

SPAIN: The Energy Behind the Nation

With sun and wind in abundance, the Iberian giant is powering up to excel in global renewable energies markets.



Offering Up Sustainable Solutions

As the global race to develop renewable energies gathers pace, Spain continues to export innovation and new technologies to the world.

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ith 47 million people, Spain is Europe's fifth largest electricity market, and making giant strides

towards the European Union's legally binding climate and energy targets. The E.U.'s large-scale project aims to reduce CO₂ emissions 20% from levels recorded in 2005, and boost energy efficiency levels by the same amount by 2020.

By reducing its dependence on fossil fuels, most of which are imported, and focusing on renewable energies (renewables), Spain is leading the way in the research and development (R&D) of "cleaner" energies such as wind power and solar energy, while creating a sustainable energy future for itself. A winning combination of progressive government policies, public sector grants, and private sector vision has put the country in a very strong position internationally.

Led by Miguel Sebastián, the Ministry of Industry, Tourism, and Commerce works closely with energy companies as the country pursues its power sector policies for the development of sustainable energies, creation of competitive markets, and reduction of carbon emissions. The Ministry has created the National Climate Commission, which is charged with developing a blueprint for Spain's future climate commitments.

"We have very ambitious plans for our energy sector and are aiming above and beyond the high standards imposed by the European Union," says Spain's Secretary of State for Energy, Pedro Marín. "Promoting renewable energies is an absolute priority as Spain is a reference country in this sector. We want renewables to make up 12% of the energy sector by 2010."

Global energy giant Endesa is Spain's largest producer and supplier of electricity, with almost 12 million customers and a portfolio of power plants that includes nuclear, fossil-fueled, and hydro-electric facilities, as well as renewables operations. With an impressive annual generation output of nearly 86,000 gigawatt hours (GWh), the ambitious company produces around a third of Spain's total energy needs and supplies



Miguel Sebastián
Minister of
Industry, Tourism,
and Commerce

119,000 GWh of electricity to the regulated and liberalized domestic markets. Through its subsidiary Endesa Cogeneration and Renewable Energies, the firm is also making substantial investments in state-of-the-art renewable power technologies.

"Renewable energies have an important role to play in the fight against climate change, and Spain's approach, as a modern European country, is in line with that global policy," says Endesa CEO, Rafael Miranda. "We are very active in improving all technologies, and have achieved a high level of energy efficiency to combat global warming. However, the fight against climate change is expensive and we need to further improve the efficiency of technologies to achieve a more competitive energy."

Endesa continues to develop new renewable energy capacity, and is also managing other projects that will help reduce carbon emissions, including the development of cleaner development mechanism projects around the world, the promotion of a carbon capture and storage plant in Spain, implementation of smart-meters and a smart-grid that will drive energy efficiency, and the promotion of the use of electric vehicles.

Wind Power

Spain is currently ranked the third-largest producer of wind energy in the world at nearly 17,000 megawatts (MW) a year—behind the U.S. and Germany. Capacity grew by more than 1,600MW last year thanks to new installations—an upward trend that means it is well positioned to reach the government's 2010 target of 20,000MW of installed capacity. Last year, wind power accounted for more than 11% of the nation's total electricity production.

According to the Spanish Wind Energy Association, the sector exports equipment worth more than €2.5 billion (U.S.\$3.5 billion) a year, invests around €200 million (U.S.\$278 million) in R&D per annum, has created more than 40,000 jobs, and has saved the equivalent of at least U.S.\$1.7 billion in fossil fuel imports. In addition, from an environmental point of view, these investments prevented the release of more than 18 million tons of CO₂ emissions in 2008.

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The sector contributes more than €3.2 billion (U.S.\$4.5 billion) to Spain's gross domestic product through direct and indirect means. According to association forecasts, more than 40,000MW of onshore capacity, and 5,000MW of offshore capacity could be in operation by 2020, thereby meeting a third of the nation's electricity requirements. The sector made international headlines earlier this year when high winds helped it set a new world record for energy needs produced by wind turbines (40%).

The Obama Effect

As the world's top producer of wind energy, and with operations in 23 countries, with Europe and the U.S. its core markets, Iberdrola Renovables is one company that is actively providing solutions. Consolidated as the world's first wind energy company, Iberdrola remains a world leader in the fast-growing sector with more than half of its projects and workforce located in the U.S. Heavy investment of €4 billion (U.S.\$5.6 billion) and greater adoption of "green" policies by governments around the world helped the company boost its 2008 production levels by 71% to 17,000GWh.

"A lot of people are saying green energy is the solution to global warming," says Iberdrola Renovables CEO, Xabier Viteri. "We have the technical knowledge, turbines, financial help, and visibility as market leader to bring wind power's environmental

advantages—as well as energy independence—to countries anywhere in the world. We have had the opportunity to grow in Spain through, among other things, government grants that have allowed us to develop other markets and take advantage of new regulations that have created a positive situation for us in Spain."

