



# HYBRIT – important initiative in SSAB sustainability targets

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PUBLIC

**SSAB**



**Our vision:**  
A stronger,  
lighter and more  
sustainable  
world

Together with our  
customers, we  
will go further  
than anyone else  
in realizing the  
full potential of  
lighter, stronger  
and more durable  
steel products.



# SSAB's new sustainability objectives

## Sustainable operations

### Fossil-free 2045

SSAB will stepwise move toward a fossil-free steelmaking process through the HYBRIT initiative and eliminate other fossil fuel related emissions, making it possible to be fossil free within the entire operation



SSAB manages risks and takes responsibility for business ethics and responsible sourcing, and continuously strive to improve safety, diversity and employer attractiveness

## Responsible partner

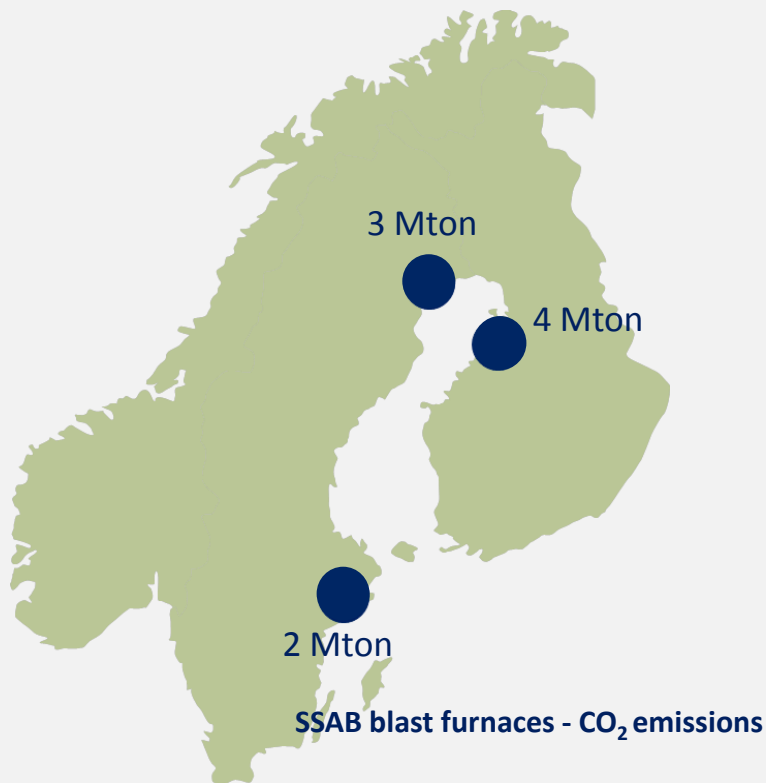
## Sustainable offering

### 10 Mtonne annual customer CO<sub>2</sub> savings 2025

By using SSAB's high-strength steels, customers can achieve CO<sub>2</sub> savings during their end product's use-phase that are as large as SSAB's direct production emissions

# Long-term initiative for fossil-free steel (HYBRIT)

The project's goal is to develop a process that emits H<sub>2</sub>O instead of CO<sub>2</sub> by using hydrogen instead of the current process based on blast furnaces using coal and coke



