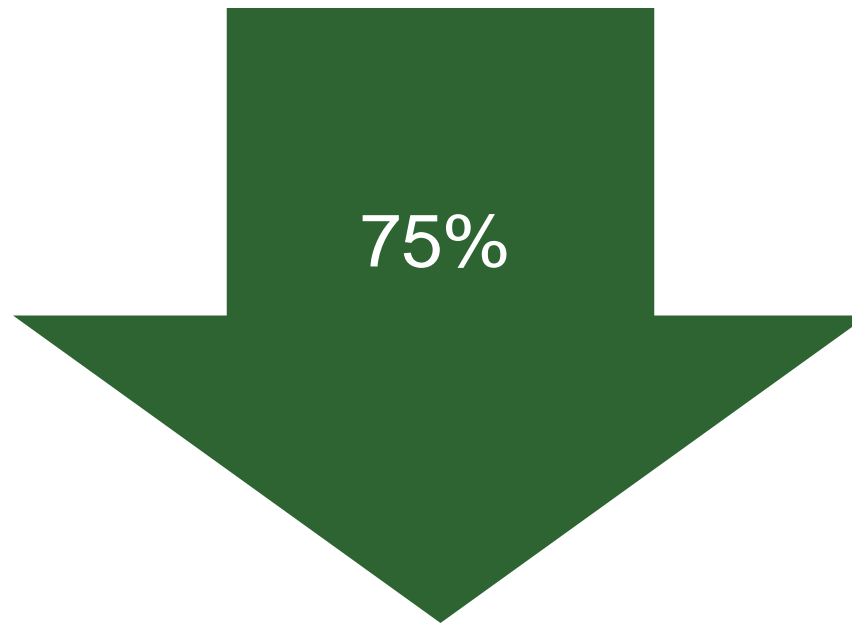




IRONMAN

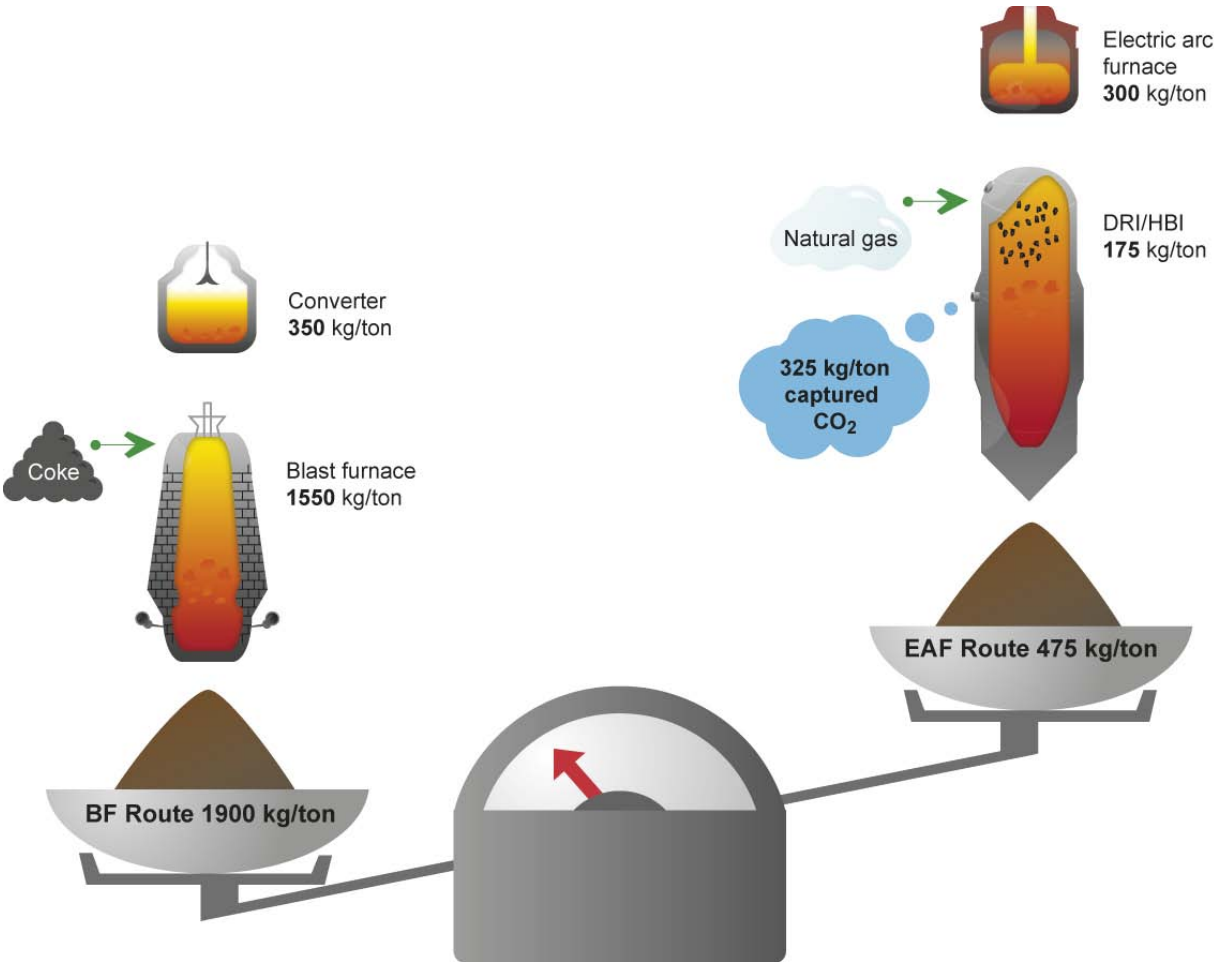
The clean way to make iron

