

SPAIN

MARKET OVERVIEW

Spain is the second largest European wind energy market after Germany, and has the fourth largest installed capacity in the global market. The country installed 1 122 MW in 2012, for a total installed wind capacity of 22 795 MW. The historic annual figures were usually much higher in the past, but the financial crisis and retroactive change on the renewable energy support legislation affected strongly the market, with no prospects for recovery in the near future. Spain has a target of producing 20% of its gross final energy consumption from renewable sources by 2020, which includes a total installed capacity of 35.75 GW of wind power (Ministry of Industry, Energy and Tourism, 2010).

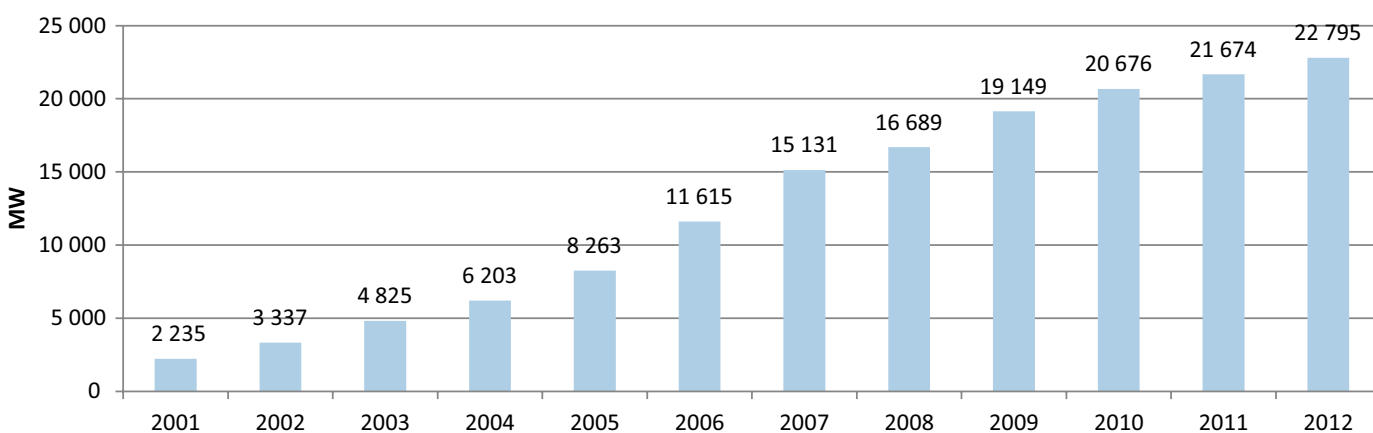


Figure 15: Cumulative Wind Installation MW) of Spain (GWEC, 2013)

HISTORY AND EVOLUTION OF POLICY AND REGULATORY FRAMEWORK FOR WIND ENERGY

Phase 1:

Technology demonstration and Renewable Energy Plans (1980-1996)

The Law of Energy Conservation (Ley 82/80 de Conservación de la Energía) was passed in 1980. The Law established the objectives of improving the energy efficiency of industry and reducing dependency on energy imports.

The first Renewable Energy Plan (PER'86) was published in 1986. This plan proposed targets for renewable energy

production and for private and public investment in renewable energy systems. It was later replaced by the second Renewable Energy Plan (PER'89), which set further targets for development and investment in renewable energy projects. Both of these early plans focused largely on demonstration projects.

In 1991, the government approved a new National Energy Plan that included the Energy Saving and Efficiency Plan (PAEE 1991-2000). This plan set an overall target for energy production from renewable sources in the country. It also established an incentive programme for cogeneration and renewable energy to increase their share from 4.5% of domestic electricity production in 1990 to 10% by 2000.

The market developed strongly in the mid-1990s when utilities started to place large orders for wind farms.

The joint venture formed in 1994 between Gamesa (the dominant Spanish manufacturer today) and Vestas, allowed the Danish wind company to comply with local content requirements.

The Royal Decree 2366 of 1994 was the first attempt to introduce tariffs for renewable energy by providing tariff bands¹⁶⁹ as well as a method for estimating the remuneration level for the produced electricity (Sijm, 2002). However, this scheme did not provide significant support to the wind sector.

Spain was able to increase its installed wind capacity and simultaneously develop a local wind industry by actively supporting local manufacturing with policies. These policies encouraged foreign companies to establish manufacturing bases in Spain in return for access to the domestic market (Lewis and Wiser, 2005).

