

Swedish perspective to the decarbonisation challenge of the steel industry

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Jernkontoret

Steel shapes a better future


Member of ESTEP since 2018

- One of the founding organizations of AISBL in 2018
- Chairman of the ESTEP steering group
- Swedish participation in Clean Steel Partnership



Agenda

The Swedish perspective to the decarbonisation challenge of the steel industry

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- About Jernkontoret and the Swedish iron and steel industry
 - Sustainable steel production and products
 - Climate transformation opportunities and prerequisites

Jernkontoret

- JERNKONTORET
 - The Swedish Iron and Steel Producers' Association formed in 1747
 - Owned by the Swedish steelworks
 - Represents the iron and steel industry in policy and politics
- MISSION
 - To safeguard the interests of the Swedish iron and steel industry to ensure the best possible operating conditions in Sweden
- AREAS OF EXPERTESE
 - Sustainability, energy, climate, environment,
 - Research and education
 - Trade policy, taxes and charges
 - Transportation and infrastructure
 - Steel industry history



Swedish iron and steel industry

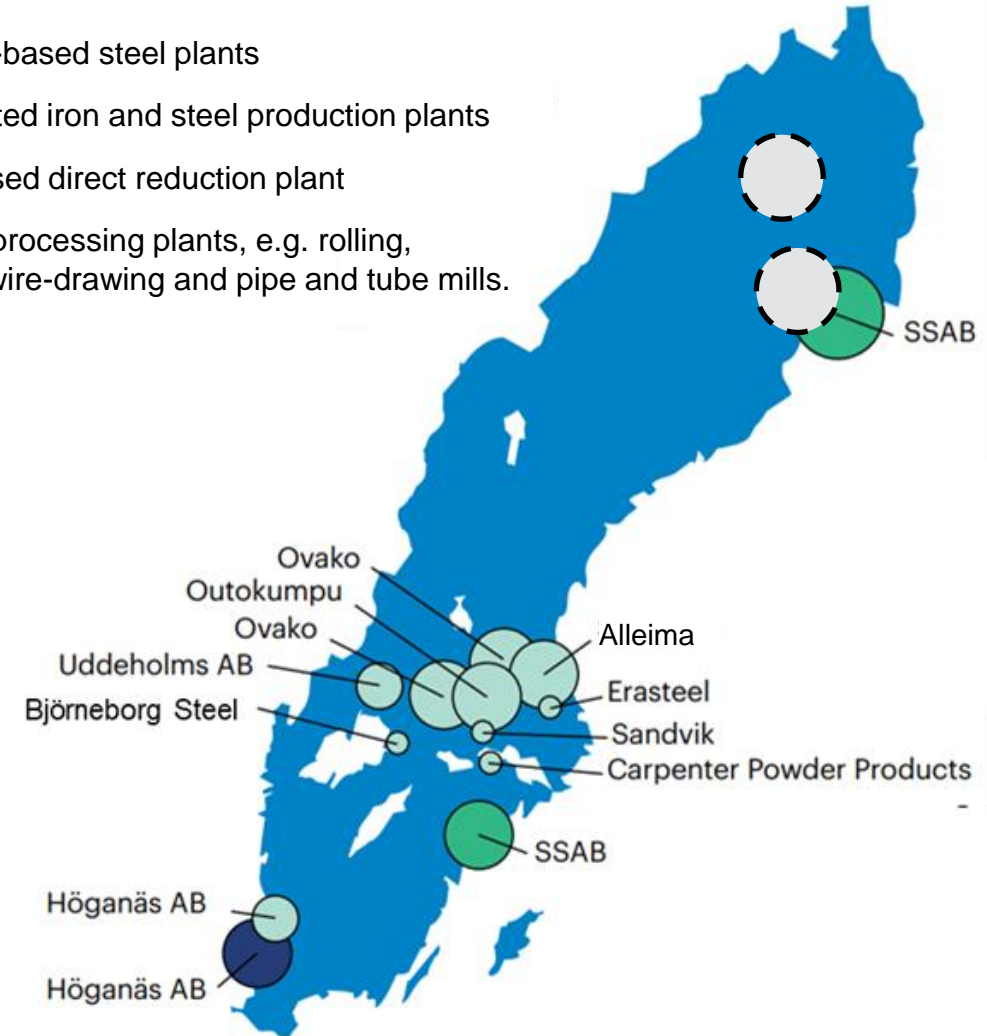
A control room operator is seen from the side, wearing a high-visibility vest and glasses, looking out at a large industrial facility. The facility is filled with glowing orange and yellow heat, likely from molten metal. In the foreground, there are several computer monitors displaying data and a control panel with many buttons.