Drastically reducing CO₂ emissions

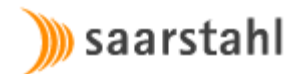
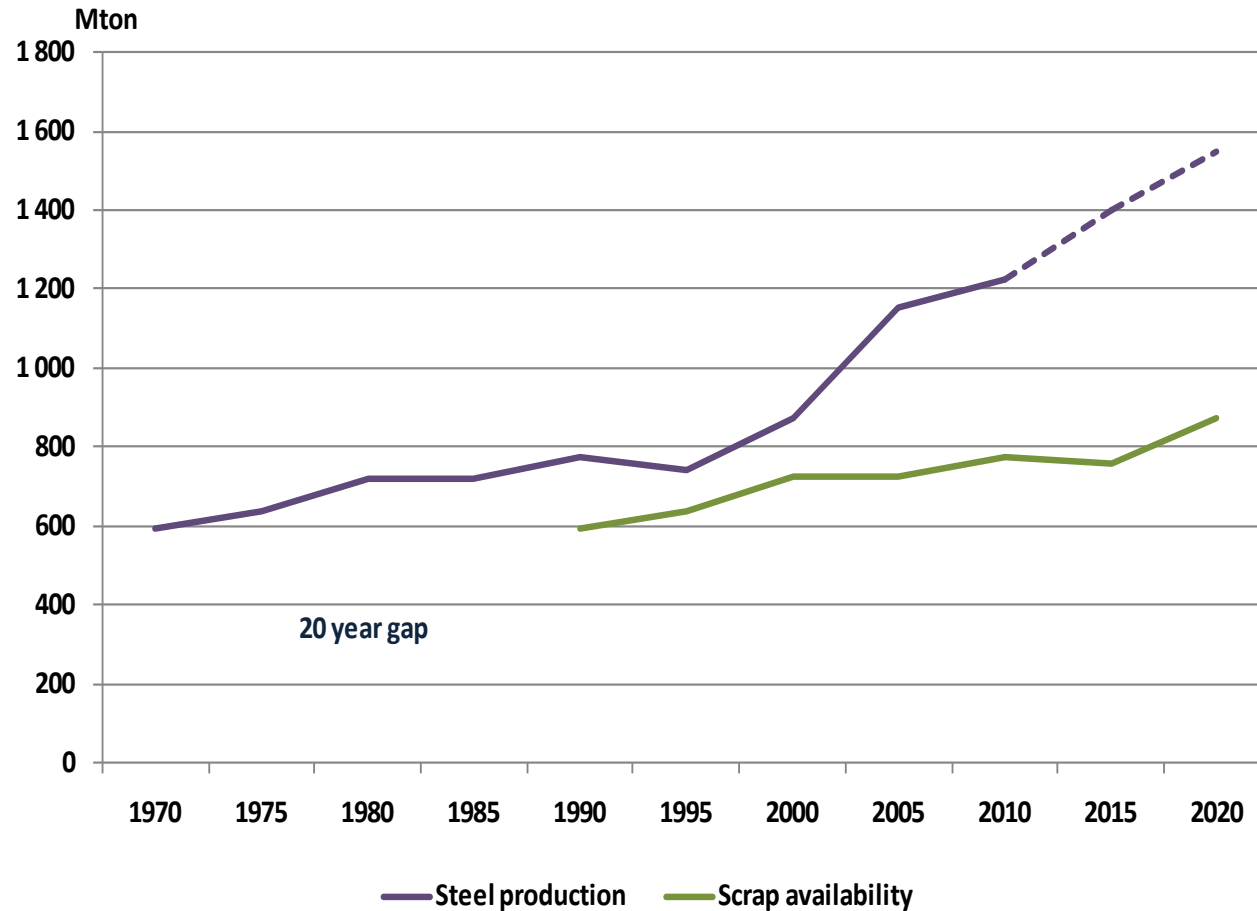


