

# Steel's green credentials

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The steel industry has drawn a lot of attention over the years as a big emitter of CO<sub>2</sub> but a recent study in Germany paints a different picture after taking a more holistic perspective on the sector's actual impact on future emissions. It claims that without new innovative steel applications, the political CO<sub>2</sub>-reduction targets in Germany would not be achievable.

A joint study by The Boston Consulting Group, the Steel Institute VDEh and the German Steel Federation, concludes that the metal will play a key role in climate protection. It estimates that one-third of the CO<sub>2</sub> reductions planned in Germany by 2020 can only be achieved with the help of innovative steel products and their applications.

It is the first time that a study has been able to demonstrate the CO<sub>2</sub> reductions made possible through innovative steel applications by comparing them with CO<sub>2</sub> emissions resulting from steel production.

Had this study come from any other country, it would not hold as much weight in its findings. But the fact that it has emerged from Germany, a country that has taken a leading role on reducing greenhouse emissions in recent years, the study's findings should be taken quite seriously by lawmakers.

Since the industrial revolution, the CO<sub>2</sub> concentration in the atmosphere has increased by 35%. But between 1990 and 2007, global CO<sub>2</sub> emissions have risen by 38% with Asia playing a major role. Emissions from China trebled over those years, giving it the highest growth rate worldwide while the US remains the highest emitter per capita among developed economies.

The Kyoto protocol came into force in 2005 and the EU, among others, committed to reducing greenhouse gas emissions by 8% by 2012, compared with 1990 levels. No mandatory targets were specified at last December's Copenhagen climate change convention but further global efforts to reduce emissions is likely.

Germany accounts for 2.3% of global CO<sub>2</sub> emissions and managed to cut emissions by 19% between 1990 to 2007 to 841mt, thereby taking an international leadership role in climate policy. It is now embarked on cutting CO<sub>2</sub> emissions by 40% (220mt) by 2020, compared with 1990 levels, to 620mt.

To hit this target the German government is calling on an increased use of gas-fired power plants, the expansion of renewable energy sources to 25% of electricity generation, a doubling of the share of combined heat and power

(CHP) and emission reductions in private and freight traffic.

The question asked by the study, could any of these targets be achieved without steel? Answer: no. In fact, the use of innovative steel applications, such as in more efficient power stations envisaged by the government, and the wind turbines and lighter vehicles, would actually bring about net CO<sub>2</sub> savings. This is because the savings potentials achieved through the use of these new steels are higher than the emissions resulting from steel production in Germany. Some of the innovative steels are already in existence in Germany or are in development and would be available before 2020.

The study looked at eight case studies, representing 10% of the steel produced in Germany, in which CO<sub>2</sub> emissions actually reduced or were avoided through the use of new types of steel. Such innovative steel would increase efficiency of fossil fuel power plants, lead to additional construction of wind power plants, improve efficiency of transformers as well as electric motors, reduce the weight of vehicles and boost the expansion of CHP – all bringing savings in CO<sub>2</sub> emissions.

In respect of the eight case studies, which required 12mt/y of CO<sub>2</sub> to produce the steel required for them, the use of innovative steels would have resulted in a total savings potential of 74mt of CO<sub>2</sub> in 2020. This saving would be greater than the 67mt of CO<sub>2</sub> currently emitted annually by the whole of the German steel industry.

Roughly a third of the German government's 2020 target reduction (220mt) could be met by this example alone thanks to the use of innovative steel applications in energy reducing projects. Bear in mind that these calculations are based solely on a closed German model. The reductions would be even greater if exports of CO<sub>2</sub>-saving steel applications, such as cars or power stations technology, are also taken into account.

With no alternative materials currently available, steel is simply indispensable for power stations or wind energy units. The study concludes that a strong steel industry is therefore not only an important link in the value chain but essential from a climate-policy perspective.

The tide of negative sentiment towards the steel industry as a big emitter of CO<sub>2</sub> could soon turn.