Jernkontoret

The Swedish iron and steel industry

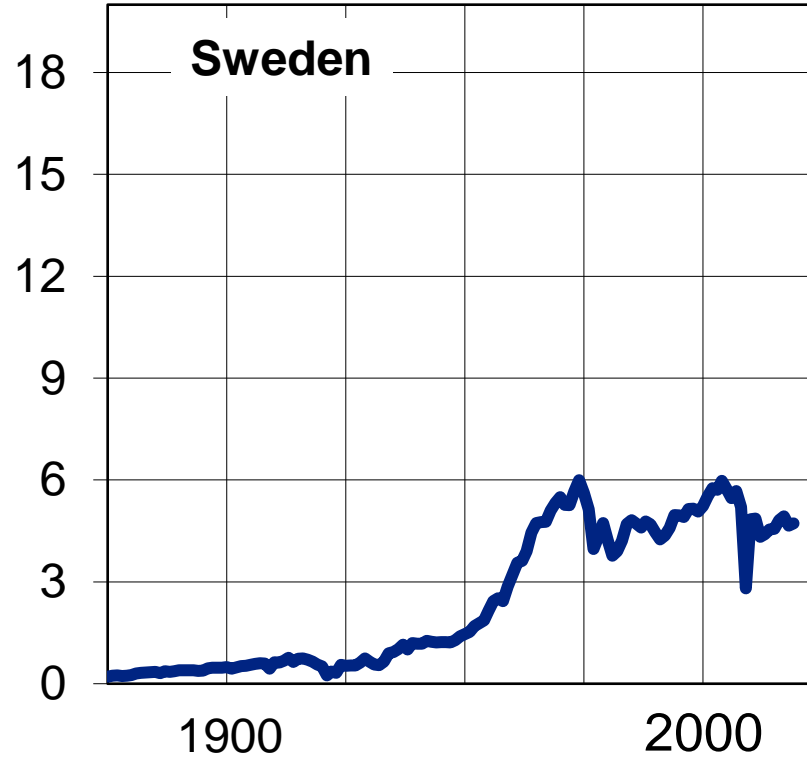
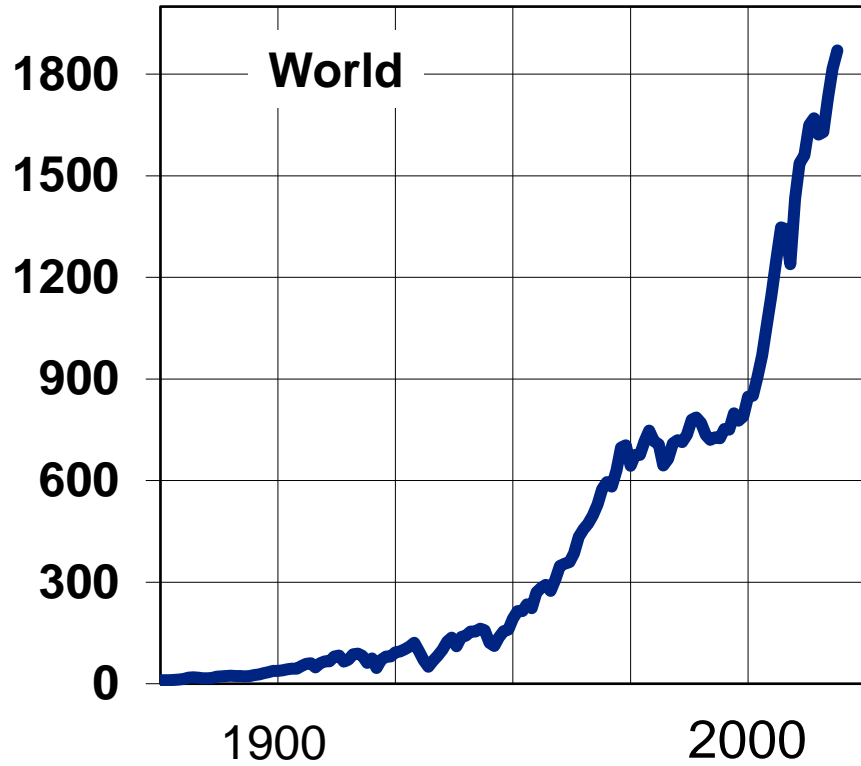
- Very high export share (>80 %)
 - Export value: 45 BSEK (3,4 Mton)
 - Export to 144 countries ~65 % to EU and the UK
- The majority of the raw material is sourced within Sweden, e.g. iron ore, steel scrap and fossil free electricity
- The iron and steel companies operates across the whole country
- Represents ~12% of the total CO₂ emissions in Sweden (~6 Mton CO₂)
- Employs about 16,000 people
- Almost no competition between the Swedish steel companies

- 10 scrap-based steel plants
- 2 integrated iron and steel production plants
- 1 ore-based direct reduction plant
- 15 steel processing plants, e.g. rolling, forging, wire-drawing and pipe and tube mills.



