

Ovako's path to carbon-neutrality – some basic facts and figures

Reducing global CO₂ emissions demands smarter product solutions. When it comes to the production of engineering steel for the automotive, bearing and other industries, it requires rethinking on many levels: achieving more performance benefits per kilogram of product, using less raw materials, and substituting fossil fuel energy sources with primarily fossil-free electricity, among other areas.

Because steel is such a widely used product, the global sum of all CO₂ emissions from steelmaking is a major concern. These can arise from ore-based steelmaking, from steelmaking based on recycled steel scrap or from downstream processing, where heating of steel is critical.

Ovako's production is fully scrap-based, with over 97% of all iron and alloys used as input material being recycled. The electricity we consume comes entirely from fossil-free sources. Taken together with efficient processes and many other actions, such as conversion of our heat treatment, these factors mean that our carbon footprint from crude steel production is 95% below the global average. At present, global emissions for the industry are estimated at 1700 kg of CO₂ per tonne of crude steel. By contrast, the Ovako figure is on average around 90 kg of CO₂ per tonne – vastly lower.

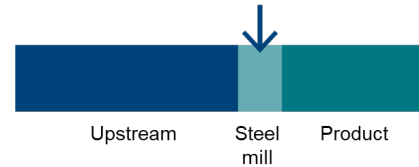
Scope 1+2, steel mill only, divided by tonne crude steel (2020):

Global average: ~1700 kg CO₂/t steel

Hofors: 124 kg CO₂/t steel

Imatra: 80 kg CO₂/t steel

Smedjebacken: 60 kg CO₂/t steel

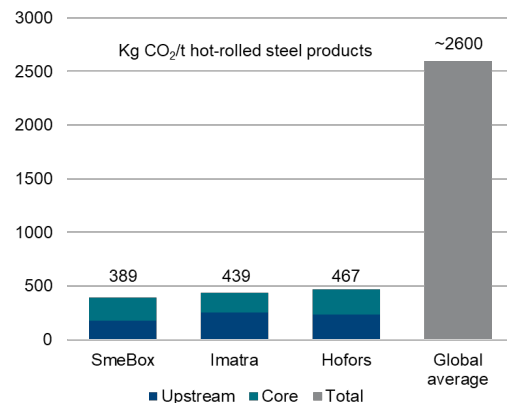


Calculations as per EU Emission Trading System legislation

However, relying solely on totals for Scope 1+2 can be somewhat misleading because they omit several important sources for emissions. For example, the indirect emissions from products purchased for the steelmaking process. It also omits any emissions downstream from the steel casting. And finally, it divides emissions by tonne of crude steel, which means it does not account for the yield losses during production of the final product.

For these reasons, we prefer to look at Scope 1+2+3. These figures provide a measure of CO₂ emissions attributable to all sources that go into the final product. Based on this for our hot-rolled products, we can establish another benchmark: "cradle-to-gate" carbon footprint. Using this benchmark, we find that for every tonne of hot-rolled product, our emissions are some two tonnes below the global average. This figure includes downstream emissions, such as heating of steel, and of course the effect from yield losses. It is the total measure of CO₂ intensity for the products we supply, including what we buy and have delivered to our site.

Scope 1+2+3 upstream, hot-rolled bar, divided by tonne finished product (2019):



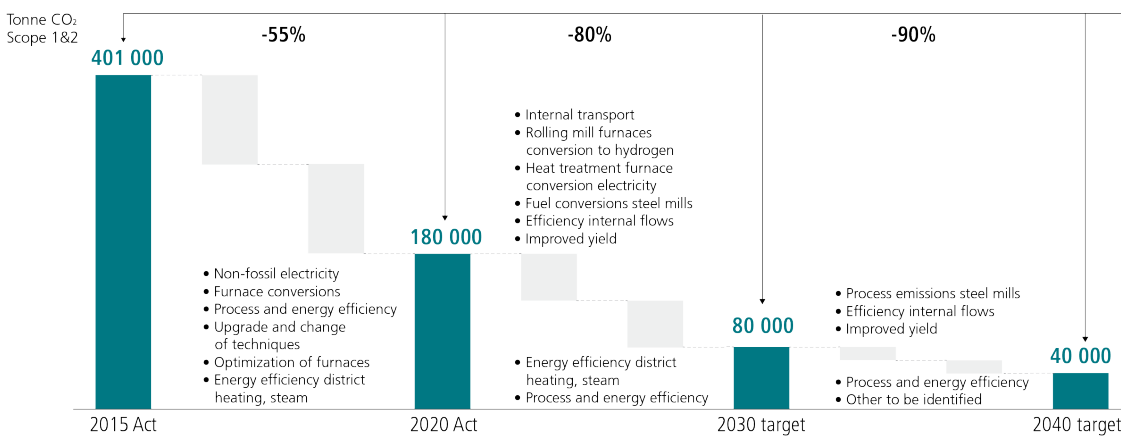
When reviewing these figures in greater detail, we found that the heating of steel offered a very important step towards the carbon neutrality of finished steel products, not just the crude steel. Therefore, Ovako embarked on the hydrogen project together with support from the Swedish Energy Agency, Volvo Group, Hitachi ABB Power Grids Sweden, H₂ Green Steel and Nel Hydrogen. We see this as an opportunity to reduce our core emissions by 50% or more, and at the same time create synergies that benefit society on a broader level.

One such synergy is our collaboration with Volvo to enable fossil-free, long-haul trucking based on fuel cell technology. Here, the energy source is fossil-free hydrogen generated cost-efficiently at our Hofors facility. Within a few years the plan is to also offer fossil-free deliveries to our European customers, further reducing our joint carbon footprint.

The hydrogen project is a necessity for us to reach zero carbon emissions and the financing of our first electrolyser plant, launched in June 2021, was made possible since it is the first project of its kind. We are now planning to build on this with an additional 5-6 times the initial capacity to cover all of Ovako's needs, across all sites. The ambition is to complete this by 2030 at the latest and hopefully much earlier.

To finance these crucial investments, from January 1, 2022, Ovako is implementing a climate surcharge, as a new component of the scrap and alloy surcharges already in use today. This will enable us to maintain our momentum in implementing the technical solutions as soon as possible, with a completion target of 2030. The size of the surcharge is set at a level that makes it possible to make the investments. Furthermore, until Ovako has zero carbon emissions, we will buy carbon offsets for any remaining CO₂ emissions, which are already at world-leading low levels. Our target is that we should be buying no more than 100 kg CO₂ offsets per tonne of finished steel product produced by 2030. The journey will then continue to reach zero carbon emissions.

Ovako Roadmap: CO₂e emissions, scope 1&2 only – Tonnes CO₂e, all production, fixed volume (2020)



All of our CO₂ emissions will be verified on a regular basis by a third party, with calculations and collection of data done according to ISO14064-1 and the Greenhouse Gas Protocol. The offsets we buy will be carefully chosen according to Gold Standard principles, as part of the United Nations carbon offset scheme – the Clean Development Mechanism. It is one of the three Flexible Mechanisms defined in the Kyoto Protocol. Please note also that Ovako will of course still be part of the European Emission Allowance trading system.

Together with our customers our actions can have a strong impact on making the world more sustainable. Our primary focus is to minimize the cradle-to-gate carbon footprint. This is in addition to delivering climate-smart product solutions, such as ultra-high-strength steel solutions for wind power bearings. Our vision remains clear: Innovative steel for a better engineered future.