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# Green transformation: European steel industry must cut emissions by 30 percent by 2030 in order to meet climate targets

Study Download

- One third of output from primary – i.e. ore-based – steelmaking, around 29 million metric tons, must be produced in a more climate-friendly way
- The necessary CO2 reductions will lead to additional annual costs for the industry in the double-digit-billion Euro range at the end of the decade
- The transformation to green steel will have to be financed with the help of state aid and end consumers

Munich, October 2021: Europe's steel industry currently releases 221 million metric tons of greenhouse gas emissions, equivalent to 5.7 percent of total EU emissions. To achieve Europe's targets to reach net zero emissions by 2050, the steel industry must reduce its emissions by 30 percent by 2030. This requires a large-scale transformation to climate-friendly technologies. Roland Berger's new study, "Green deal for steel. What will it take and who will pay?", considers with which technology and at what cost the CO2 reduction target can be achieved.

"Europe's steel industry is facing a mammoth task. If it wants to achieve the EU's climate targets, it must act now and resolutely drive forward the industry's transformation," says Akio Ito, Partner at Roland Berger. "According to our analysis, for today's primary – i.e. ore-based – steelmaking volumes alone, the green transformation will be synonymous with additional annual costs in the double-digit-billion Euro range by the end of the decade, almost irrespective of the technology that is used. This is because, in the context of

the climate targets declared by the EU, doing nothing is not an option either, and the rising prices of CO2 emission certificates within the European Emissions Trading System are making conventional steel production more and more unattractive."

**Climate-neutral technologies at an advantage**

The study shows that steel producers are facing substantial cost increases in the coming years. If they were to continue pursuing conventional steel production as in the past, this would be the most expensive option in view of the expected price increases for CO2 emission certificates. According to Roland Berger calculations, in order to meet the climate targets by 2030, the industry would have to produce about one third of its present primary steelmaking output, or 29 million metric tons, in a more climate-friendly way, instead of using the existing coal-fired blast furnaces. Technologies based on hydrogen and – on a transitional basis – natural gas offer the greatest potential here. For example, according to our analysis, if a hydrogen-based direct reduction technology were used in the production chain, this would result in additional costs for the industry totaling EUR 17 billion in 2030. Of this, EUR 3.5 billion would result from the new technology itself – operational expenditures and equipment depreciation – and EUR 13.5 billion from the very high costs of CO2 emissions for the remaining 66 million metric tons, approximately, of steel produced by conventional methods.

"Because of the uncertainty about how the price of green hydrogen will develop and the mounting cost of CO2 emissions – which, however, cannot be forecast precisely – steelmakers ought to opt for fuel-flexible direct reduction technologies. The mix of natural gas and green hydrogen as reducing agents offers them greater room for maneuver," Ito says.

**Spread the financing across several shoulders**

The transformation to green steel has its price, and the industry cannot pay it on its own. Low profit margins and unstable prices of raw materials mean that the steel industry cannot bear the costs of its transformation by itself. Federal institutions, customers and end users will have to contribute indirectly toward financing this process.

"Political support is necessary for this transformation. The EU and individual member states have already launched innovation support programs and promised funding," Ito says. "Climate-neutral steel will increasingly be in demand from customers to enable them to meet their own ambitious climate

targets. What is more, if there are steep rises in CO2 prices and, consequently, in the cost of emissions, companies with conventional production methods will also come under pressure in terms of their own costs. If they do not start with the transformation in good time, they will fall behind their competitors and, ultimately, put their very existence at risk."

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