Sweden is a small steel country with respect to volume ...

Crude steel production, Mton



...but with global presence...

.... but with a global presence



Jernkontoret

...and the steel producers are world leaders in their niches

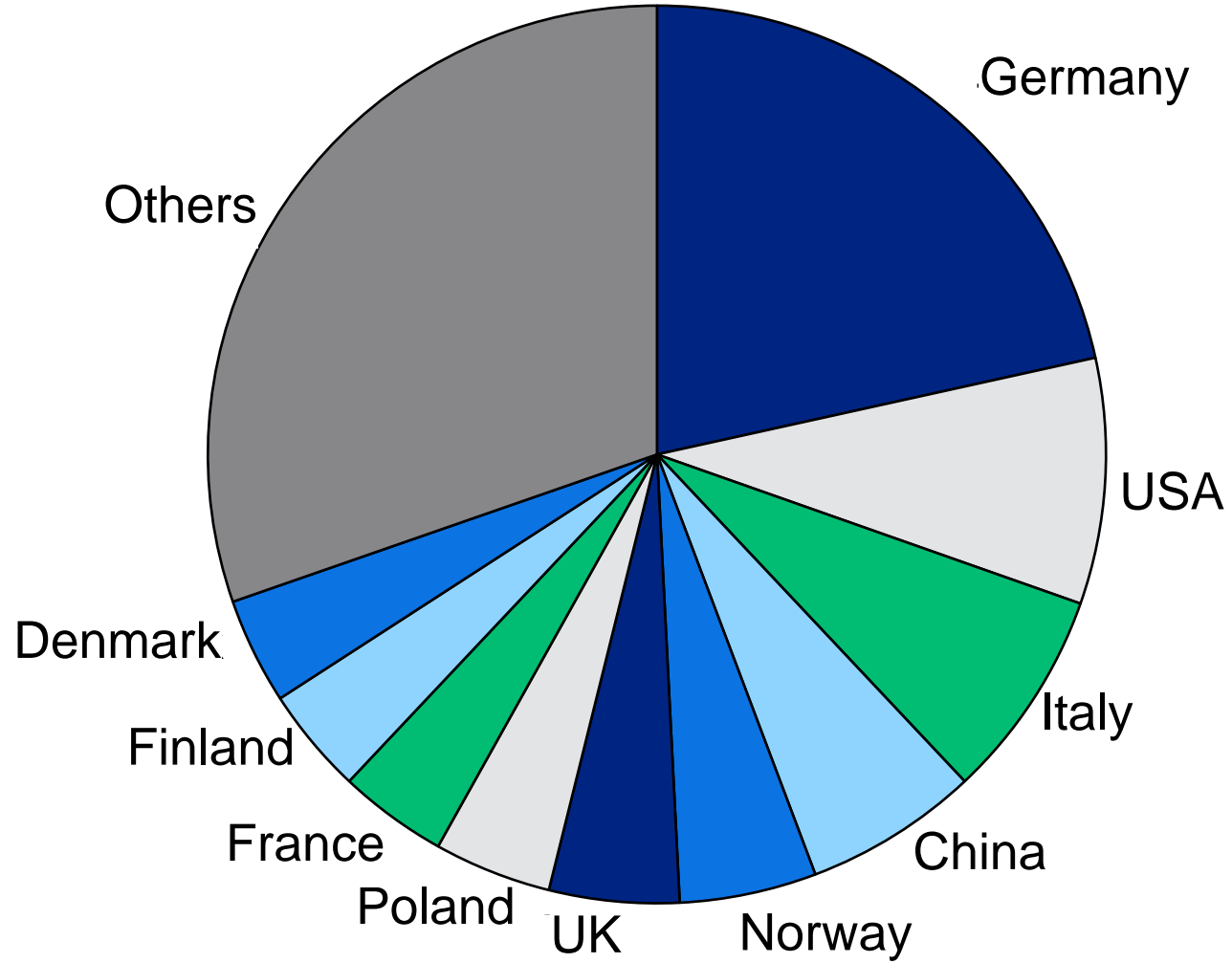
Stainless steel	Alleima - seamless tubes, strip and metal powder Outokumpu Stainless - plate & high alloyed steels Fagersta Stainless - wire rod Carpenter Powder Products – metal powder
Tool steel	Uddeholm , largest manufacturer
High-speed steel	Erasteel Kloster , largest manufacturer
Ball bearing steel	Ovako , largest manufacturer
Carbon steel	SSAB extra high strength steels & abrasion-resistant steels