Phase 2:

Targets for RES, introduction of feed-in tariffs and market development (1997-2000)

Electric Power Act 54/1997

The feed-in tariff system was fully developed through the Electric Power Act of 1997 (Act 54/97¹⁷⁰). This Act introduced the process of liberalisation of the electricity sector in the country. It differentiates between the average rate of electricity production and the “Special Scheme” for facilities using non-consumable renewable sources as primary fuel¹⁷¹. The Special Scheme included obligations and rights for producers, including:

i) the mandatory incorporation of the electricity produced into the electric grid; and ii) the payment of a premium for this energy, with the intention of improving its market

value. Under the Special Scheme, electricity producers could sell their surplus energy at a regulated tariff to the distributor, or to the market at a premium price. Under the new system the power producer could choose between the feed-in tariff and premium for the period of one year.

This Electric Power Act established a new “Plan for the Promotion of Renewable Energies¹⁷²”, to supply at least 12% of total energy demand from renewable energy sources by 2010. Under this Act, the electricity distributor had an obligation to buy all electricity produced from renewable sources. The National Commission of Energy (CNE¹⁷³) was responsible for settling the costs incurred by the distributors. Under this tariff plan, the costs of renewable electricity production were accounted for in the annual calculation of the electricity price, thereby ensuring that the additional cost to consumers was proportionate to their electricity consumption. Transmission and distribution access were opened to third parties. A transitional period of 10 years was established for the liberalisation of electricity supply, whereby all consumers could gradually choose their supplier.

The Royal Decree (2818/1998)

The Royal Decree (2818/1998) on the production of electricity from renewable energy regulated the requirements and procedures for projects eligible to the Special Scheme. Among other things it set out the details of registration procedures in the National Energy Commission’s (CNE) registry.

The 1998 Decree established the right of renewable energy producers to sell their entire electricity production to the grid, and to be paid the wholesale market price plus a premium. It set the initial values for these premiums and the process for their annual updates, taking into account variations in the average price of electricity

¹⁶⁹ The Decree distinguished among six eligible technology groups, of which only three assumed the use of non-fossil fuel resources. For example, installations using wind, solar and geo-thermal were in Group A. This differentiation was only relevant for tariff levels or bands. It was applicable to projects smaller than 25 MW or 100 MW with special permission from the government. Large hydro projects were not included.

¹⁷⁰ Ley 54/1997 del Sector Eléctrico Español, Jefatura de Estado was passed in 1997, and modified by Royal Decree 436/2004.

¹⁷¹ The law introduced the differentiation between the average rate of electricity production and the “Special Scheme” for facilities using non-consumable renewable energies as primary fuel, such as biomass or any other biofuels, in plants up to 50 MW.

¹⁷² These targets were defined in the Plan for the Promotion of Renewable Energy Sources of 1999 (Instituto Para la Diversificación y Ahorro de la Energía (IDAE), 1999). The plan had an indicative character and implied no compulsory behavior for energy sector actors.

¹⁷³ The National Energy Commission is the regulating body of Spain’s energy sector. It was created by Act No. 34/1998 and Royal Decree 1339/1999 further developed its functions. Its goals are to ensure effective functioning of energy systems, while promoting objectivity and accountability in their performance.

sales. Additional sets of incentives were introduced in 1999, including research budgets and a programme for promoting renewable energy among the general public.

Wind had become a national success story, and the installed wind capacity grew from 7 MW in 1990 to over 377 MW in November 1997 – more than double the government’s target of 168 MW by 2000. The efforts of various regional governments to capitalise on the development of the wind power market helped create a large support for local wind power development.

A large share of the investments (such as for manufacturing and construction) also benefitted local economies. Several regional governments used local content requirements to attract wind industry manufacturers to their regions in an attempt to increase industrial development and economic growth. These provinces included Navarra, Galicia, Castile and Leon and Valencia, many of which insisted on local assembly and manufacture of turbines and components before granting development concessions (Lewis, 2007).

The Royal Decree (436/2001) also established the methodology to update and systematically improve the legal and economic framework for the electricity sector’s activities under the Special Scheme¹⁷⁴.

