The German chemical industry has put a price tag on going carbon neutral

The industry federation of Germany's powerful chemical sector said Wednesday companies could achieve carbon neutrality by 2050, but at a massive cost in financial and energy terms.

A study showed reaching net zero output of greenhouse gas carbon dioxide (CO2) by mid-century would cost 45 billion euros ($49.4 billion) in additional investment, said the VCI group, which brings together giants like BASF and Lanxess with hundreds of smaller firms.

"The necessary CO2-free processes to produce basic chemicals are known in principle, but have to be developed further for large-scale application," it added, suggesting many could be ready "in the mid-2030s".

But for the plans to make business sense, low electricity prices and a massive increase in renewable generation would be needed.

Switching to the new carbon-neutral processes and technologies would multiply the key industry's electricity demand elevenfold, to 628 terawatt-hours per year, the VCI estimated—or as much as Germany generates annually today.

By comparison, a no-new-action scenario could bring a 27-percent reduction in CO2 output using only the seven billion euros already committed to greening chemical plants.

Or a middle path with 15 billion of investments could slash emissions by 61 percent.

Chemical firms have already reduced CO2 output by 48 percent between 1990 and 2017.

That means that for new reductions, "the more ambitious the goals, the faster the cost and power requirements rise," said Klaus Schaefer, an executive at polymer maker Covestro who also works on climate issues for the VCI.

Wednesday's intervention from the chemical industry—Germany's third-largest—came as ministers in Chancellor Angela Merkel's government approved a new climate law calling for 100 billion euros of investment by 2030.