[Höganäs](#) metal powder

[Alleima Heating Technology \(Kanthal\)](#) - steel alloys for resistant heating

[Suzuki Garphyttan](#) - spring wire

Swedish steel exports, largest recipients



Agenda

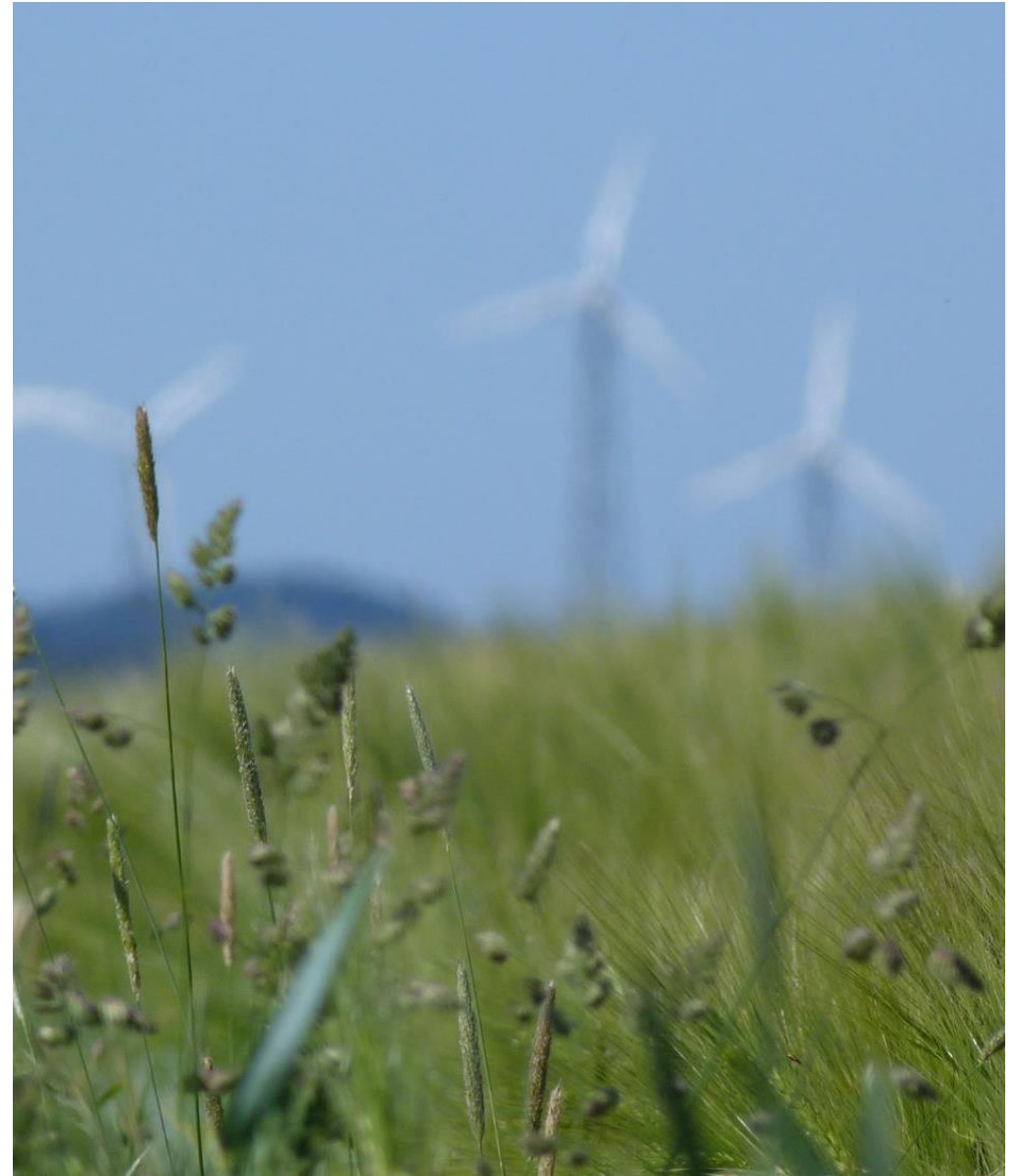
- About Jernkontoret and the Swedish iron and steel industry
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Steel shapes a better future

The Swedish steel industry's
joint vision for 2050

With three commitments:

- We lead technical development
- We inspire creative individuals
- We create environmental benefits

