H_2 Fe HyIron

FIRST OF ITS KIND

OSHIVELA – GREEN IRON FROM NAMIBIA

First of its kind

Introduction

Iron production at zero CO_2 emissions is an important goal in the fight against climate change. With 9% of global CO_2 emissions, there is a need for rapid adaptation of the iron production processes. The rapid and positive development in the efficiency of renewable energy generation and the pricing of CO_2 emissions has created a positive tipping point: Iron from net-zero production is competitive!

HyIron has the goal of establishing a new technology concept for the production of green iron. Therewith generation capacities of renewable energy are made usable and a key industry can be supplied with important raw materials and energy. All of this sustainably and within the framework of new energy partnerships.

Primary production :

Iron ore to Iron

Iron-Oxide Reduction

Traditional : Iron reduction with Carbon vs. HyIron : Iron direct reduction with hydrogen

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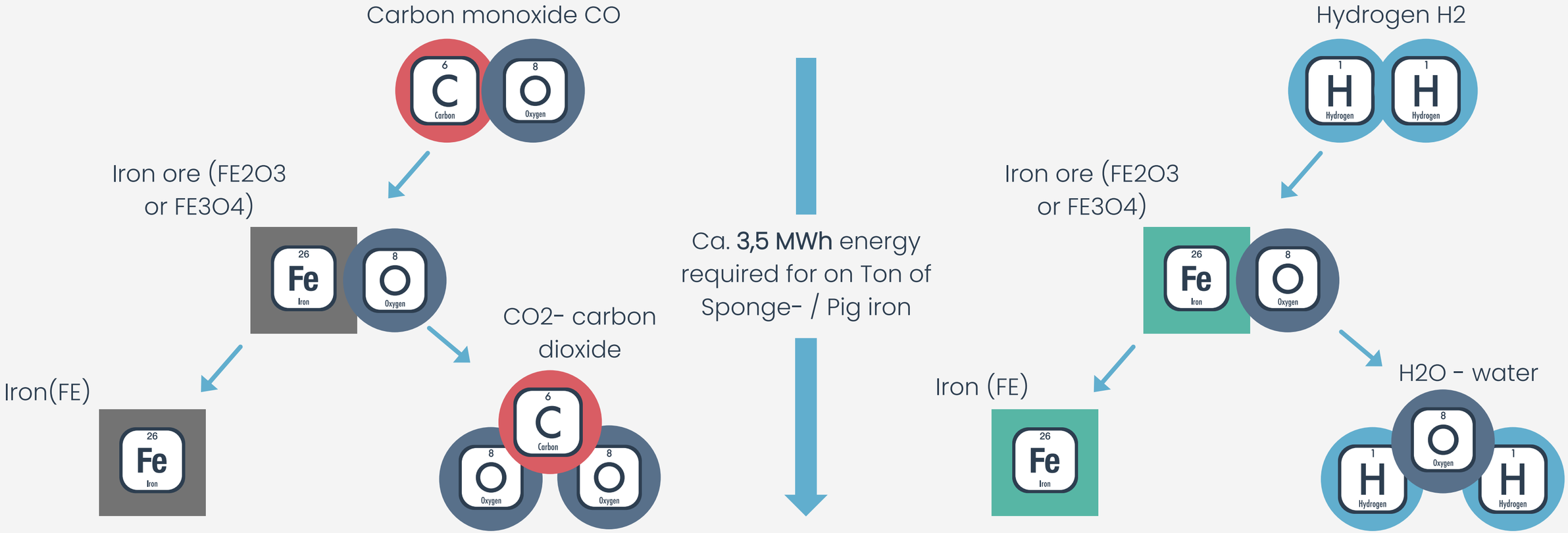
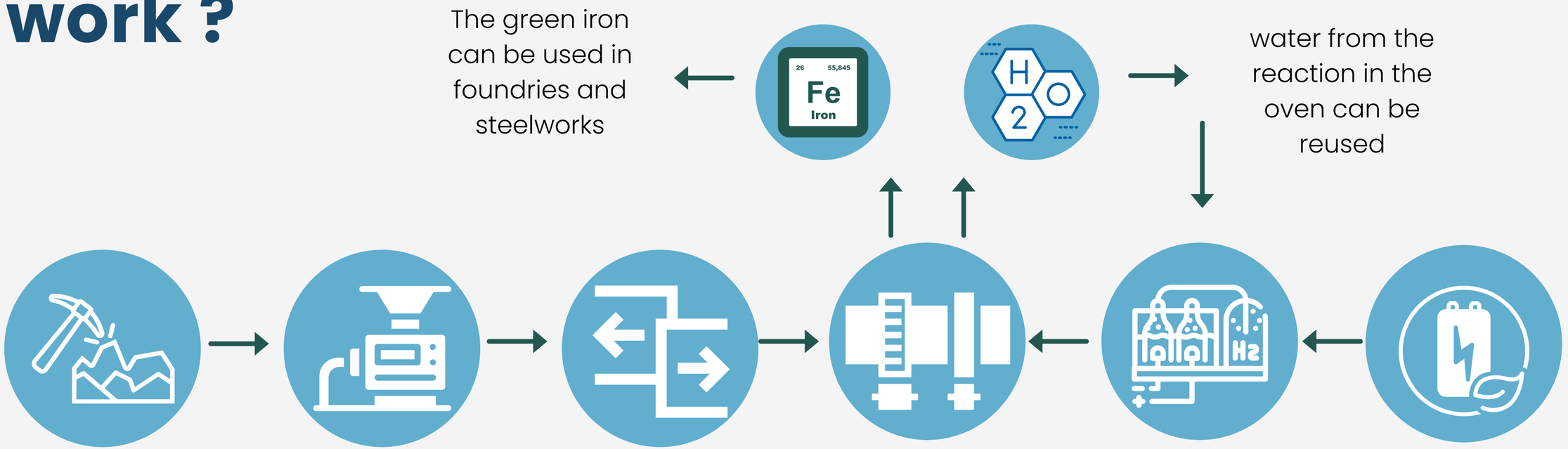