**In the entire
steel production process**

CO₂ emission for additional production in IRONMAN process



Securing supply of DRI for the European steel industry

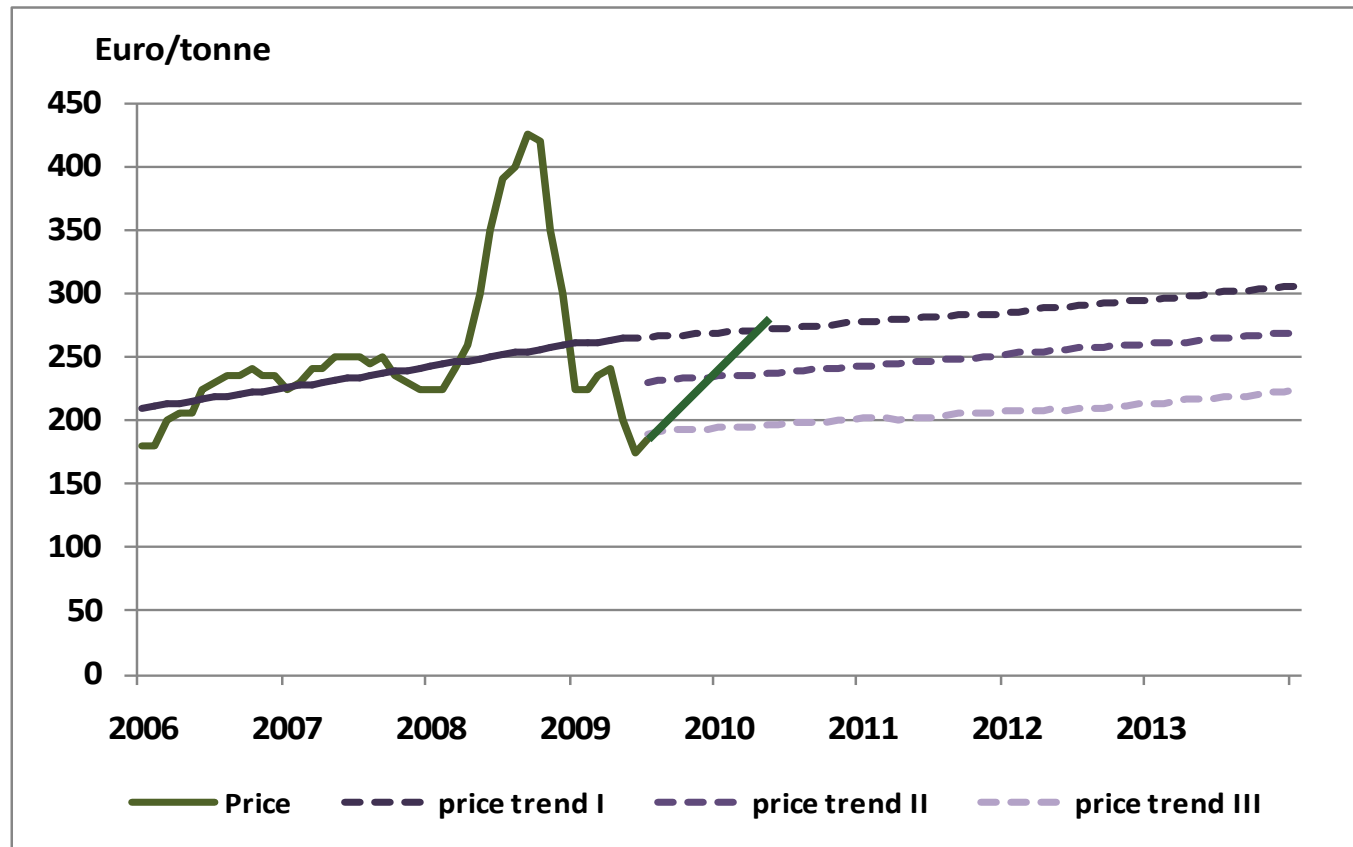


A Nordic Combination...