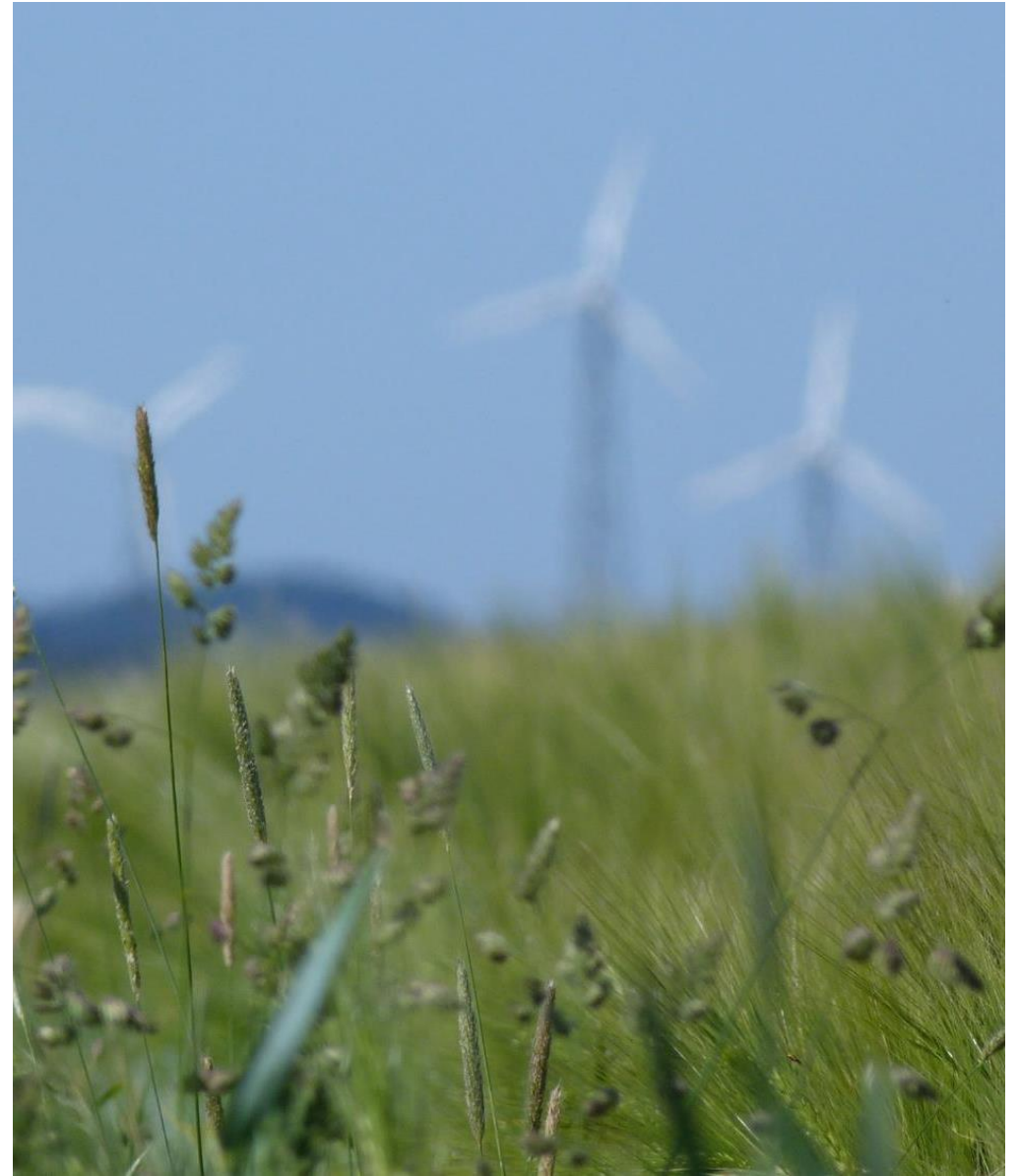


Steel shapes a better future

The Swedish steel industry's joint vision for 2050

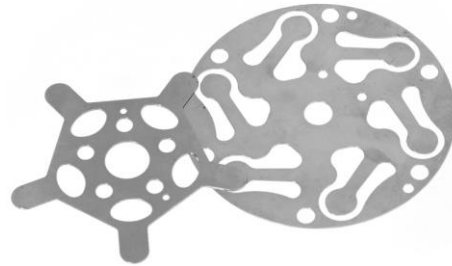
With three commitments:

- We lead technical development
- We inspire creative individuals
- We create environmental benefits
 - Our production uses resources so efficiently that only products of societal value to the community leave our plants.

