

## EXECUTIVE SUMMARY

In recent years, a very powerful economic sector has developed around the wind energy industry that **creates value to society directly with 2,311.0 million € and, indirectly, with additional 1,492.4 million €** to the rest of the economy in 2008.

However, **the financial crisis and the introduction of the new Royal Decree Law 6 / 2009 have meant a slowdown of the performance of the Sector in 2009**. The establishment of a new regulatory framework that considers the evidence presented in this report and that introduces stability and long-term incentives will maintain the growth levels of the years before 2008.

**Spain is an exporter of equipment, services and technology related to this industry**, and the development of the sector has attracted foreign investments to our country. This great economic performance has **happened along important job creation** and a very significant contribution to **achieving the objectives of energy and environmental policies**.

The wind energy sector is without doubt one of the main characters regarding the **reduction of emissions of greenhouse effect gases** and other pollutant gases, the increased penetration of renewable energies and **the avoidance of fossil fuels imports**. It must be kept in mind that this favorable environmental impact has an economic translation: less requirements for CO<sub>2</sub> emission rights, lower costs of poor air quality and pollution, avoidance of transfers of financial flows to third countries by fuel imports...

The main conclusion is that the policy of public support to this form of renewable generation has been very efficient in economic and technological terms until 2008. If regulatory stability and clarity was not established, these benefits would be significantly reduced.

Therefore, it is necessary that in the near future the following issues are given great importance in the decision processes of the industry players and regulators:

### Contribution to the GDP

**The sector's contribution to the GDP of Spain was of 2,311.0 million € in 2008 (1,929.7 million € in 2003 constant prices), this represents 0.24% of the country's GDP in that year.** The relevance of this industry is noted when compared to other important sectors of our economy; so for example, the contribution of the entire Energy Sector was 3.3% in 2008.

**The greatest contribution of the several subsectors of the industry is that of promoters-producers**, 694.4 million € in 2008; however, its contribution to the GDP in real terms is subject to the high volatility to which the sector is subjected to, energy and raw materials prices, weather conditions ...

**In recent years, the fastest growing activity is that of wind turbine manufacturers**, 628.0 million €. This spectacular increase of activity was due to the increasing demand for such equipment in Spain and to a growing volume of exports. However, the slowdown of the Sector has meant a drop in the activity that has affected industrial sectors mostly in both production and employment.

The effective enforcement of the environmental and energy objectives or **the introduction of repowering programmes** for the replacement of older equipment for more advanced wind turbines are important factors that allow the trend prior to 2008. Moreover, the other two industry activities are also relevant in terms of activity volume; the manufacture of components and services exceeded 526.3 and 462.0 million € respectively in 2008.

### Growth forecasts

The forecasted increase of the future installed capacity is 80.9% worldwide in 2010 and 33.1% and 98.3% in Spain in 2010 and 2016.

According to the analysis done, if the objectives of energy policy are met, the industry contribution to the national GDP **would exceed 3,232.8 million € in 2012**, which would be 0.31% of the total GDP of Spain.

On the other hand, if a clear and stable regulatory framework which would maintain the growth trend of the sector was not established, this figure could be significantly reduced.

### Multiplier effect

**The relevance of this industry is also evident in its ability to generate wealth in other sectors of economic activity.** According to the study carried out, the drag effect of the Wind Energy Sector indirectly contributed 1,492.4 million € to the GDP in other economic sectors.

The multiplier effect of this sector's economic activity is higher than other sectors because, **all activities of the value chain are developed in Spain (development, construction, manufacturing, services)**, being national agents an important part of it.

Additionally, **foreign agents of the wind energy industry have settled in Spain to carry out their productive activities in our country**, so, a significant part of the acquisition of inputs necessary for their business processes are conducted here.

As shown in this report, the economic sectors most affected by the activity of the wind energy industry are: metallurgy, metal products manufacture, machinery manufacturing and electrical equipment, finances and land transport.

### Exports

Due to the high level of technical and economic development reached by the agents of the Spanish wind energy industry, **the sector exported more than 2,899 million € in 2008**. In addition, Spanish companies have established subsidiary companies in major markets where they are considered to be reference operators and manufacturers.

### R&D

The wind energy industry growth has significantly contributed to the technological development of Spain (scientific development). **The contribution of the industry to R & D was 189.5 million € in 2008**. The positioning of the domestic industry in the global context, poses a challenge for the development of new products that are competitive, reliable, with added high value and adapted to different terrain and wind conditions. In this sense, territorial characteristics as well as the different wind conditions represent an opportunity for wind turbines and components manufacturers to develop technologically, also in view of the strict grid codes of the Spanish electric system, mainland and islands.

### Tax payment

The Wind Energy Sector is **a net fiscal contributor** (tax revenues: local taxes, fees, property taxes, corporation tax and other taxes; vs incentives received), the fiscal balance in 2008 was of a contribution of almost 250 million € in nominal terms.

## Employment

**In 2008, the Wind Energy Sector directly employed 22,970 people, being the contribution to the GDP of over 84,000 € per employee.** With the development in Spain of important labour intensive industrial activities, the sensitivity towards job creation in reference to the increase of activity is higher than in other major economic sectors (i.e. energy sector).