Decree 436/2004 obliged operators of wind farms with capacities greater than 10 MW to provide the distributor with a forecast of the electricity they intended to inject into the grid at least 30 hours before the start of each day. Penalties were established for deviations. This decree also supported distributors’ obligation to purchase all the electricity produced at a price above the market rate.

Phase 3: Strengthening targets and feed-in tariff (2000-2010)

To further strengthen the growth of renewables in Spain, the Institute for Diversification and Saving of Energy

(IDAE) prepared a Plan for Renewable Energy (IDAE, 2005) involving members of the national government, the regional governments and academic and professional institutions. The 2005 plan set revised capacity targets for 2010, which included a wind target of 20 155 MW. This plan superseded the Renewable Energy Plan passed in 1999. IDAE was put in charge of monitoring the state of the 2005 plan’s targets (European Renewable Energy Council (EREC), 2009).

The 2005 plan had an investment outlay of approximately EUR 23.6 billion (USD 38.1 billion). Of this amount almost 97% was expected to come from private sources. Just EUR 681 million (USD 1.1 billion) or 2.9% of the total, was to be provided as public investment aid.

The 2007 modification to the Spanish feed-in tariff system (Royal Decree 661/2007) introduced two alternative remuneration options for wind power.

- » Feed-in tariff (guaranteed payment): comprising a guaranteed feed-in tariff¹⁷⁵ (understood as a state-regulated minimum tariff for all electricity from renewable sources); and a variable feed-in tariff for hydro-electricity operators and biomass projects, based on a variable, time-dependent tariff, set up by statutory law. This tariff varies with the time of day and the season. The feed-in tariff guaranteed an internal rate of return of 7% to wind energy.
- » Feed-in premium: paid as a complement to the electricity market price with a minimum and maximum overall remuneration level (for all renewable sources except solar PV and geothermal), determined on an hourly basis.

The new decree laid out the administrative and authorisation procedures for offshore wind farms. During 2008, 7.6% of Spain’s primary energy needs and 20.5% of the nation’s electricity was produced from renewable sources.

Spain reached the 2010 target of 7.5% of gross energy consumption from renewables in 2008 (RECHARGE,

¹⁷⁴ It further consolidated the regulatory framework laid down by Law 54/1997 for renewable energy producers operating under the Special Scheme and derogates the previous legislation under Decree 2818/98.

¹⁷⁵ Tariffs are differentiated by technology and project size, and guaranteed for different time periods. The tariffs are adjusted for inflation and account for other elements such as operational efficiency of the system, the cost of technology used, market development of the technology, etc. The updating process is also linked to the fulfillment of capacity targets per technology, as defined by the Renewable Energy Plan. Each time a “Special scheme” technology has exceeded the target, its remuneration scheme is reviewed in order to adapt to the new market conditions for the technology. PV and wind are two examples of technologies affected by changes of regulation due to meeting and surpassing their planned capacity targets.

n.d.a). The government then created a “pre-assignment register” in May 2009 to stop the sector overshooting the revised targets in its 2005-2010 renewable energy plan.

The tariff system was revised in 2010 (Royal Decree 1614), with the feed-in premium temporarily reduced by 35% (from EUR 30.98 to EUR 20.13/MWh – USD 44.4 to USD 28.9/MWh). This reduction only affected installations under the Royal Decree 661/2007. The new decree also included a provision to limit the number of hours of operation that would qualify for the feed-in tariff or premium each year¹⁷⁶.

For a given year, when the average number of equivalent hours for the overall wind power installation passes 2 350 hours, the individual wind farms that produced above 2 589 hours would only receive the market price for the hours below the limit¹⁷⁷.

The National Renewable Energy Plan 2011-2020, approved by the Council of Ministers on 11 November 2011, should enter into force in 2012/13. In line with EC Directive 2009/28/EC on the promotion of the use of energy from renewable sources, Spain should supply 20% of its gross final energy consumption from renewable sources by 2020. The 2011 plan follows up on the mandate of Royal Decree 661/2007, which regulated the activity of electricity production under the “Special scheme” and the Law 2/2011, of March 4, on “Sustainable Economy”.

CURRENT CHALLENGES

In January 2012, the government passed a moratorium stopping subsidies to all new renewables capacity not already approved (McGovern, 2012). Wind projects already approved on the national pre-allocation register will not be affected by the moratorium.

