

Materials Eastern Europe

# Green materials



thyssenkrupp



# Current situation- The European Green Deal

The EU is at the forefront of international efforts to fight climate change. The European Green Deal sets out a clear path towards realising the EU's ambitious target of a 55% reduction in carbon emissions compared to 1990 levels by 2030, and to become a climate-neutral continent by 2050.

Climate change is a global problem that needs global solutions. As we raise our own climate ambition and less stringent environmental and climate policies prevail in non-EU countries, there is a strong risk of so-called 'carbon leakage' – i.e. companies based in the EU could move carbon-intensive production abroad to take advantage of lax standards, or EU products could be replaced by more carbon-intensive imports. Such carbon leakage can shift emissions outside of Europe and therefore seriously undermine EU and global climate efforts.

## Solution for „carbon leakage”

The **Carbon Border Adjustment Mechanism** (CBAM) will equalise the price of carbon between domestic products and imports and ensure that the EU's climate objectives are not undermined by production relocating to countries with less ambitious policies.

**Which sectors will the new mechanism cover and why were they chosen?**

**The CBAM will initially apply to imports of the following goods:**



**cement**



**iron and steel**



**aluminium**



**fertilisers**



**electricity**

These sectors have a high risk of carbon leakage and high carbon emissions. The administrative feasibility of covering the sectors in the CBAM from the start was also taken into account.

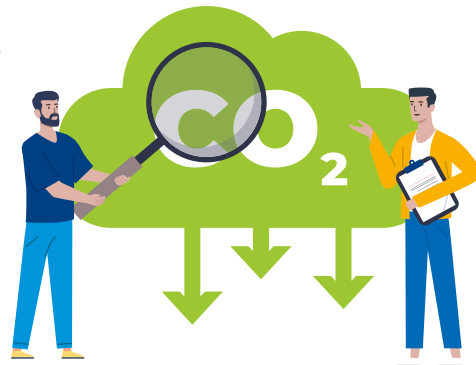


The CBAM will apply to direct emissions of greenhouse gases emitted during the production process of the products covered. By the end of the transition period, the Commission will evaluate how the CBAM is working and whether to extend its scope to more products and services - including down the value chain, and whether to cover so-called 'indirect' emissions (i.e. carbon emissions from the electricity used to produce the good).

# Sustainability strategy and green Excellerate program

**As Sustainability leader of the industry** we have a very clear goal: “Creating a world in which resources are used in the best possible way – for joint success and a sustainable future”.

We have developed our “**thyssenkrupp Materials Services Sustainability Manifesto**”. It defines our ambition as Materials Service provider and underlines our clear goal: we are going “**beyond clean, green and good**”. Fighting climate change and protecting biodiversity is central to us. Therefore we will operate climate neutrally by 2030 and will reduce all forms of environmental pollution continuously. We will be climate neutral 20 years earlier than previously planned and 20 years earlier than the EU is having as an ambitious target. This is **beyond clean** for us. **Beyond green** means that we would like to be our customers’ first choice for the products and services they need to decarbonize their supply chain and meet their social criteria. We want to create an ecosystem of green materials suppliers across the Eastern European region and become the Nr. 1. supplier of sustainable materials solutions. **Beyond good** means acting as a responsible member of global society, and this is key to our company. By fostering diversity, enriching the communities in which we live, supporting the education of the region and raising social standards in our supply chain, we will contribute to creating a sustainable world – for our employees, partners and society. Our **green Excellerate performance program** clearly defines the pathway to our sustainability goals. It brings together processes, projects and initiatives. The objectives of the performance program cover three areas: - **Energy reduction**, - **CO<sub>2</sub> reduction**, - **Distribution of green products and services**.



## What is green steel; as an example of green materials?

Green steel is becoming more and more common, but do we really know what it is? Subsidiaries of the Eastern European region are already negotiating with the best material suppliers and their biggest customers to define the materials of the future.



### There are two types of „green materials”

- Limited carbon reduced products (they exist today), these involve raw material recycling as well as products with a low CO<sub>2</sub> footprint.
- Truly carbon neutral products, these require technological transformation of current production methods.



