

Large energy producers such as GDF, EDF, Areva, Alstom and Suez are tripping over themselves to take advantage of the highly favourable renewables legislation in France. But in a country where the population tends to be wary of free enterprise and EU directives, the industry's enthusiasm serves only to reinforce public suspicion.

French remain wary of green energy

| by Yves de Saint Jacob

Is it because the French are reliant upon nuclear power? Is it the fear that it could harm the landscape and frighten away tourists? Is it the threat of price increases? Whatever the reason, the French public isn't totally convinced of the benefits of energy from renewable sources any more than many economists or scientists in France. The media has also been extremely critical of green energy. Major energy producers, however, are taking advantage of the highly favourable regulations already in place. But in a country where the population is sometimes wary of free enterprise and European directives, the industry's enthusiasm serves only to reinforce public suspicion.

On paper, everything looks fine. France has committed to meeting the European Commission's targets for the use of renewable energy as specified in the climate action plan. The goal is to ensure that, by the year 2020, at least 20% of all energy consumed is generated from renewables, an increase of 122% in all green energy production. Wind energy has emerged as the vanguard of renewable energy and solar energy appears to be just as promising, albeit with a delay of eight to ten years. Hydropower already provides more than 11% of electricity production

and cannot be increased, and biomass is seen as a complex development, dependent on the technological advances in biofuels.

At the end of 2007, the total capacity of wind power in France surpassed the 2,500MW mark, placing the country third in the EU in terms of annual wind power generation, behind Germany and Spain. And if in the short-term expansion seems sluggish because of a lack of equipment (which can be attributed to the worldwide craze for wind energy), the official projections in the medium-term are for France to reach 17,000MW capacity by 2015, increasing to 25,000MW in 2020. There are currently 1,500 wind generators in France and there should be 10,000 in 2020, 850 of them at sea.

As far as solar energy is concerned, France is still in the early stages with 40MW installed, compared to 1,000MW in Germany and 400MW in Spain. But the potential for growth in this market is strong, with 100MW expected to be added in 2008. It should continue to expand through the installation of solar panels on the roofs of residential, industrial or commercial buildings rather than by constructing solar farms at ground level. The explosion in the production of wind

power and the prospects for solar energy have given rise to a number of debates. The most pressing revolve around two recognized shortcomings specific to renewable energy sources: power density and intermittency.

Squandering space |

Experts agree that green energy does not fare well in terms of power density, which is the measure of the physical space required to accommodate both the energy production sources and the energy users. A nuclear power plant, for example, with a capacity of 1.5GW occupies 10 hectares. To achieve the same power from wind generators, it would take hundreds of windmills covering some 20,000ha. By the same token, a coal-fired power station of 500MW is equivalent to 110km of wind towers, if they all were built in a straight line.

Vaclav Smil of the University of Manitoba, in Winnipeg, Canada, has made similar calculations vis-à-vis solar power. 'In a future world reliant on solar power, a house would require a roof entirely covered with solar panels. A supermarket would need a photovoltaic field of around 10 times the area of its own roof, and for a skyscraper, it would be 1,000 times the size of its roof,' he said.

Wind power is very visible. Every summer, as they set off on holiday, the French can measure the industry's progression by the sheer number of turbines dotting the landscape. In publishing a map of the country with dots representing

'The French public isn't convinced of the benefits of renewables'

projected wind-generated power sites, Le Figaro Magazine – a publication aimed at a well-heeled, right-leaning audience who most likely own second homes in the countryside – countered the idyllic vision of the windmill set against a blue sky and a cornfield, which the main energy producers like to promote. With a series of photo-montages, showing “before and after” pictures of some familiar landmarks in the French countryside once wind generators would have been added, the magazine managed, in one fell swoop, to galvanise the hitherto scattered objections of various organizations that defend the nation's heritage, whether for cultural or economic reasons, in a country where one of the main assets is tourism.

And it isn't only the conservative media that is critical of wind power. The influential and left-leaning newspaper Le Monde has also published articles against the wind-power industry and even the country's leading scientific magazine Science et Vie devoted an entire issue to the 'dark side of green energy'. 'Ten thousand wind power plants by 2020, that's a fifth of France covered,' says Jean-Jacques Bultré, president of the high-profile Federation for a Sustainable Environment (FED). 'The pro-wind power lobby has done a great deal to promote a favourable image: it's free, clean and it's the way forward. But that's a major ecological lie,' he says in an interview with EER. 'When you have 80% of electricity produced by nuclear power, 10% by hydraulic power and 10% by thermal power, 10,000 wind generators will only contribute less than one percent



Solar energy station at Pyrenees, France. Photo: Fridmar Damm/zefa/Corbis

reduction in greenhouse gas emissions.'