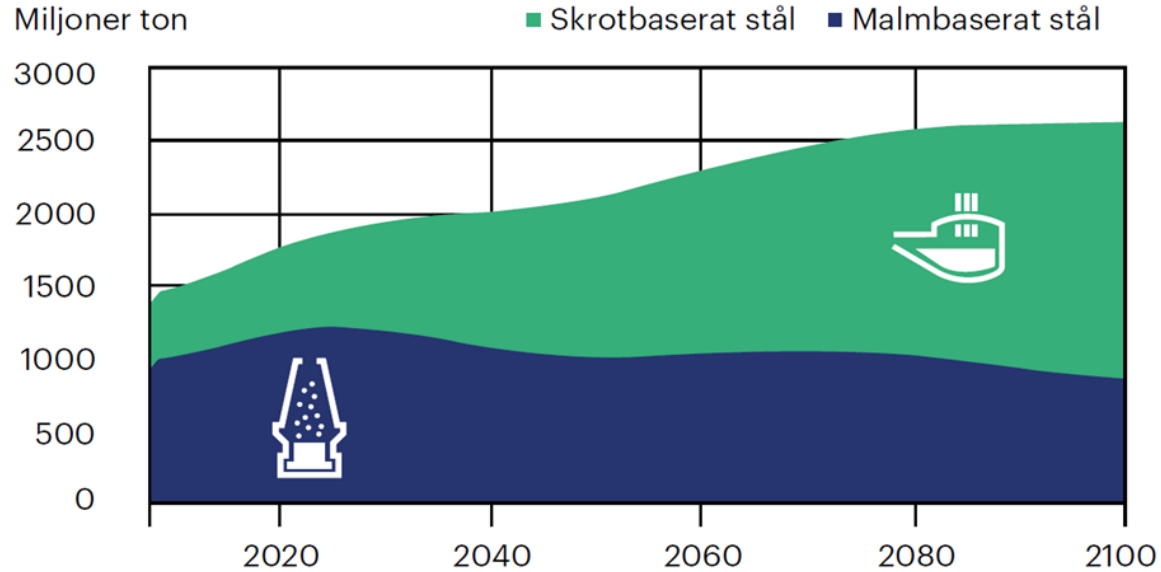


Iron and steel products are needed for greenhouse gas mitigation

- Resource efficient
- Energy efficient
- Strong
- Lightweight
- Long life
- "Fossil free"



In Sweden steel is produced from iron ore and steel scrap / recycled steel



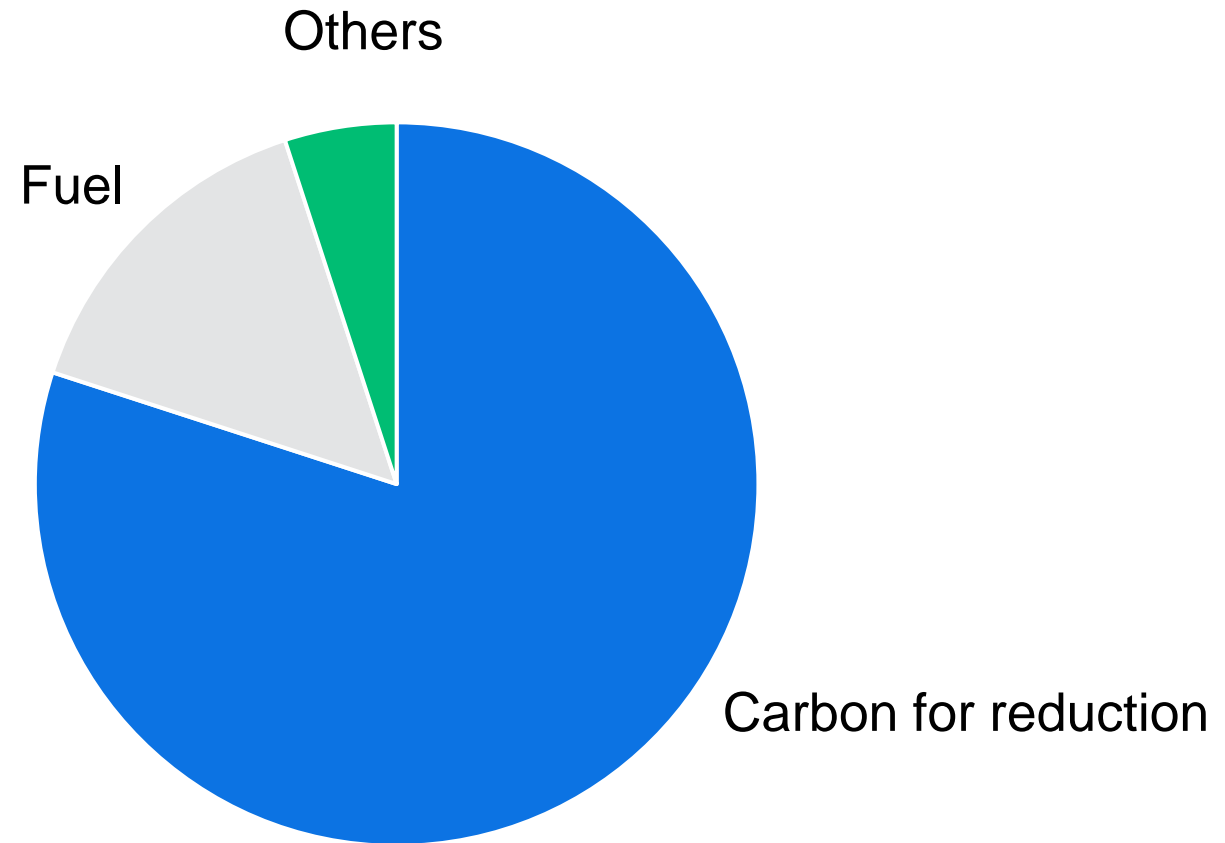
Iron ore based production will be needed also in the future



