



# European Energy Crisis – The No Fuel Solution

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Europe is facing an energy crisis on four fronts. And not just because of the recent Russian gas furore.

- Firstly, Europe is an energy intensive region, heavily reliant on imports - 50% already today, and projected to increase to 70% within two decades. By 2030 the level of gas imports could rise from 50% (in 2000) to 81%.
- Secondly, Europe is running out of indigenous energy supplies at a time when world resources are diminishing and are concentrated into fewer, more geopolitically sensitive regions. The resulting constraints and associated increases in fuel prices are a threat to both economic and political stability.
- Thirdly, demand for power is increasing, whilst many large power plants are scheduled for retirement. The total demand for new electricity generation capacity across Europe is predicted to reach 760 GW by 2030.
- Fourthly, the effects of climate change require a continued reduction in carbon emissions from the power sector.

We are now living in an era of energy uncertainty. The days of cheap and abundantly available conventional energy are over. For so long considered a boring, predictable topic, energy has become a 'live' political issue.

In this crisis, it is often overlooked that Europe is the world leader in renewable energy technologies, the most promising and mature of which is wind power. Wealthy in wind energy resources, there is enough available to power the entire continent.

## Wind: power without fuel

Wind power has a unique characteristic: it requires no fuel. This means no geopo-

litical risk, no external energy dependence, no extraction or refining, no resource constraints and no CO<sub>2</sub> emissions. No fuel means no uncertainty over the future cost of electricity because, in contrast to the highly variable and unpredictable cost of fossil fuels, most of the costs of wind power are fixed and known. Wind energy eliminates the economic impacts and risks associated with volatile and uncertain fuel prices.

Unlike conventional fuels, wind energy is a massive indigenous power source permanently available. And wind power stations can be constructed and deliver power far quicker than conventional sources.

'Clean energy' does not just mean zero carbon emissions. It also means no environmental risk or degradation from the exploration, extraction, transport, shipment, processing or disposal of fuel.

'Indigenous' means no import dependence, which means no political risk to European electricity supplies, no need to compete with the rest of the world for distant fuel sources. Wind energy can reduce international energy policy conflicts; there is no need to compete over a supply that exists everywhere.

'Inexhaustible' removes massive uncertainty about depleting fuel resources, and reduces the need for speculative long-term R&D investments in possible alternatives. Right now – today – the amount of wind blowing across Europe is equivalent to all of Europe's electricity needs. And always will be.

## Wind: a mainstream solution

There are two arguments put forward to marginalise wind as a fringe technology. One is the prevailing myth that wind cannot become mainstream because it is intermittent. The other is that if it was deployed

on a scale similar to conventional power, the landscape would be 'inundated' by turbines.

In reality, the capacity of European power systems to absorb significant amounts of wind power is determined more by economics and regulatory rules than by technical or practical constraints. EWEA has articulated this issue in detail in its recent report on grid integration.

How many turbines will actually be needed is an interesting question. But the technology has progressed immensely to the point where today, a single modern turbine annually produces 180 times more electricity than its equivalent 20 years ago.

In 1981, the Danish government published a scenario for meeting 10% of the country's electricity needs which included installation of 5,000 biogas plants and 60,000 wind turbines. Back then, it would have taken 100,000 wind turbines to provide power for 10% of the population. Today, 20% of Denmark's electricity is provided by just 5,590 turbines. Across Europe, around 47,000 wind turbines, capable of providing 2.8% of EU power needs, were operating at the end of 2005. EWEA scenarios show that by 2030, 90,000 machines could be delivering 23% of Europe's power, even with demand set to rise by 50%.

Put another way, doubling the number of turbines would deliver 14 times more electricity - and power almost one fifth of Europe.

The entire wind sector gathers at its annual conference in Athens at a time when decision makers are looking for realistic solutions to the current energy crisis. Wind energy is a compelling and mainstream solution, and for a reason that most people have yet to appreciate – that it provides power without fuel.