### Main transformation strategies: Today

- Process improvement for existing technologies
- Increasing amount of scrap in BF/BOF (Blast Furnace-Basic Oxygen Furnace)
- Invest in EAF technology (Electric Arc Furnace) to increase scrap ratio in steel production



### Bridging technologies

- Reducing carbon emissions
- Carbon capture and storage
- Carbon capture and usage of natural gas
- Usage of bioenergy
- “Balancing”: partly CO<sub>2</sub>-savings will be converted on total production volume
- Naturalgas



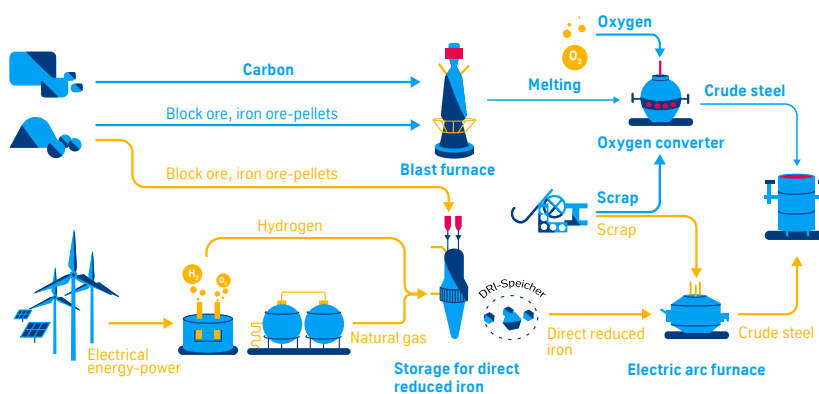
### CO<sub>2</sub>-neutral: Green hydrogen based direct reduction with green electricity

- Implement DRI (Direct Reduced Iron) plants with “green” hydrogen
- Green “renewable” energy, e.g. wind, solar, hydropower
- Molten Oxide Electrolysis (MOE)

## Transformation of current production methods & CO<sub>2</sub> reduction measures

### Direct Reduced Iron "DRI" production method

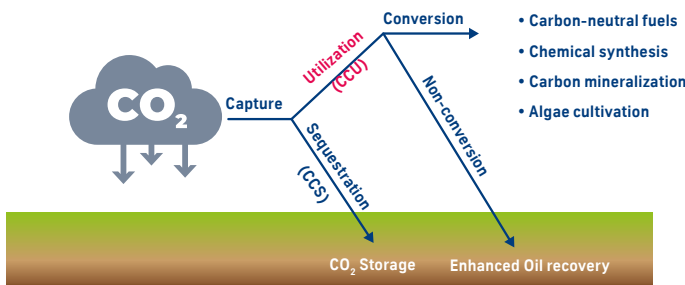
#### Steel manufacturing processes – Direct reduction – Blast furnace



#### DRI technology

- Produced from direct reduction of iron ore under usage of natural gas or H<sub>2</sub> into sponge iron. No melting of iron ore
- Further processing in an electric arc furnace to steel
- Natural gas can be replaced step-by-step by green hydrogen produced from renewable energy
- CO<sub>2</sub> reduction up to 95% compared to BF technology

## Carbon Capture: use and storage



#### Carbon capture and use (CCU)

- Separation of CO<sub>2</sub> from production emissions and connected use in further chemical processes
- Provision of chemical raw material

#### Carbon capture and storage (CCS)

- Reduction of CO<sub>2</sub> emissions in the atmosphere by separation in the production process
- Permanent storage of CO<sub>2</sub> in underground depots e.g. former crude oil deposits

#### Green certification

- The implementation of CO<sub>2</sub> reduction measures is regularly audited.
- We are working on an assurance process audited by a certification body accompanied by transparent reports on the mechanisms of the process and on the rules and system boundaries applied.

Experts at thyssenkrupp Steel have been working on sustainable solutions for a long time. For more information on our current projects, [click here](#).

Carbon capture and use (Carbon2Chem)

➞ <https://www.thyssenkrupp.com/en/newsroom/content-page-162.html>

Carbon direct avoidance: hydrogen based path (tkH2Steel)

➞ <https://hydrogen.thyssenkrupp.com/en/>

Are you interested in green materials and services?

Let us work together for approaching this topic of Sustainability which is so important for us and the following generations!

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