Fossil free iron reduction needed

The Swedish iron and steel industry CO₂ emissions

- ~6 Mton CO₂ emission at the current production level (12% of total Swedish CO₂ emissions)
- CO₂ emissions from
 - Carbon used for the reduction of iron ore
 - Fuel for heating and heat treatment
- Indirect emissions from
 - Raw materials
 - Energy production
 - Transports



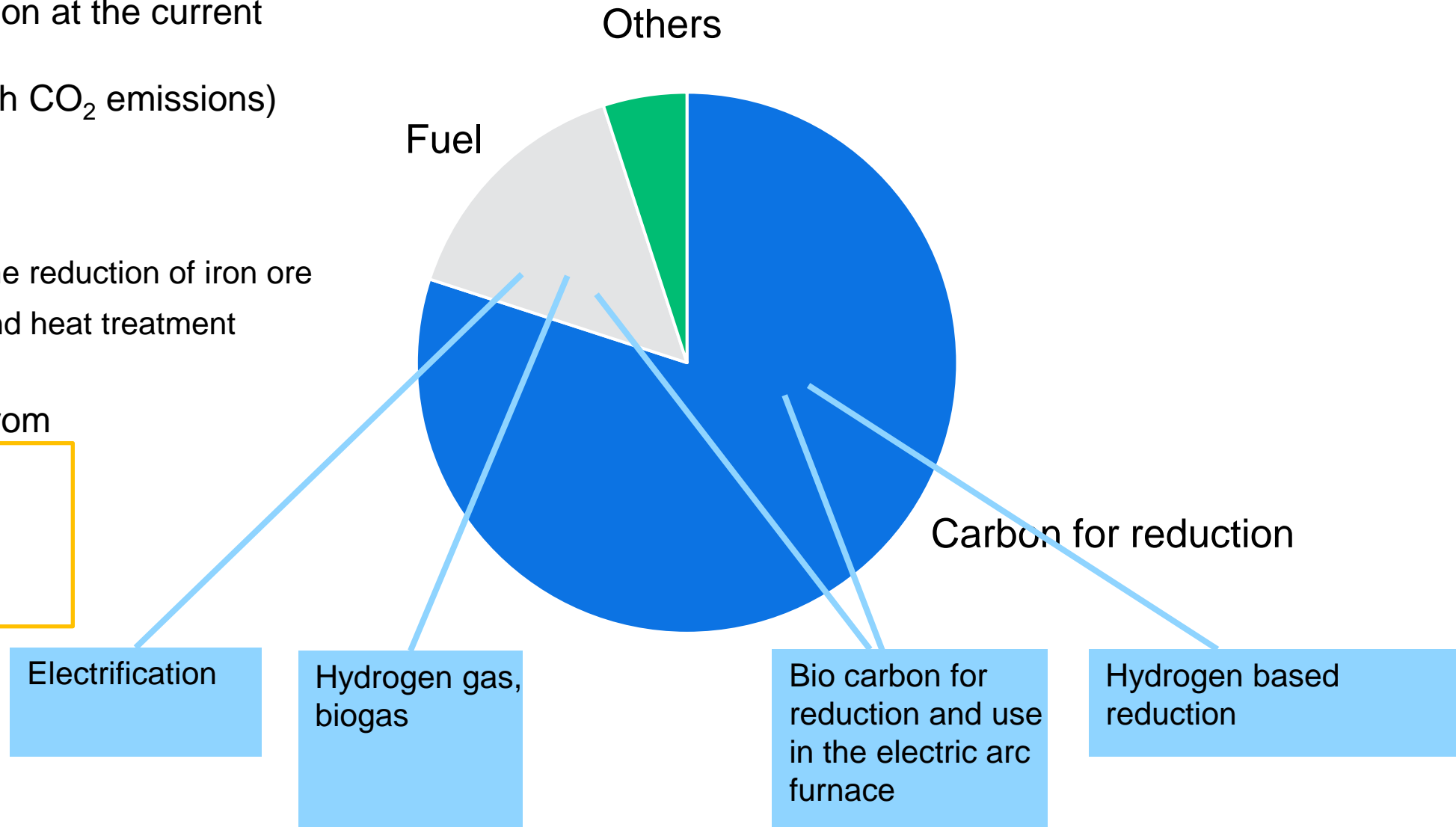
The Swedish iron and steel industry CO2 emissions

- ~6 Mton CO₂ emission at the current production level (12% of total Swedish CO₂ emissions)

- CO₂ emissions from
 - Carbon used for the reduction of iron ore
 - Fuel for heating and heat treatment

- Indirect emissions from

- Raw materials
- Energy production
- Transports



Examples of on-going projects to decrease the fossil emissions

- Within all Swedish steel companies there are on-going activities to decrease the CO₂ emissions.
- Hybrit – a collaboration between SSAB, LKAB and Vattenfall – will result in the biggest impact on the total emissions.



