



ArcelorMittal

Leadership on climate change  
November 2020

# Disclaimer

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## Forward-Looking Statements

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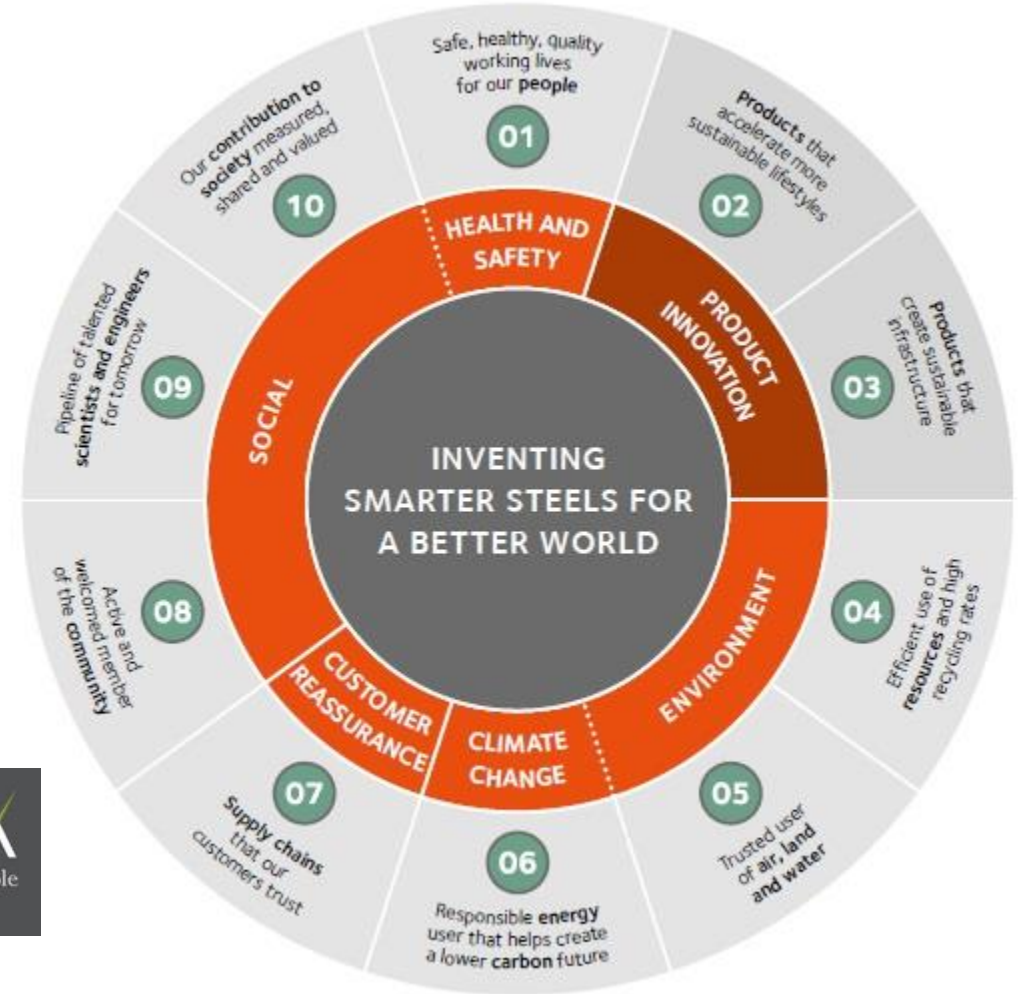
# Our approach to sustainable development

Sustainable development underpins the Company's purpose: Inventing smarter steels for a better world

- ArcelorMittal is committed to building solutions for the sustainable development of society
- Our [10 Sustainable Development \(SD\) outcomes](#) provide a compass to describe the business we know we must become
- The Board's Appointments, Remuneration, Corporate Governance & Sustainability Committee oversees progress on SD each quarter, chaired by lead independent director
- Materiality is assessed on ongoing basis through bottom up and top down processes. Key issues flagged to ARCGS.



Our operations are underpinned by a programme of independent ESG certification: IRMA and ResponsibleSteel





