

## Spain's gain from wind power is plain to see

By Ambrose Evans-Pritchard in Oviedo, northern Spain

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Windmills pay. On a breezy Saturday at the end of March, Aeolian Parks scattered across the hill-top ridges and off-shore sandbanks of Spain produced 40.8pc of the country's electricity needs - 9,862 megawatts to be precise.

The much-derided turbines produced enough wattage to power the great cities of Madrid, Barcelona, Seville, Valencia, Toledo, Cordoba, Granada, Santander, Bilbao, and Zaragoza combined. The workday record on a Tuesday, March 5, was 28pc.

Years of nurture by the Spanish government have paid off. Spain is a global superpower in the wind race, with 15,000 MW of capacity. The region of Navarra is 70pc green, shielded against gas-shocks, Russian politics and soaring oil prices.

Today's wind turbines are a far cry from the archaic mini-mills that scar the landscape for little return, and provoke such fury in the English shires. They are vast. Each mast can power a neighbourhood.

Here in the wet misty mountains of Asturias, the German power group E.On is erecting a battery of mills that tower 410ft into the sky. They are higher than the dome of St Paul's Cathedral or the US Congress on Capitol Hill. The rotors alone dwarf the wingspan of an Airbus A380 super jumbo.

"We are beyond the boutique phase," said Frank Mastiaux, the head of E.On's green operations. "When this began in the 1970s it was a niche play, a nice tax break for German dentists and doctors. Now it is turning into an industrial business. Productivity has grown by 150 times in 25 years."

Every mill costs €2.6m (£2m) to buy and erect, yet the Danish manufacturer Vestas is sold out until 2010.

E.On is coy about profit margins. The European operations are flirting with break-even cost, but the company's huge 10-mile wind farms in the Texas outback have reached the magical level of €50 per megawatt hour (with US government subsidies), far below natural gas at the current market price.

America is the new Mecca for wind power. The ranchers are fully signed up. They collect an annual royalty of \$5,000 to \$10,000 for each turbine, and cattle can still graze underneath.

The wind revolution has crept up on us. It is solar power that has seized the popular imagination.

"Everybody loves solar, but in fact solar and wind technology are miles apart," said Dr Mastiaux. "The cost of wind power is €50 to €100 a megawatt hour, while for solar it is still more than €450. The killer for solar is the cost of silicon."

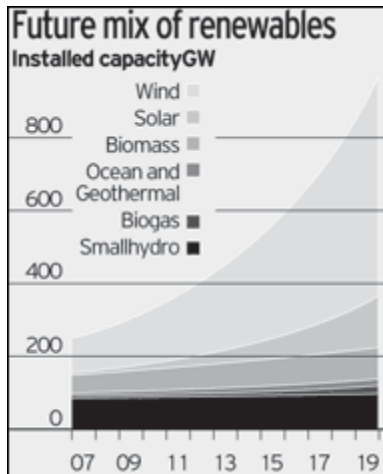
As of 2007, renewable energies produced 242 GW (gigawatts), or 5pc of all global electricity. The mix is wind (93 GW), small hydro (77), biomass (48), geothermal (9.6), solar (8.5), biogas (5.2), and tide power (0.3).

E.On, Europe's biggest privately owned energy company, believes all these forms together will quadruple over the next 12 years to 970 GW, led by wind. Dr Mastiaux said: "Renewables will soon be a €200bn business. I can't think of any other industry with growth like that."

The Global Wind Energy Council (GWEC) predicts that wind power will provide almost 29pc of world electricity by 2030.



Milling around: the German power group E.On is committed to developing wind farms



Yet the International Energy Agency says 3.5pc is more realistic. A report from the UK's Royal Academy of Engineering concluded that wind power still costs two to three times more than nuclear energy, even after decommissioning. The dispute centres on the back-up needs when the wind is not blowing.

E.On has done its own sums, based on the yield from its 1,100 MW network of wind parks across Europe and the US. It believes wind will reach durable "grid parity" with other fuels in just over a decade, if not before.

The group is taking the plunge, spending €6bn in three years to stake out its share of the renewable frontier. It lags Spain's Iberdrola, but aims to raise its wind power tenfold by 2015.

E.On's cluster of four parks in Asturias will generate 126 MW by the end of this year. The power is fed into the local grid. It is enough to supply 82,000 homes in the coastal cities of Oviedo, Aviles, and Giron.

Hardly anybody lives in these cool Celtic highlands, the only region of Spain never conquered by the Moors. The sight of huge white poplars across the ridges at 3,300ft seems to cause little offence, although Asturias hoteliers have called for a halt to new wind farms. Local branches of the socialist party (PSOE) have launched a campaign against the "massive proliferation" of turbines along the Galician coast.

Mr Mastiaux admits that it is becoming ever harder to erect turbines on land, especially in Britain and Germany. "We've hit tissue rejection. Nobody wants to look out of their window at a wind farm," he said.

The company is going off-shore. The wind yield is stronger, but the costs are higher. There is only one ship in the world fitted to install the 200-tonne masts.

E.On already has a £75m project on Scoby Sands off the coast of Norfolk, where 30 turbines are cranking out 60 MW for 30,000 homes.

It is developing one of the world's largest offshore sites with Shell on the outer Thames Estuary. Known as the London Array, it is eventually expected to provide 1,000 MW - or a quarter of London's power.

If the prices of oil and gas fall sharply - and stay low - as they did in the 1980s and again in the late 1990s, the huge gamble on renewables may prove a costly flop. But demand suggests that is unlikely to happen.

World oil output has been flat for four years, despite frantic efforts by BP, Shell, Exxon and peers to find new supplies. China's oil imports grew 14pc last year.

Goldman Sachs says crude may reach \$175 a barrel within two years. "Markets are as tight as a drum and now the US has hit the stimulus button," says the bank's oil guru, Jeff Currie.

The switch to grain-based ethanol - or "dethanol", to critics - is nearing political limits as the United Nations warns of food rationing and possible starvation.

Wulf Bernotat, E.On's cigar-chomping chief, says global electricity demand will double by 2030 as the industrial revolutions of Asia gather pace.

Wind power ticks more good boxes than almost any other option. It is clean, nearly silent, emits no CO2, pays its way, and is "home made" - no small matter as Europe's reliance on imported gas jumps from 54pc to 80pc over the next 15 years.

"Those who don't like wind power have a duty to offer an alternative. So far they haven't really come up with anything," said Dr Bernotat.

Few working on the front line of the global energy crisis would disagree.