...that can't be found anywhere else in Europe

Supply deficiency is pushing price



Utilizing existing technology and infrastructure



LKAB



...just adding know how

...how to produce it
environmentally



LKAB

...how to use it
and market it



Höganäs 

Close to the market



**Freight cost share of the clients total product cost
will be 10-20 % lower**

Objectives



Production:
1,6 Mton
DRI



European
market
share:
15 %



Basic facts – the project

- Unique mix of competences creates unique product
- A joint project between Höganäs, LKAB and Statoil
- Evaluating a plant for HBI production at Statoils existing site at Tjeldbergodden in Norway
- Höganäs initiator of project and one buyer of produced HBI
- Höganäs and LKAB main sales channels

LKAB

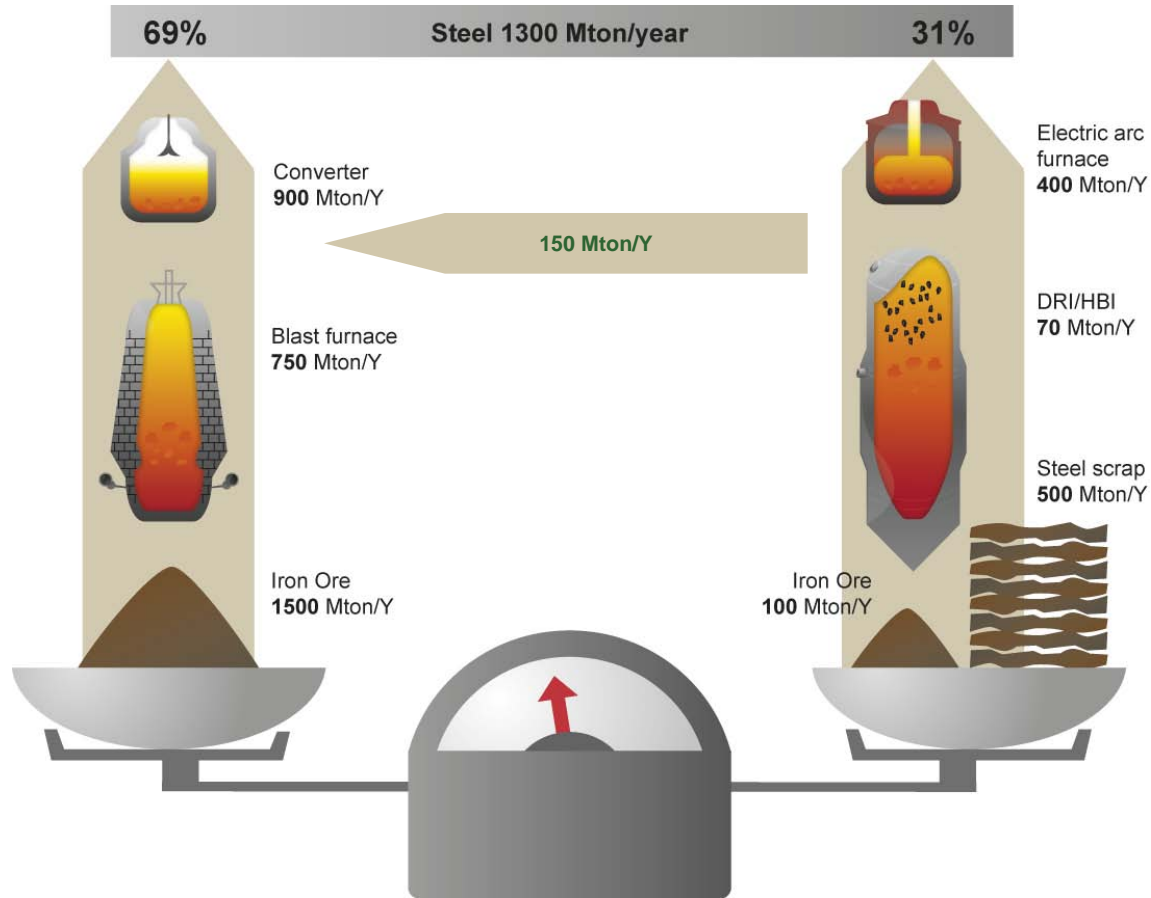


Höganäs 

Basic facts – HBI

- **Hot Briquetted Iron – (DRI)**
- **Used in Electric Arc Furnaces – eliminates need for new Blast Furnaces**
- **Used in blast furnaces/converters – replaces shortage in scrap**
- **Most plants in Middle East, Central/South America, and Asia**
 - Long transports
 - Weak focus on CO₂ reduction

