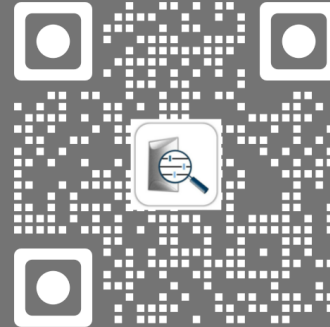
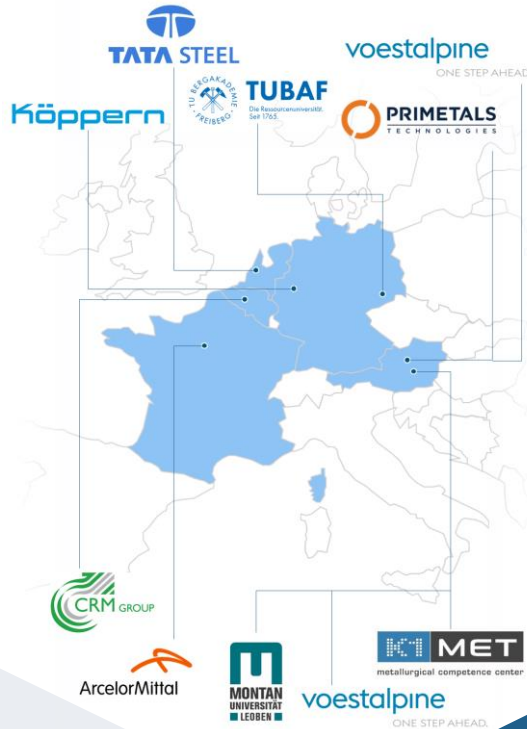


# Consortium

The consortium consists of 10 partners and includes steel producers, technology providers, RTOs and universities.



**Start date:** 01.07.2023

**Duration:** 42 months

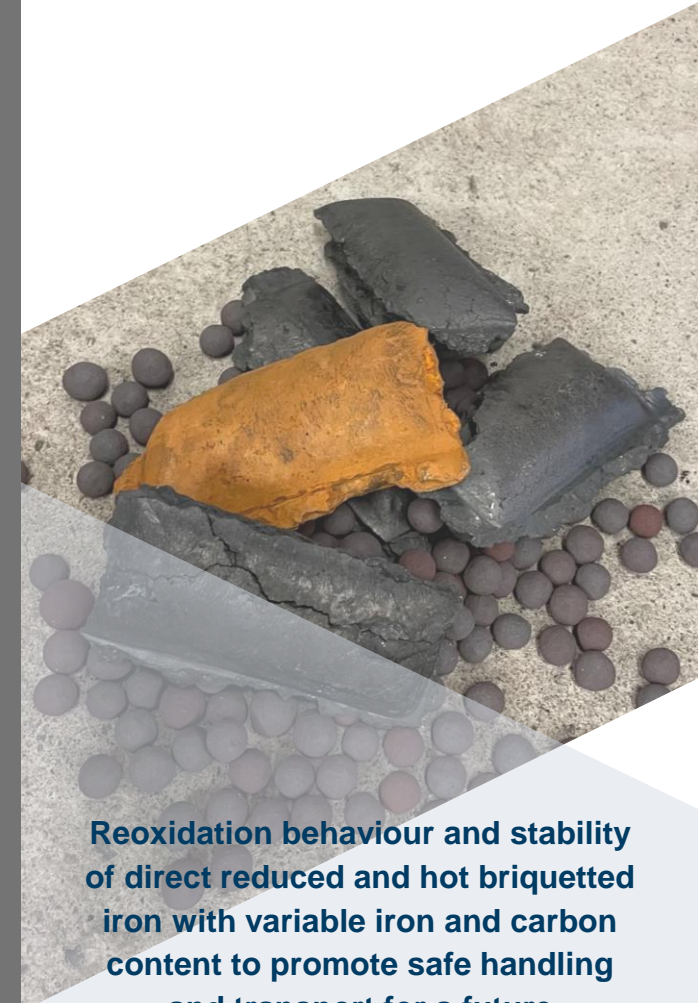
**Funding scheme:** RFCS-PJG

**Budget:** 2.4 M€

**Coordinator:** K1-MET GmbH

**Contact:** info@hbi-c-flex.eu

**Website:** www.hbi-c-flex.eu



**Reoxidation behaviour and stability of direct reduced and hot briquetted iron with variable iron and carbon content to promote safe handling and transport for a future decarbonised steel production**



*This project is co-funded by the European Union under grant agreement number 101112479*

# Motivation

Since not all steel demand can be met by recycling scrap due to scrap availability and quality requirements of high-tec steel grades, primary steel production will still be necessary and therefore has to decarbonise. This requirement induces the need to increase the production and use of Direct Reduced Iron (DRI) and Hot Briquetted Iron (HBI). These materials serve as enablers of the steel circular economy by diluting the metallic and other impurities present in lower quality grades of scrap. The pathway to decarbonisation of the steel industry envisages DRI/HBI being produced using hydrogen (H<sub>2</sub>) rather than natural gas with a consequent impact on product properties, notably carbon (C) content. The HBI C-Flex project takes an ambitious step towards contributing to new, sustainable and low-carbon materials for steel production.

# Objectives

HBI C-Flex demonstrates the direct reduction of iron ore using various qualities (including lower-grade ores being typically not used for direct reduction) followed by hot briquetting. The figure below shows the project concept. Flexible carbon contents will be reached also including zero-carbon products. HBI, as well as DRI will be subject of reoxidation trials under changing ambient conditions (dry and wet atmosphere, enhanced temperature) to quantify exothermic reactions during onsite storage, rail and maritime transportation. Mineralogical, mechanical and metallurgical analyses of the DRI/HBI before and after reoxidation will be performed. The knowledge about reactivity and stability (dust formation) during HBI handling will be valuable for steelmakers in terms of logistics and up-skilling of workers awareness how to avoid hazard situations during their daily work.

# Expected results

HBI C-Flex aims to achieve the following goals:

- Determination of HBI reoxidation and reactivity and strategies to avoid reoxidation
- Definition of strategies for safe handling and onsite storage
- Extension of the IMSBC Code to cover zero-carbon HBI
- Contribution to new, sustainable and low-carbon steelmaking materials

