



Climate roadmap

For a fossil-free and competitive steel industry in Sweden

Summary

The Swedish steel industry intends to make a difference for the global climate. Already, Swedish steel products have an internationally low climate footprint and create climate benefits during use. To achieve Sweden's aim to become one of the world's first fossil-free welfare nations will require commitment from all stakeholders, and greater cooperation between the political arena and industry.

Swedish steel creates climate benefits

The Swedish production of 4.5 million tonnes of crude steel places Sweden among the smaller players on the global market. Sweden's steel companies have strategically developed higher levels of specialisation within selected market niches, aiming to grow faster than surrounding markets. Efficient and climate-smart steel products from Sweden contribute to reduced materials consumption, longer lifespan, less wear and increased energy efficiency. Through maximal use of recycled raw materials, such as scrap, large resources can be saved. Daily, the Swedish steel industry generates climate benefits, meeting the demands of modern society. Climate actions provide an opportunity to increase the value of these market offerings. The global climate would benefit if the share of steel produced in Sweden could increase, because global emissions would be reduced, even though emissions in Sweden might increase on a short- or medium-term basis. The best climate policy is to maintain full value chains in Sweden.

THE SWEDISH STEEL INDUSTRY WILL:

Continue to help its customers to create climate-smart and resource-effective solutions with Swedish steel so that their production, use and recycling become as efficient as possible

THE POLITICAL AGENDA MUST ENSURE:

A solid base for global competitiveness through efficient transportation and infrastructure, secure power supply, top class competence supply and appropriate operating conditions such as harmonised taxes and duties.

Leader in technical development

The emissions of fossil carbon dioxide from the steel industry are mainly direct emissions from production processes (5.8 Mtonnes CO₂, 2016) and internal transport. The direct emissions emanate from the use of coal when iron ore is reduced to iron (85%), the use of fuel to heat and process the steel (12%) and from the coal content in raw materials and additives (3%). To handle the direct emissions, the most important potential solutions today are:

- The development of a brand-new process technique which uses hydrogen to reduce iron ore to iron. With this technique, the carbon dioxide emissions are eliminated from the reduction process and instead the by-product would be water. This technological leap involves numerous challenges but a successful outcome would allow blast furnaces to be phased out. Potentially, the new technique could also be spread globally. At the current level of production, the technique means an increased need of about 15 TWh electricity.
- The development of bio coke for reduction of iron ore for powder production and for scrap melting processes. This requires a suitable source of carbon, processes for coke production and access to biomass for bio coke at a cost equal to that of fossil coke. At the current level of production, at least 1–1.5 TWh is required.
- The use of bio-based gas as a substitute for the fossil fuels used in heating and heat-treatment processes where electrification is not an alternative. This requires access to a gas of the same quality as natural gas and liquefied petroleum gas. The cost of the gas has to be competitive related to international energy costs. The estimated need is at least 2–3 TWh at the current level of production.



These measures demand extensive, long-term research efforts including testing at pilot- and demonstration levels.

THE SWEDISH STEEL INDUSTRY WILL:

Continue to actively focus on research within prioritised areas which result in reduced direct emissions of fossil carbon dioxide.

THE POLITICAL AGENDA MUST ENSURE:

Financing for long-term research and knowledge development, also ensuring that the government campaign Industriklivet (Industrial stride) is maintained over parliamentary terms.

Secured access to electricity and bio-based energy at internationally competitive costs.

Responsibility for the entire chain

The steel industry also causes indirect emissions in other sectors, for example in the manufacturing of raw materials, such as alloys, generation of electricity and external transports. For a majority of the Swedish steel companies the indirect emissions represent a significant part of the total emissions. By choosing products, services and suppliers with low climate impact, the steel industry can influence the value chain, deliver more climate smart products and reduce the total emissions. The Swedish steel industry is already in the front line in this area.

Maximum use of recycled raw materials, for example scrap, is a key factor for a more efficient use of resources and a low level of emissions. Access to steel scrap globally is today the limiting factor for scrap based steel production. With an increased demand for high quality scrap and in a more circular future economy, products designed for recycling, more efficient collection of scrap and improved sorting of scrap are required to a higher extent. This means that valuable metals can be conserved and contamination minimised.

Transport can be developed primarily by streamlining the handling of goods, by optimising the entire transport system and the choice of transport methods. The development of new fuels or other fossil-free means of transport is dealt with in other sectors.

THE SWEDISH STEEL INDUSTRY WILL:

Continue to evaluate its value chains to reduce the total emissions through active choices of transport, raw material and more efficient recycling.

THE POLITICAL AGENDA MUST ENSURE:

Facilitate increased collection of steel scrap and support the development of refined sorting of scrap.

Invest more and faster in climate-smart means of transport such as railways. The steel industry also recommends development of more electric highways and 74 tonne trucks.

Conditions for investments

The intention of the Swedish steel industry is to continue to develop its activities in Sweden. From a climate viewpoint, Sweden has advantages of electricity production which is close to emission free, iron ore which allows refining with low emissions and good availability of biomass compared to other countries.

In order to move towards fossil free steel production with retained competitiveness the companies must be able to invest at a pace adjusted to their production.

Many steel companies have plants in other parts of the world and foreign owners, which means that competition for investments is also tough within the companies.

It is essential that the conditions in Sweden are competitive compared to the conditions in other countries and that the time from development to market can be as short as possible.

THE SWEDISH STEEL INDUSTRY WILL:

Continue to implement new techniques for reduced emissions when commercially competitive.

THE POLITICAL AGENDA MUST ENSURE:

Efficient and predictable permit processes, including required time plans and adaption of legal frameworks to European legislation.



Declare climate footprint

Competition is tough on the global steel market with significant price pressure even on the specialised products from the Swedish steel industry. Currently, the steel industry cannot pass on the cost of lower emissions to the customer, this lies far into future, since the market is global. Greater transparency in carbon dioxide footprint for the end product may activate this process since important steel users will want to stand out by reducing their climate impact. In time, declarations of environmental impact will be requested more often and it is crucial that models and methods for relevant declaration of climate impact are further developed.

THE SWEDISH STEEL INDUSTRY WILL:

Further develop analysis and reporting models and declare relevant data so that the customers can evaluate the environmental performance of their suppliers' products.

THE POLITICAL AGENDA MUST CONTRIBUTE TO A LARGER VISIBILITY THROUGH:

Supporting further development of qualified life cycle based models for declaration of climate impact.

The Swedish steel industry has a vision for the year 2050, Steel shapes a better future, in which only products of value to the society will leave the companies. The vision is based on the prerequisite that the Swedish steel industry remains competitive all the way to 2050 and thereafter. With this Climate Roadmap, the Swedish steel industry points out difficulties and possible solutions to achieve a fossil free and competitive sector, also underlining the importance of co-operation between the industry and the political agenda to achieve success.

The Swedish Steel Producers' Association

Since its foundation back in 1747, Jernkontoret has been owned jointly by the Swedish steel companies. Jernkontoret represents Sweden's steel industry on issues that relate to trade policy, research and education, standardisation, energy, the environment and sustainability as well as transportation issues. Jernkontoret also manages the joint Nordic research in the steel industry. In addition, Jernkontoret draws up statistical information relating to the industry and carries on research into the history of mining and metallurgy.

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