World steel production – raw material balance



The market

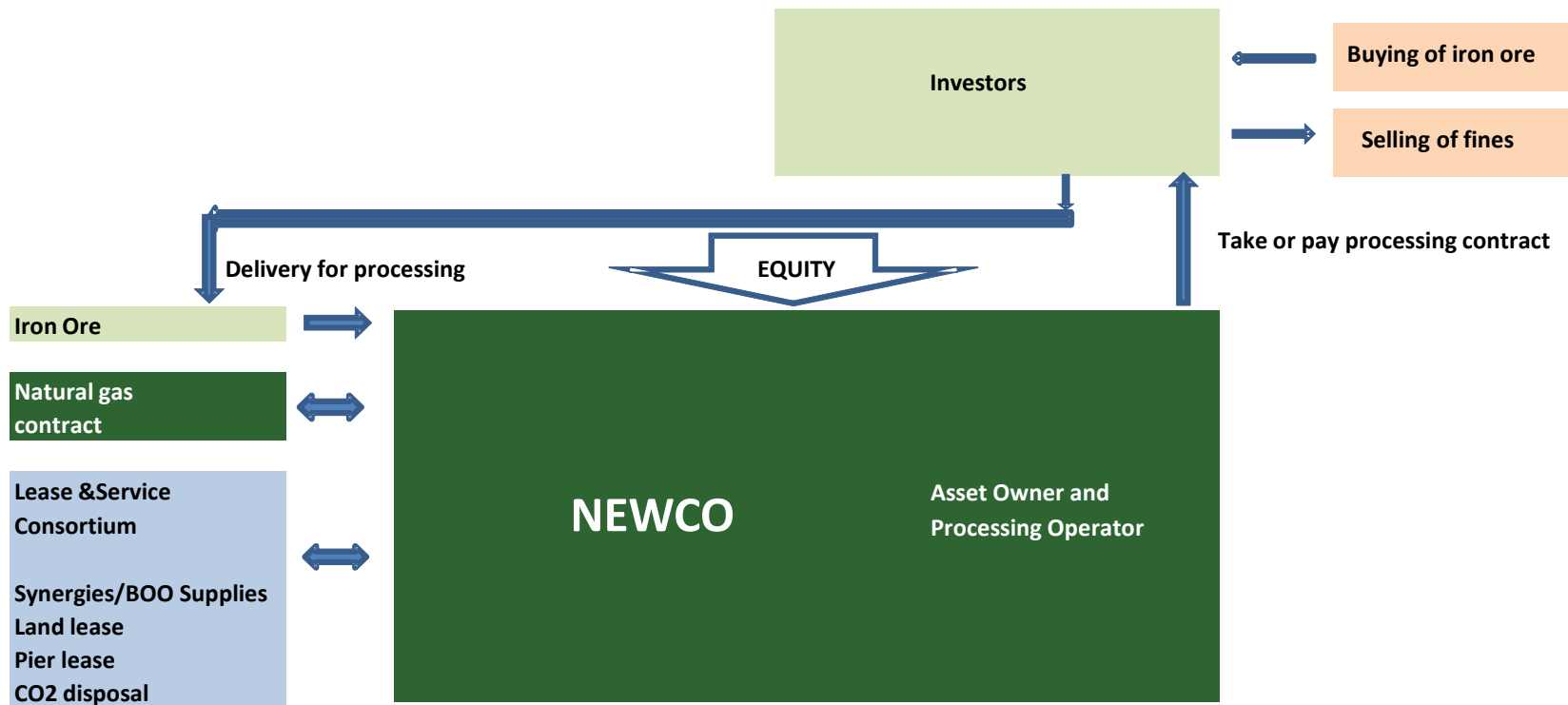
- **Total world production of steel and iron products 1 300 mton**
 - Blast Furnace process – 900 mton
 - EAF process – 400 mton – mainly based on scrap
 - Annual growth 4 %
- **Shift towards EAF**
- **Majority of DRI production today is not on the open market**
- **EAF process creates 40 % less CO₂ than BF process**
- **Emission rights will be re-negotiated 2012**

Potential clients

<u>Country</u>	<u>No. of producers</u>	<u>Mton/year</u>
Spain	8	6,7
Germany	10	10,0
UK	2	4,0
France	6	5,3
BeNeLux	4	4,5
Italy	10	6,7
Poland	2	3,2
Scandinavia	4	2,7
Total approx.		40,1



Organisational structure & business model



It doesn't get any greener!