side and supply side was taken into account. Based on our findings, we separate the wind turbine industry from the broad energy sector. We can isolate the wind energy from the rest of the energy sector due to environmental considerations and cost efficiency.

The first step when conducting a structural analysis in the turbine industry was to characterize the strategies of all significant competitors in Europe by mapping the key players into strategic groups by degree of internationalisation and vertical integration.

We proceeded with the Structure-Conduct-Performance model. The first step consisted of the analysis of the "basic conditions". Demand, supply and factors such as technology and growth will settle the rules that will shape the structure of the industry. Technology is a very clear driver of the current structure. The industry possesses high tacit knowledge that makes it very difficult to other players to get into the industry, even though the growth rates are substantial.

What concerns public policy, the incentives created by various European countries to wind energy have been instrumental in establishing commercial wind turbine manufacturers and wind energy utilization at a level that we witness today. European governments have stimulated the use of wind power through various mechanisms on both "push" and "pull" side, with the fixed-price scheme being most efficient and increasingly used by different countries. The future outlook for wind energy in Europe is favourable because of the technology's economic competitiveness, growing demand for electricity, and effective renewable energy policies adopted in several markets of the EU while the region moves towards an increasingly competitive market.

A review of the structure of the windmill industry has highlighted the fact that the structures differ from country to country. It has been argued that on a global scale the number of competitors and their relevant share of the market is conducive to an oligopolistic framework. In contrast to this it has been found that if the European market is broken down to the level of individual countries then the market structure shifts to a weaker oligopolistic market and more concentration is evident. In explaining the three different market structures certain factors were considered: suppliers, developers, and government. Industry specific variables such as economies of scale, reputation, tacit knowledge, or learning curve are also very important.

From this analysis two important common trends have been identified. Firstly, manufacturers are more actively considering vertical integration, notably towards the manufacturing of blades. Some of the largest manufacturers have undertaken greater vertical integration, and it is believed that they have pursued this policy on the basis of being able to control further the delivery and cost structures.

To meet the growing demand, all leading manufacturers have undertaken an expansion, either through organic growth, vertical and horizontal integration or strategic alliances. Due to high transportation costs, country of origin effect and ability to provide after-sales service and maintenance it has paid off to establish sales-production-service facilities in major growth markets, like Spain. The minimum efficient scale requirement of plants limits the ability of firms to pursue the above strategy.

Due to their relative size, the leading manufacturers have an advantage over smaller counterparts in funding on-going research, development, design and engineering activities for further product and process improvements. The cost-effectiveness of the technology depends very much on the R&D efforts of also sub-suppliers. If sub-suppliers are not ready to undertake these major relationship-specific investments, or if there exists a possibility of moral hazard, vertical integration should be the preferred option.

The same applies to the down-stream activities in the value chain - marketing and sales. Most probably it would make sense to intensify cooperation with the wind power development companies, as project development requires a large capital base and specific know-how.

The intensity of competition in the industry is currently not very intense, although variations can be observed from country to country, with Germany being the most competitive market. High worldwide growth of the wind power sector is the most important explanation for the lower competition which keeps companies busy meeting the market demand. Entry and exit barriers to the industry are also important. Price and non-price competition between wind turbines manufacturers is though believed to intensify when market growth and government support to wind power lowers.

In a few years to come we will especially witness an increased competition in the upper part of the mw-scale segment, due to the emergence of the lucrative offshore market.

The growth in order sizes, caused largely by the development of the off-shore segment is thus believed to increase the oligopoly power of the leading manufacturers which will enable them to finance future growth and to maintain technological lead.

Finally we identified key success factors in the industry.