Viteri strongly welcomes President Barack Obama's recent announcement that U.S.\$15 billion of public sector money will be invested in alternative energy each year over the next 10 years to reduce reliance on foreign fuel imports. "One of the challenges of renewable energy is competitiveness," he says. "Global competition is positive and the United States is now the world leader in wind power installation and capacity.

"We want renewables to make up 12% of our energy sector by 2010."

Pedro Marin, Secretary of State for Energy

"We have to take advantage of the opportunity that we have in the U.S. now with President Obama planning to have 25% of the country's total energy resources coming from renewable energies by 2025."

Juan Araluze, CEO of Vestas Iberia, a company that produces



TOWARDS A NEW CONSCIOUSNESS

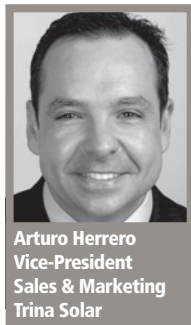
Energy has determined our level of progress as a species, and it is energy that should prompt our next step. Endesa, one of the world's leading energy companies, has a great responsibility in this challenge to reinvent our way of being and of living on the planet. For this reason, in the name of all those at Endesa, we take on this commitment to our children's children. It won't be easy, but could there be anything more exciting than thinking everything up again?



Rafael Miranda
CEO
Endesa



Xabier Viteri
CEO
Iberdrola
Renovables



Arturo Herrero
Vice-President
Sales & Marketing
Trina Solar

wind generators, believes wind power today is every bit as important as petrol or gas. "Nowadays, 1% of the electricity consumption worldwide comes from wind but that is going to rise substantially," he says. "The U.S. administration's targets represent an important business opportunity, one where Spanish companies are well located."

Outlook Bright

With Spain enjoying up to 340 days of sunshine a year, solar power is another area that has seen strong growth and received significant public and private sector funding and investment. Solar power plants can be found all over Spain, with many hi-tech panels also located on council, government, and private sector buildings and facilities in order to reduce energy costs.

At the forefront of the solar revolution is Trina Solar Limited (TSL), a globally-recognized manufacturer of mono- and multi-crystalline photovoltaic (PV) modules. The company's high-tech products are used in solar panels in countries as distant as South Korea and Australia.

"We are very competitive because we use our technology to make our business vertically integrated," says TSL chairman and CEO, Jifan Gao. "We have many panels in Europe, especially in Spain, and now want to establish ourselves in the U.S., particularly in southern California."

This expansion drive follows spectacular growth in TSL's turnover in the past three years. Revenues surged to €602 million (U.S.\$832 million) in 2008 from €218 million (U.S.\$301 million) in 2007. Vice-president of sales and marketing, Arturo Herrero, believes excellent growth will continue as TSL looks to further expand its footprint in the lucrative U.S. market. "Our solid background in Europe will help us succeed quickly," he says.

Grupo Villar Mir, another Spanish company, is investing €820 million (U.S.\$1.144 billion) in a new silicon plant in China that

will produce solar panel materials. Spain is also leading the way in innovative electrical products and technology, with a growing presence in a range of energy-related sectors.

Creating Efficiencies

Efficiency is a key factor in energy production, and Spain's Circutor S.A. is another home-grown entity that's making waves on a global level. Founded in 1973, Circutor has a presence in more than 100 countries and is one of Europe's leading companies in the design, manufacture, and marketing of electrical energy-efficient equipment and technology.

With factories in Spain, Argentina, India, and the Czech Republic, the company employs more than 900 people and is always focused on developing new products and solutions. "We were the first company in the world to create a regulator with a microprocessor and currently have about 70 patents," says joint president and co-founder, Ramón Comellas.

Strong growth in niche markets boosted the firm's sales to €130 million (U.S.\$181 million) in 2008 compared to €118 million (U.S.\$165 million) in 2007. Among its principal clients are petrol firms, airports, hotels, and carmakers. "Our products are used in many solar parks in Spain, and in the wind power sector we have major clients like Iberdrola Renovables, Gamesa, Acciona Energía, and Siemens," says joint president and co-founder, Ramón Pons.

"We are always focused on developing new products."

Ramón Comellas, Co-Founder, Circutor S.A.

Francisco Rosique, general manager, sums up the company's impressive reach: "Our energy efficiency systems, solutions and technologies are used throughout the industrial and domestic sectors, from generation and transmission to consumption."

Spain is clearly making good progress towards greater use and development of renewables, despite being a relatively young industry, but as Endesa chief, Rafael Miranda admits, it still has much to achieve if it is to reach all of its goals. "The electricity industry has three major objectives: security of supply, competitiveness of supply, and the fight against climate change," he says. "We should not forget that combating global warming is an absolute priority: We are part of the problem and must find a solution." ●



The power behind the panel.

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