

HOW

# CLEAN ENERGY

IS SHAPING THE FUTURE OF  
EUROPE'S MANUFACTURERS

*With rising global temperatures and new geopolitical realities, the transition to green energy is vital to the future of Europe's manufacturing sector.*



“

To stay relevant and thrive in an uncertain future, manufacturers must make sustainability a fundamental and inseparable part of everything they do.

”

Rising global temperatures, along with Russia's illegal invasion of Ukraine, have culminated in enormous disruption to Europe's energy system. However, while global warming is nothing new, the geopolitical reality has further highlighted the urgent need to reduce, and ultimately eliminate, dependence on the Russian fossil fuels that the EU had become overly reliant on. This comes at a time when we are all still reeling from the economic fallout of the pandemic, presenting fresh challenges to the manufacturing sector, along with most other industries.

Fewer sectors are as energy intensive as manufacturing. Not only has the ongoing crisis led to greatly increased energy prices – it has also put the entire sector under increased pressure to adopt more sustainable business models. Although energy prices have stabilised somewhat over the last year, gas-fired power plants still dictate the prices for wholesale energy in many European markets. As a consequence, this has pushed up the prices of raw materials and other commodities significantly. The responsibility to reverse that trend falls heavily to the manufacturing sector, especially over the longer term.

### **Why green energy is the key to becoming more competitive**

Manufacturers face a legal, ethical, and social responsibility to do everything in their power to reduce their impact on the environment. Consumers are becoming warier of the impacts their commodities have on the planet. Business customers, who are increasingly concerned about corporate social responsibility (CSR),



are even more careful about who they do business with. At the same time, green energy and sustainability are core goals for the EU and its constituent nations. Combined, these factors make clear the role of green energy in staying competitive.

No longer can Europe depend on cheap offshore manufacturing in a world shaped by climate change and geopolitical disruption. The pressure to bring manufacturing back to a more local level is growing, but this also presents an opportunity. European manufacturers, in spite of, or perhaps because of, the ongoing energy crisis, now have the chance to play a central role in how we consume energy and reduce our environmental impact. As such, there are now many exciting new opportunities for manufacturers to set up shop in Europe and, in doing so, boost accountability, transparency, and quality control.

The renewable energy market in Europe is growing rapidly, steadily reducing the barriers to use by manufacturers. In Germany and the UK, for example, almost a third of all energy generated comes from renewable sources<sup>1</sup>. By 2020, renewable energy represented 22.1% of all energy consumed in the EU, which was two percentage points higher than that year's target<sup>2</sup>. The objective behind the European Green Deal is for Europe to become the world's first climate-neutral continent by 2050. Manufacturers play a vital role in making that happen.

### **Overcoming the resource dependency challenge**



In spite of the clear need for clean energy in manufacturing, both established and emerging challenges remain. One of the most complicated to overcome is the need to avoid replacing dependency on fossil fuels

with a dependency on imported raw materials. It is an unfortunate reality that the transition to green energy often ends up being little more than a displacement activity. For example, China dominates 80% of the global supply for rare earth materials, which are vital in high-end technology, including clean energy systems<sup>3</sup>.

While the responsibility to extract rare earth materials locally and more sustainably falls to the mining and processing sector, manufacturers still have a part to play. For example, the circular economy places an emphasis on reuse, recycling, and elimination of unsustainable business models like planned obsolescence – all of which contribute to increased consumption of raw materials. However, modern, streamlined manufacturing can reduce materials consumption by minimising waste.



**The transition to renewable energy sources is vital for lessening the dramatic environmental impact of manufacturing.**



Additive manufacturing is an especially promising development, since it facilitates the creation of complex products from high-quality data and more economical materials. The better the data, the higher the precision throughout the manufacturing process, and that means reduced wastage. Additive manufacturing can also reduce the need for manual labour, therefore freeing up budgets for allocating to green energy initiatives. Furthermore, the reduced costs that come with additive manufacturing and automation also means reduced prices for buyers, thus giving companies the opportunity to price their products more competitively.

### The clock is ticking

In March 2022, the European Commission set a goal to completely eliminate its reliance on Russian fossil fuels by 2027. Part of that plan involves

helping manufacturers and other firms accelerate their transition to renewable energy.

To bring manufacturing back to Europe, and to do so in a sustainable manner, which does not simply mean shifting the problem somewhere else, the Commission has also promised greater financial incentives, while imposing controls on solar panels, wind turbines, and other renewable technologies imported from outside the bloc.

The European Commission's 'Clean Tech Europe' initiative is a new platform with the goal of replacing 170 billion cubic metres of Russian gas with 480 gigawatts of wind power and 420 gigawatts of solar power by 2030<sup>4</sup>. With the help of clean, home-grown renewables, the hope is that the EU will be able to invest in the factories and infrastructure that will help establish a clean and self-sufficient energy industrial base.

Currently, the most energy-intensive sectors, which include iron and steel, chemical, oil and gas, non-ferrous materials, non-metallic materials, and paper and pulp, collectively account for more than three quarters of all industrial energy consumption<sup>5</sup>. The transition to renewable energy sources is vital for lessening the dramatic environmental impact of manufacturing. That said, barriers including lack of expertise and limited financial incentives make these changes easier said than done.

To stay relevant and thrive in an uncertain future, manufacturers must make sustainability a fundamental and inseparable part of everything they do. Clean energy plays a vital role in that. Diversifying manufacturing power sources by investing in wind, solar, and other renewable technologies, might seem like a major investment, but it is also an investment in the future of industry and the planet itself. ■

Author:



**Ian Gibson**

Scientific Director,  
Fraunhofer Innovation Platform  
for Advanced Manufacturing,  
University of Twente

### Sources

1. <https://www.expertmarketresearch.com/reports/europe-renewable-energy-market>
2. [https://ec.europa.eu/eurostat/statistics-explained/index.php?title=Renewable\\_energy\\_statistics](https://ec.europa.eu/eurostat/statistics-explained/index.php?title=Renewable_energy_statistics)
3. <https://fortune.com/2022/07/22/china-rare-earths-monopoly-lynas-pensana-iluka-us-supply>
4. <https://www.reuters.com/business/sustainable-business/eu-will-do-whatever-it-takes-bring-solar-energy-manufacturing-back-europe-2022-03-31/>
5. <https://www.smartcitiesdive.com/ex/sustainablecitiescollective/how-manufacturers-are-developing-and-using-renewable-energy/1175001/>