The current uncertainties in the Spanish legislation are an example of the difficulties that a country can face in continuously adapting its legislative framework to broader economic constraints, while preserving a dynamic market. The delays in defining a regulatory framework for the period after 2012 could delay the achievement of the 2020 targets.

The economic crisis has put limits on budgetary allocations for renewable energy. This is likely to further slow down development of Spain’s wind industry in 2012. Investors are uncertain on the rules for 2013, which makes it difficult for them to plan and invest in new projects. 2012 will be an unusual year for new installations in Spain. The capacity recorded in the pre-allocation register is the last to be installed in Spain under Royal Decree 661/2007. In September 2012, no new future capacity was planned, and manufacturers had received no new orders for the domestic market (RECHARGE, n.d.b).

CONCLUSION

Through the 1990s and early 2000s, the rapid development of renewable energy in Spain was a direct outcome of national and regional industrial and energy policies. Since 2008, the policies were influenced by the implementation of the European Directives. Some key characteristics of the Spanish market are:

- » The country’s rapid emergence as a centre for wind manufacturing was due to its local content requirements and its stable feed-in tariff policy, which created opportunities for investment in technology development.
- » Government-led wind concessions were also widely used. Five wind concessions totaling 3 200 MW were granted to project developers through a tendering process. These projects helped support the development of new transmission capacity, since the financing of power lines was a requirement of the concessions (Lewis, 2007).
- » The support scheme provided stable long-term support for the projects. This, in turn, created a stable market environment, where investors could predict their returns, and generated a constant demand for turbines. This constant demand enabled the industry to predict market volumes, and invest in manufacturing facilities and technology development.
- » The 17 autonomous communities which constitute Spain have had a significant role in the development

¹⁷⁶ In 2010, significant changes affected the renewable energy market. The “deficit of the electricity tariff” is defined as the difference between the revenues of the renewable energy projects and the real costs in terms of energy generation, transport and distribution. The deficit was estimated at EUR 3 billion (USD 4.3 billion) in 2010. The government proposed a road map to reduce the deficit to EUR 2 billion (USD 2.7 billion) in 2011 and EUR 1 billion (USD 1.3 billion) in 2012. The temporary measures modified the remuneration schemes for wind, solar PV and CSP by limiting the possibility of choosing between the feed-in tariff and feed-in premium, reducing the tariff and the number of hours of production eligible under the scheme. This regulation was approved on a temporary basis (valid up to 2013) until the tariff deficit would be cancelled.

¹⁷⁷ A new regulation is expected by 2012 for the wind farms with a capacity over 50 MW (RD 1614/2010). The remuneration duration would be reduced to twelve years, for a maximum of 1 500 hours of production per year.

of renewable energy. In particular, the regional authorities mostly develop administrative procedures and provisions related to the environment, as well as planning provisions. For example, the autonomous region of Navarre was one of the first regions to actively support local wind industry development, opening the way for other Spanish regions to replicate the approach.

- » The electricity grid has shown sufficient flexibility to operate with high levels of wind penetration, even above 50%, and with lower than originally expected costs of support services and spinning reserve (GWEC, 2010). The recent implementation of electricity exchanges agreements with Portugal, along with plans to reinforce the exchanges with France, would further increase the flexibility of the system.
- » The contribution from the local industry to R&D was equivalent to EUR 189.5 million (USD 277 million) in 2008. The wind energy industry is a dynamic component of the national manufacturing industry.
- » The growth of wind energy in electricity generation

has led to environmental benefits, reduction of energy import dependence, development of an important technology and industrial base, and job creation.

According to the analysis undertaken by the European Wind Energy Association a key reason why Spain stood out from other European leaders in wind power, was that environmental issues were not the major driving force behind the sector's expansion. Spain's wind energy boom was much more about regional growth and economics.

The utilities were obligated to pay a guaranteed price that included a bonus incentive for wind energy, for five years. This price and bonus are adjusted every year based on fluctuation in the electricity market prices.

Spain's initial success has been possible due to the existence of a strong policy regime at a time when very few similar initiatives existed. A solid industrial sector was created, and the Spanish manufacturers developed strong export capacity. However since 2010, the wind sector has almost come to a standstill and its future beyond 2012 remains unclear.