Managing land in France traditionally has been a difficult process given the system of a strong central state and scattered local authorities. When it comes to wind farms, it is the local mayors of the roughly 36,000 village councils who have the final say. 'We have delegated the official decision-making to people who are not qualified to make that sort of decision,' Bultré says. 'If a mayor rubber-stamps an authorisation for a 12MW wind power plant, it is worth

€3 million to the promoter and can bring €40,000 to the village. Delegating that sort of power upsets those who believe important decisions on the future course of the country's energy policy should remain in the hands of the government.'

Replacement? |

The second weakness of renewable sources of energy, which is the intermittency of production due to the fluctuation of wind and sunshine, is also under debate. Why would anyone want to replace stable

Two technicians in a nuclear waste storage center in the French state-owned Electricité de France nuclear power plant of Bugey, situated on the banks of the Rhone River in Saint-Vulbas near Lyon, France. Photo: Frederic PitchaSygma/Corbis



electricity, produced by nuclear power, with an electricity source that is subject to numerous external conditions?

ADEME, the influential French agency responsible for providing expertise and support on issues of energy management, says that production of electricity in France is becoming less clean. In fact, the agency said, energy consumption is growing despite efforts to get the situation under control, and the market's natural tendency under those circumstances is either to produce electricity with gas or coal or to import electricity. The result is that France's electricity emits more and more CO₂, ADEME says.

The choice then would be to increase

prepared consumers for the prospect of paying more for energy. Again, the defenders of nuclear energy point out that France is promoting an expensive energy source even though it has a "cheap" one at its disposal. To promote renewables, the French government guarantees operators of wind power a purchase price of 8.2 eurocents per kWh for at least ten years. For solar power, this is 55 cents per kWh. The production cost is 4 cents per kWh for wind power and more than 20 cents for solar power, so industrialists in both sectors are effectively receiving more generous subsidies.

For the industry, this gift has "fallen from the sky". No one lobbied for it but all the big companies are pursuing these no-risk investments. There is also the added benefit of improving the company brand, since wind and solar power are considered clean energy.

Areva, GDF, Suez, Alstom, Total and even EDF, in order to avoid being left behind, have all developed their sustainable activities, sometimes by buying up, albeit at inflated prices, a number of operators in the renewable energy sector. They argue that such public support is fair: the new industry needs secured investment to create a "critical mass" that leads to investments in research.

This economic bonanza has drawn some criticism from the French ecological movement. 'In fact, promoters of wind power do the same as promoters of nuclear power: they favour offering generous conditions when in fact they should be looking at a policy based on demand. It would be better to encourage society to accept a rise in electricity prices, which would lead to a reduction in consumption, than to develop wind power,' said Jean-Marc Jancovici in an

interview with *Le Monde*. The atypical expert was one of the inspirations of Nicolas Hulot's ecological movement, which was fashionable in France in 2006 and 2007. As far as he is concerned, 'it would be much more efficient to launch a serious energy-saving programme, for example by insulating existing buildings, which would easily result in a 10% saving in energy consumption, and that is more than 2,000 windmills could generate'.

'I agree completely with Jancovici's position', says Jean-Louis Ball, head of renewable energy at ADEME, in an interview with EER. 'It is the EU with its 20-20-20 rule that has set a goal of 20% percent improvement in energy efficiency.' ADEME has modified policy accordingly with its own plan for renewable energy sources. From now on, every project must include an initial study on how energy efficient it will be.

Whatever the differences of opinion, everyone agrees on one thing: even if developing renewable energy sources is essential, it won't be enough. Professor Jacques Foos, President of the Environmental Centre of the National Conservatory of Arts and Crafts, has made a graphic calculation for EER: 'If we build hydroelectric dams everywhere where it is possible to do so; if we multiply the capacity of wind farms and solar panels by 150; and the geothermic capacity by 30; and encourage biomass; and if we maintain the same level of consumption of oil and gas and double that of coal while improving the treatment process; and if in the end we adhere to energy-saving plans; the planet will still see a shortfall of 9 gigatonnes of oil equivalents per year by 2050. In essence, we will be short of energy in 40 years' time and, at the same time, we will not be able to do without nuclear power.' ■

The country's leading scientific magazine devoted an entire issue to the 'dark side of green energy'

nuclear capacity or to move towards renewable energy sources. French environmentalists have been relatively quiet in their campaign against nuclear power, and the tacit agreement by the government has been not to add fuel to the fire when it comes to this debate. This is a position that troubles some supporters of nuclear power, who had hoped that President Sarkozy would confirm at home his strong affirmation that 'nuclear power is the energy of the future', just as he has done abroad.

Reducing demand |

On financial grounds, the cost of renewable energy is clearly debatable even though rising oil prices have