About 1.42 billion tons in 2020

No comercial production yet

How does it work ?

Overview



Iron ore is mined

The material is ground to fines

With the help of magnetic separation the iron ore is separated from the waste materials

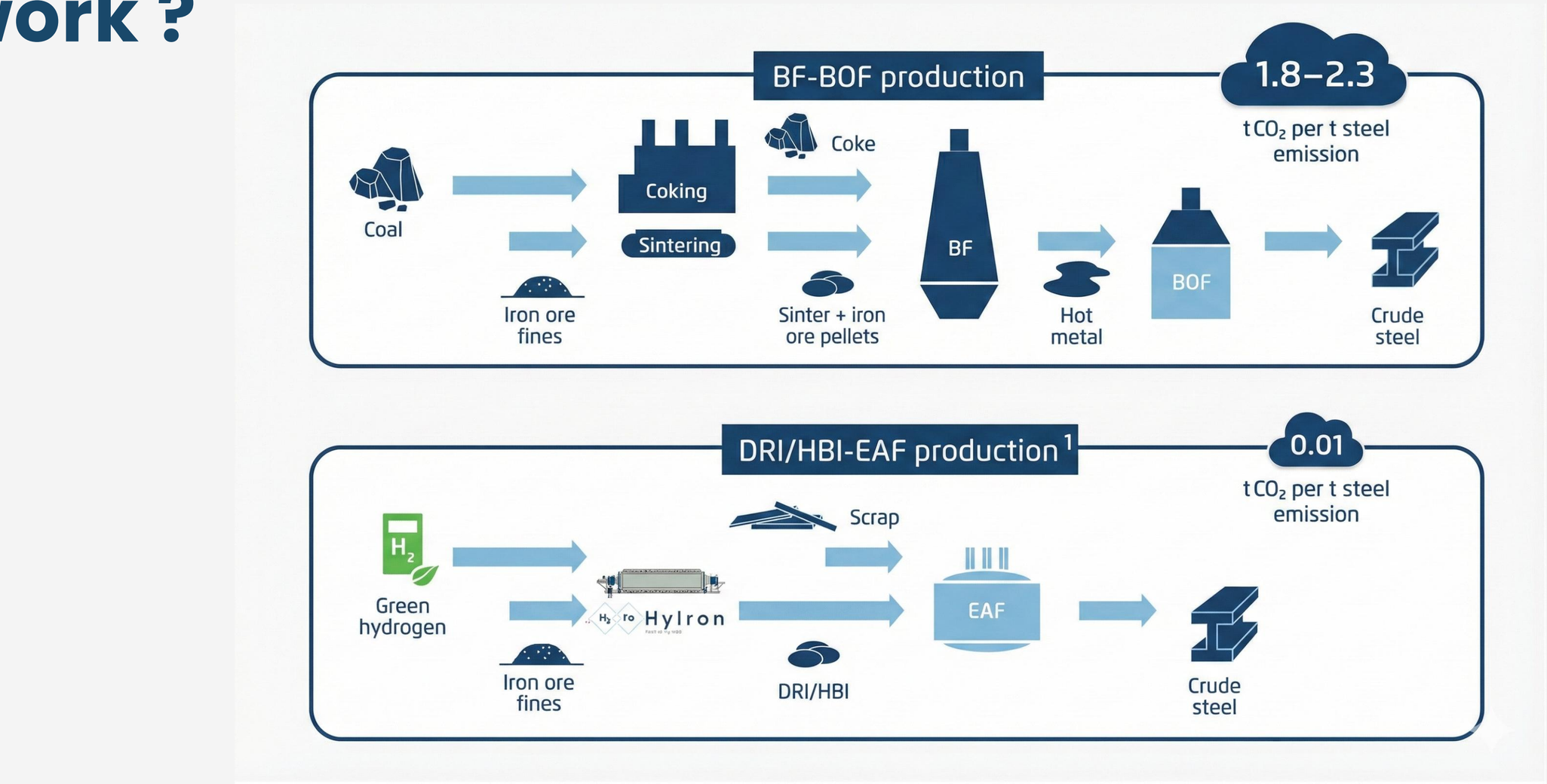
The iron ore concentrate and the hydrogen react in the Rotary Kiln and FE3O4 or FE2O3 and H2 become FE and H2O

With the energy water is split into oxygen and hydrogen

Renewables energies from wind and solar power plants

How does it work ?

Overview



Project Oshivela Phase 1 – 3

Expansion stages Oshivela :	Energy requirement :	Resulting CO2 savings :
First Production stage : 5 T/H – 3000 hours per year. Annual Production: 15000T – Beginning of 2025	Approximately 25 MW	• Approx.: 27,000 tons of CO2 abated • This corresponds to approximately 0.75% of the total annual CO2 emissions of Namibia
Second Production stage : 25 T/H – 8000 Hours per year (including energy storage) Annual Production : 200,000T - End of 2027	Approximately 360 MW	• Approx.: 360,000 tons of CO2 abated • This corresponds to approximately 10% of the total annual CO2 emissions of Namibia • Investment Volume ca. 220 Mio €
Third Production stage : *250 T/H – 8000 hours per year* *Annual Production :* */2,000,000T* *End of 2030*	*Approximately 3600 MW*	• *Approx.: 3,600,000 tons of CO2 abated* • *Around 88 % of Namibia's annual CO2 emissions* • *Investment Volume ca. 2,4 Mrd €*

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Green industrialisation Energy costs?

Overview

Timeline	Hylron Cost per kg (H2)	Hylron Cost per kWh in form of H2	Coking Coal Cost per kWh	Status
Phase 1 (2025)	$1.81	$0.05	~$0.025	**Premium**
Phase 2 (2028)	$0.99	$0.03	~$0.025	**Approaching Parity**
Phase 3 (2030)	$0.75	$0.02	~$0.025	**Cheaper than Coal**

Project Oshivela

Construction completed in February 2025

END, the beginning,…

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