The importance of this industry is also reflected in the indirect employment it generates. According to the study carried out, **the estimated number of jobs arising from the indirect effect of the activity of the Wind Energy Sector in 2008 was 18,468.** On the other hand, **there has been a slowdown regarding employment in 2009 due to the negative effects of the financial crisis and regulatory instability.**

## Emissions avoided

Wind generation has contributed significantly **to avoid emissions from fossil fuel use in 2008, about 19 million tons of CO<sub>2</sub>eq**, as well as a very large volume of NO<sub>x</sub> and SO<sub>2</sub>: 15,104 and 27,781 tons respectively. **In monetary terms, there were savings of 405.5 million € of CO<sub>2</sub> emission rights.**

## Avoided fuel imports

**Wind generation has replaced a significant amount of energy generated from imported fossil fuels.** The reduction of imports reduces our energy dependence on other countries. **Wind generated production avoided in 2008 the import of around 7.4 million tonnes of oil equivalent**, which in economic terms meant a reduction of our income transfers abroad of more than 2,205.6 million €.

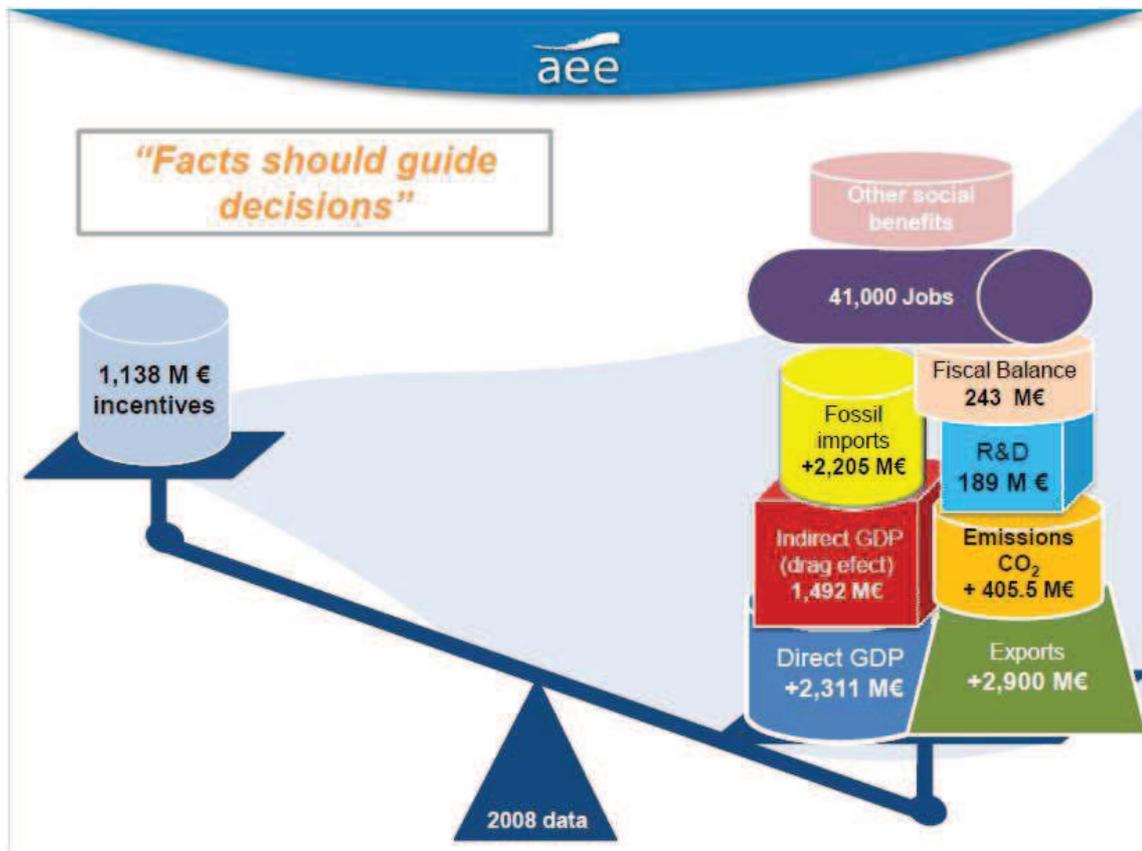
## European objectives

Wind energy is in line with the achievement of the objectives of energy and environmental policies established by the European Union by 2020: to achieve a 20% reduction of emissions of greenhouse effect gases and to reach a penetration of 20% of renewable energies.

## Grid integration

In addition, wind power has a limited impact on regulatory services and the spinning reserve linked to the operation of the electrical system, a much lower impact than initially expected.

## Conclusions



The important role of wind energy in the electricity generation of Spain is a very clear example of the sustainable development of the Spanish economy: to the environmental benefits and reduction of energy dependence, we can add the creation of an important technological and industrial base with a significant drag effect in other sectors of the economy and job creation.

This has been possible due to the existence of a vigorous policy that encouraged this development and added value to the economy at a time where there were very few similar initiatives. As a result, the creation a solid industrial sector with export capacity and presence in other markets was possible.

The incentives cost for the whole of the society has been much lower than the macroeconomic and social benefits received, and that without taking into account the global strategic positioning of the industry and the developers present in the Spanish market.

Moreover, the Spanish electric system has shown sufficient flexibility to operate with high levels of wind penetration, even above 50%, and with very low and lower than originally expected costs of support services and spinning reserve at certain times during 2009.