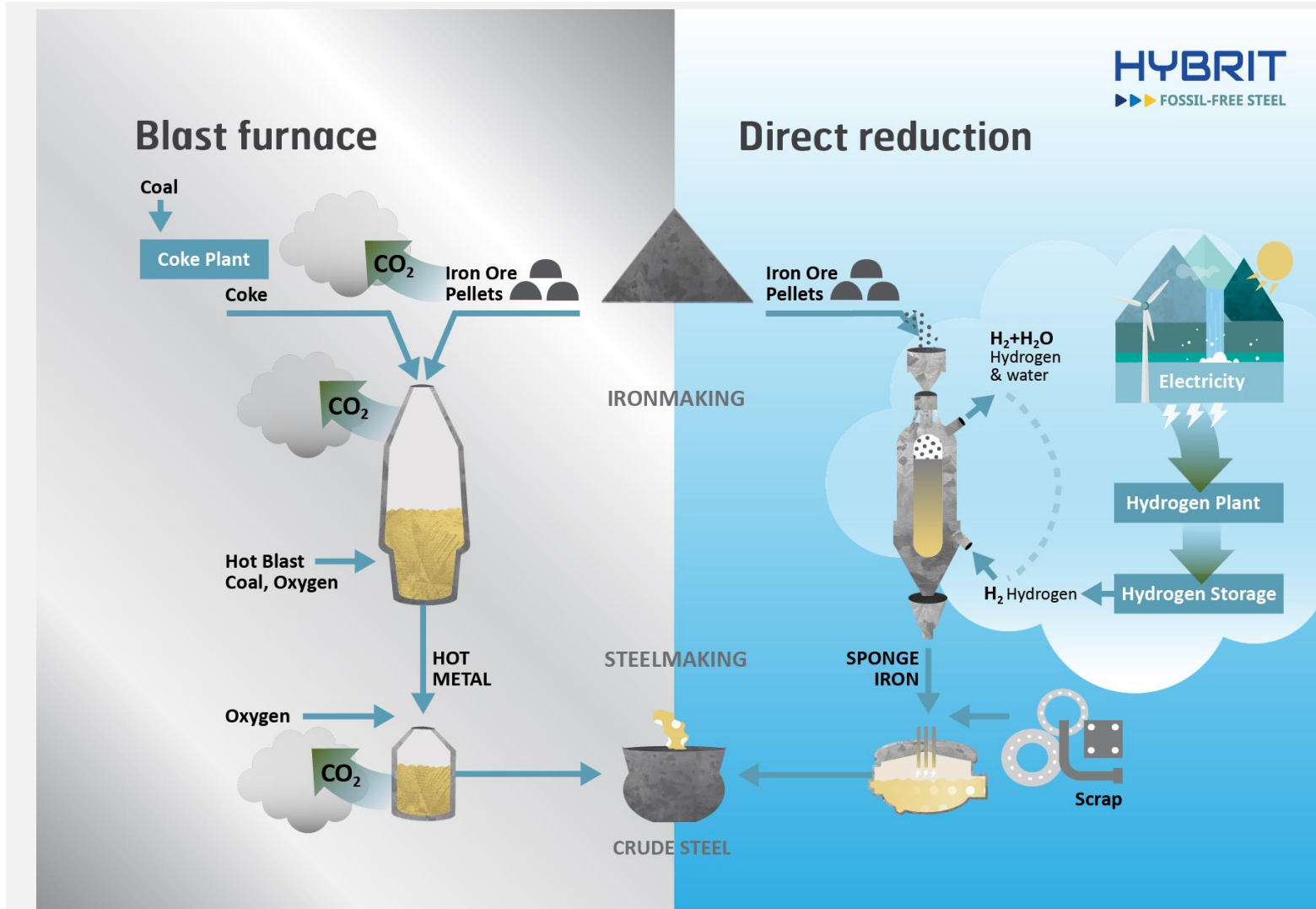
## Background

- ▶ SSAB's blast furnaces close to theoretical minimum of CO<sub>2</sub>-emission with today's technology
- ▶ Still SSAB stands for 10% of Sweden's total emission and ca 30% of ETS system in Sweden
- ▶ Fossil-free electricity – excess capacity
- ▶ Multiparty energy agreement – creates base for long term development

# Introducing the HYBRIT-initiative



# Long-term initiative for fossil-free steel (HYBRIT)



► Today coal and coke are used to produce iron. This creates carbon dioxide as a by-product.

► HYBRIT aims at using hydrogen instead. The by-product will then be water.

► Main challenges:

- to develop an effective process to use 100% hydrogen on an industrial scale.
- to produce hydrogen in an energy-efficient way so that it is economically justifiable.

# HYBRIT – A joint Swedish industrial project

- ▶ SSAB – world leading iron and steel-making know-how, experience and R&D
- ▶ Vattenfall - electrification and sustainable hydrogen production
- ▶ LKAB – high quality iron ore pellet production
- ▶ Swedish universities/institutes – a leader for metallurgical research
- ▶ Wide political support in Sweden
- ▶ Support from The Swedish Energy Agency

**SSAB**

 **LKAB**

**VATTENFALL** 

# Timeline for HYBRIT



Pre-feasibility Study

Feasibility Study  
Pilot plant trials

Demonstration  
Plant Trials

2016 – 2017

2018 – 2024

2025 – 2035

2045

**2016**

Prefeasibility study 14,4 MSEK (Support from Energy Agency by 50%)

4-year R&D project 99 MSEK Support from Swedish Energy Agency (55%)

**June 2017**

A joint venture company between SSAB, LKAB och Vattenfall (HYBRIT Development AB)

SSAB  
Fossil-free