

# Transformative steel supportive programmes in Sweden

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# About the Swedish Energy Agency

- National authority for energy policy issues
- Sorts under Ministry of the Environment and Energy
- The Director-General is appointed by the Government
- Government funded
- Around 370 employees



# Sweden today

- Almost fossil-free electricity production
- Almost fossil-free heat production
- Low CO<sub>2</sub> emissions per capita
- Energy intensive industry, energy use per value has decreased



# Climate and energy targets in Sweden

	2020	2030	2040	2045
<b>Greenhouse gas emissions</b>	40 % reduction in GHG emissions in Non ETS (ESR) compared to 1990	- 63 % in Non ETS compared to 1990 in Non ETS	- 75 % in Non ETS compared to 1990 in Non ETS	Zero net emissions of GHG in Sweden
<b>Energy Efficiency</b>	20 % more effective energy use compared to 2008, measured as gross inland consumption/GDP	50 % more efficient energy use compared to 2005, measured as gross inland consumption/GDP		
<b>Renewable Energy</b>	50 % of total energy consumption should come from renewable energy sources		100 % renewable electricity-production	
<b>Transportation</b>	10 % renewable energy in transportation			

# Research and innovation funding

- From basic research to demonstration and implementation
- Annual budget approximately 140 million EUR
- Doubled through industrial co-funding
- Some 55 programmes and 900 projects running



# Decreased GHG-emissions from Swedish process industry

- Government mission 2016-2019
- Zero net emissions of GHG in Sweden in 2045
- Coordinate governmental activities
- Call for projects, 6,6 million EUR
- Status analysis
- Technical and market barriers, barriers in regulations
- R&D required



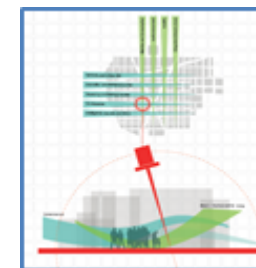
# HYBRIT initiative



Steel from  
reduction iron ore  
by hydrogen

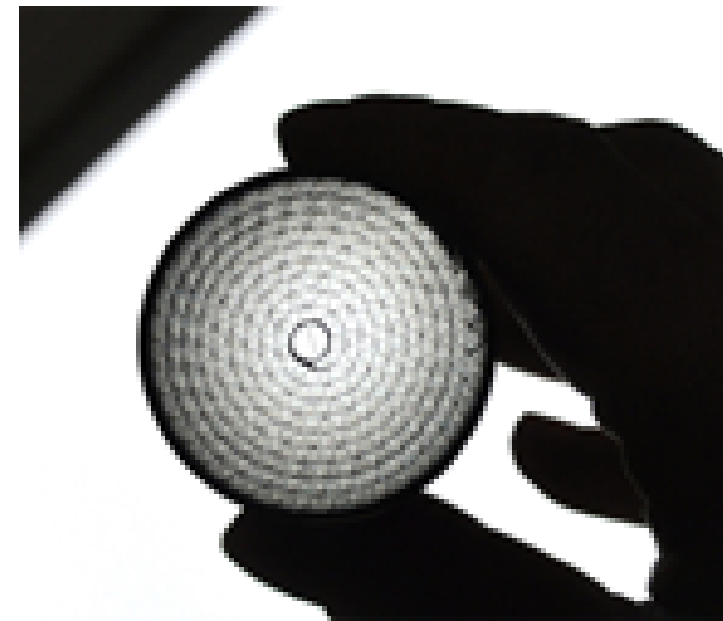
- Pre-Feasibility study concluding
  - Technical and cost structure clarifications
  - Report due at the end of the year - No showstoppers identified so far
- Research Program 1 started
  - The 4-year program studies specific techno-economical research questions supporting the initiative
  - After 6 months of research, approximately 50% of the research projects have started
- Pilot-Plant preparations on-going
  - Planning for the pilot plant phase has started, with the goal to have a formal "Go" early summer 2018
  - Pre-projects, design and erection activities are foreseen to proceed the nextcoming years with the first parts operating in 2020
- Strong support from Sweden and Europe
  - Studies performed so far have been co-funded by the Swedish Energy Agency

# 17 Strategic Innovation programmes (SIP)





- **Vision:** Swedish metal industry should be a well-known and important enabler in the world's quest to shape a better future.
- The projects aim is to create the conditions for expanding the global potential of the metal industry as a central and growing part of Sweden's business community.
- The work is focused on seven areas:
  - Develop the industry's offer*
  - Open the value chain*
  - Increase the material development rate*
  - Increase flexibility*
  - Increase resource efficiency*
  - Reduce environmental impact*
  - Increase skills and attractiveness of the metal industry*



# SIP for the Swedish mining and metal producing industry (STRIM)

- The aim of STRIM is to strengthen the competitiveness of the Swedish mining and metal extraction industry. This is achieved by promoting leading centers and clusters for research, innovation and education where sustainable solutions for the extraction of metals are developed.
- Four tools to reach the visions of the agenda:
  - innovation projects,
  - education,
  - symposiums and meetings,
  - internationalization



# Sectorial strategies for energy efficiency

- Swedish Energy Agency together with other agencies and industry
- Formulate sectorial strategies for energy efficiency contributing to the goal of 50 % more efficient use of energy in 2030
- Energy efficiency in the one sector or how the sector can contribute to efficiency in another sector
- Propose sectors in January 2018

# The “Industrial Leap” - *Industriklivet*

- Swedish Government will provide 28 million EUR each year between 2018-2040 to significantly reduce process related emissions in Swedish industry
- Support can be given to feasibility studies, demonstration projects and full scale investments
- Swedish Government is engaged in a close dialogue with Swedish industry and the Swedish Energy Agency



# Thank you for your attention!

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