Environmental certification of steel products



Bio carbon for the electric arc furnaces



Internal transports



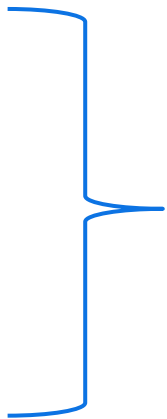
Hybrit pilot production, hydrogen based reduction



Electrification of furnaces and hydrogen gas for heating

Increased need of electricity

- The current Swedish steel production use ~20 TWh
- Reduction using hydrogen gas
- Steel melting in electric arc furnaces
- Electrification of heating and heat treatment
- Hydrogen gas as fuel



The electricity need
will double in the
future

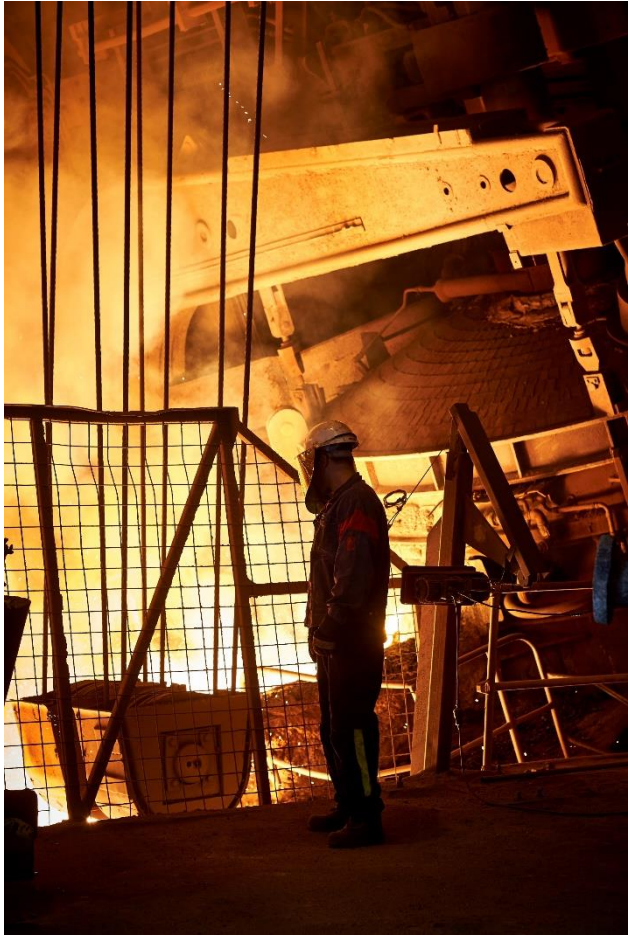
This means increased demand on...

- Electricity availability
 - Fossil free
 - Quantities in line with future demand
 - At the right place and time
 - Increased capacity and stability of the distribution network
 - At competitive cost
- Effective approval processes
- Competence and resources
- Fossil free and efficient infrastructure / transport systems

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A strong and long industrial tradition in Sweden



The Swedish climate agenda

- A new climate policy framework adopted in 2017
- Long-term target is to have zero net emissions of greenhouse gases into the atmosphere by 2045
- Milestone targets:
 - By 2020 emissions are to be 40 per cent lower than 1990
 - By 2030 emissions are to be 63 per cent lower than 1990
 - By 2040 emissions are to be 75 per cent lower than 1990

What does a successful transformation mean for Sweden?

- Highly decreased CO₂ emissions from the industry
- Improved competitive position for the steel companies and their activities at Swedish sites in the whole country
- Increased exports
- Increased demand of competence and resources from the industrial sites
- Increased attraction of foreign competence and resources
- Improved investment climate
- Improved innovation power
- Improved position for Sweden as a country



What does the Swedish iron and steel industry's transformation mean globally?

- A new market for materials and products with low CO₂ emissions
- Steel products are used in many applications and supply chains that are part of the climate change
- Inspires and drives the steel industry in other countries
- More production in Sweden lead to decreased global emissions



Why does the Swedish steel industry take the lead in the transformation?

- We have raw material of high quality
- We have fossil free electricity at competitive cost
- We have long experience of iron and steel production as well as innovation power
- We have high climate change ambitions – both the industry and the politicians
- There are future business opportunities

These are prerequisites for the climate transformation to happen





THANK YOU!

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