Maranchón, Guadalajara, Spain ©Wind Power Works

ANALYSIS ON ENABLING CONDITIONS FOR WIND ENERGY

<p>Effective rule of law; and transparency in administrative and permitting processes</p>	<p>A contiguous and long-term policy framework has been in place since 1985. Administrative and permitting processes are primarily the responsibility of regional governments. Detailed guidance is available to the industry.</p>
<p>A clear and effective pricing structure</p>	<p>Until 2009, there was strong support for renewable energy. Since 2010, revised legislation has slowed the growth of the wind sector. The revised legislation followed constraints on public expenditures caused by the financial crisis..</p>
<p>Provisions for access to the grid (incentives & penalties for grid operators)</p>	<p>Electricity produced from renewable energy sources has priority access. All electricity produced is purchased.</p>
<p>An industrial development strategy</p>	<p>The industry's growth has been largely due to the initial public support for wind turbine manufacturing. Two of the largest wind manufacturers are based in Navarre. The Navarran Hydroelectric Energy Company or EHN (presently called Acciona Energy) was created in 1989 under a public-private partnership. In 1994 GamesaEólica was created to manufacture wind turbines as a joint venture between the government of Navarre, GamesaEnergía and Vestas (with a 40% stake) .</p>
<p>A functioning finance sector</p>	<p>Spanish wind energy companies are among the largest in the global market. Financing was not a problem till 2010.</p>
<p>Expression of political commitment from government (e.g. targets)</p>	<p>There is a long-term renewable energy target of 20.8% by 2020.</p>
<p>A government and/or industry-led strategy for public and community buy-in</p>	<p>Early benefit-sharing among local populations (via rent for land use for wind farms, job creation, economic development in the community, etc.) has helped create positive support for the wind industry.</p>
<p>An employment development strategy</p>	<p>This was largely driven by the governments of the autonomous regions who provided additional support to both foreign and domestic investors in the 1990s to set up manufacturing units in Spain.</p>
<p>NOTE</p>	<p>Through the 1990s and early 2000s, the rapid development of renewable energy was the result of Spain's national industrial and energy policy. Since 2008, the legislation has been influenced by the implementation of the European Directives.</p>

REFERENCES

- » EREC (European Renewable Energy Council) (2009), “Spain: renewable energy policy review”, www.erec.org/fileadmin/erec_docs/Project_Documents/RES2020/SPAIN_RES__Policy_review__09_Final.pdf
- » GWEC (2013), “Annual market update 2012”, *Global Wind Report*, GWEC, Brussels.
- » IDAE (Instituto para la Diversificación y Ahorro de la Energía) (1999), “Plan de Fomento de las Energías Renovables en España”, IDAE, Madrid.
- » IDAE (2005), “Plan de Energías Renovables 2005-2010” (Renewable Energy Action Plan 2005-2010), IDAE, Madrid.
- » IDAE (2010), “Spain’s National Renewable Energy Action Plan 2011-2020”, IDAE, Madrid.
- » Lewis, J. (2007), “A Comparison of Wind Power Industry Development Strategies in Spain, India and China”, www.resource-solutions.org/pub_pdfs/Lewis.Wind.Industry.Development.India.Spain.China.July.2007.pdf
- » Lewis, J and R, Wiser (2005), “A Review of International Experience with Policies to Promote Wind Power Industry Development”, *Final Report*, Clean Energy Solution Center.
- » McGovern, M. (2012), “Spain slams brakes on wind”, *Wind Power Monthly Magazine*, www.windpowermonthly.com/news/1114691/Spain-slams-brakes-wind/
- » Ministry of Industry, Energy and Tourism (2010), “The national action plan for renewable energy (2011-2020)”, Ministry of Industry, Energy and Tourism, Government of Spain, Madrid, www.minetur.gob.es/energia/desarrollo/EnergiaRenovable/Documents/20100630_PANER_Espanaversión_final.pdf
- » RECHARGE (n.d.a), “Spain is having a renaissance of renewables”, RECHARGE, Singapore, accessed 21 October 2012 www.rechargenews.com/regions/europe_russia/article179103.ece
- » RECHARGE (n.d.b), “Wind body’s warning as Spain adds 413MW in first half of 2012”, RECHARGE, Singapore, accessed on 26 November 2012 www.rechargenews.com/energy/wind/article321948.ece
- » Sijm, P.M.J (2002), “The Performance of Feed-In Tariffs to Promote Renewable Electricity in European Countries”, www.ecn.nl/docs/library/report/2002/c02083.pdf