# ArcelorMittal's disclosures on sustainability



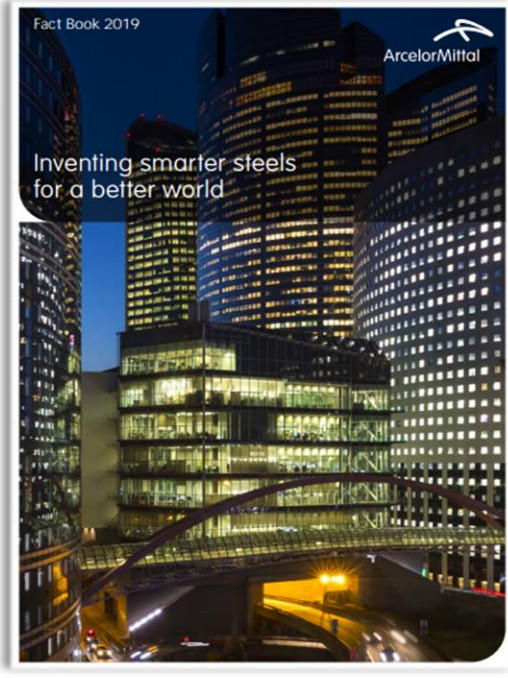
European Climate Action Report



Climate Action Report



Integrated Annual Review



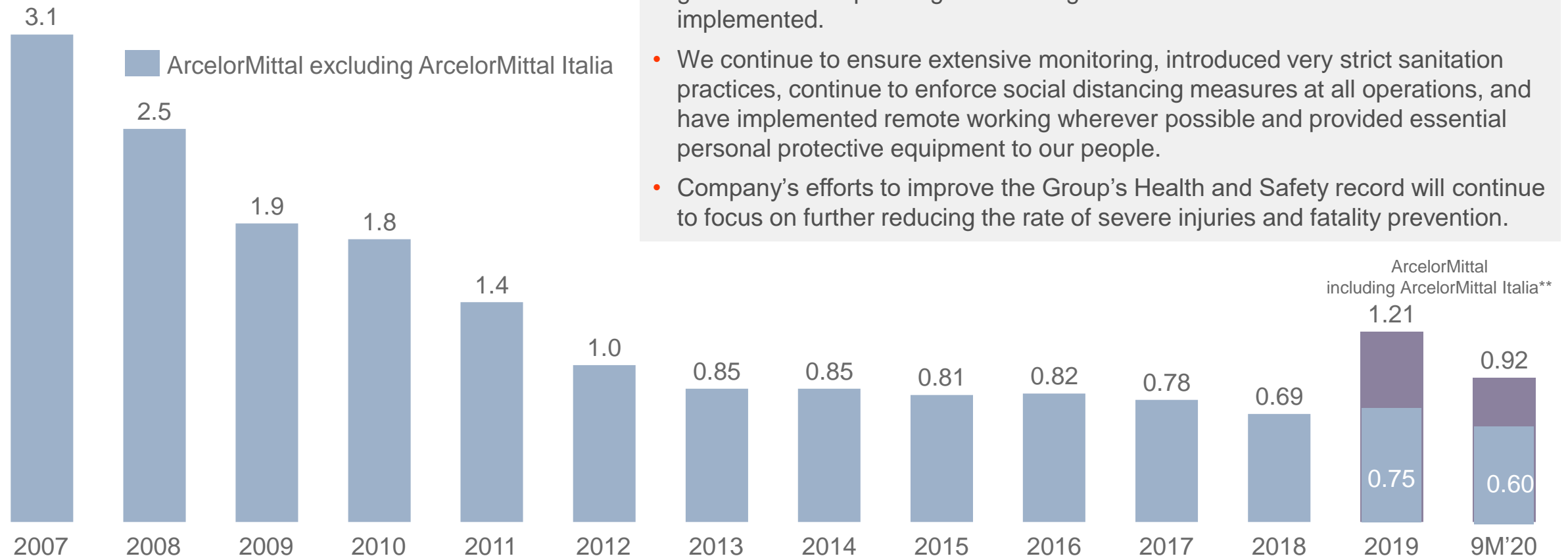
Factbook



# Safety is our priority: Remain committed to the journey towards zero harm

Health & Safety of the Company's workforce is of paramount importance

## Health and safety performance (LTIF)\*



- Protecting the health and wellbeing of employees remains the Company's overarching priority with ongoing strict adherence to World Health Organisation guidelines and specific government guidelines have been followed and implemented.
- We continue to ensure extensive monitoring, introduced very strict sanitation practices, continue to enforce social distancing measures at all operations, and have implemented remote working wherever possible and provided essential personal protective equipment to our people.
- Company's efforts to improve the Group's Health and Safety record will continue to focus on further reducing the rate of severe injuries and fatality prevention.

\* LTIF = Lost time injury frequency defined as Lost Time Injuries per 1.000.000 worked hours; based on own personnel and contractors; A Lost Time Injury (LTI) is an incident that causes an injury that prevents the person from returning to his next scheduled shift or work period.

\*\* ArcelorMittal Italia previously known as ILVA. 3Q'20 LTIF rate of 0.95x (incl. ArcelorMittal Italia) vs. 0.77x in 2Q'20 and 1.36x in 3Q'19; LTIF excluding ArcelorMittal Italia of 0.56x in 3Q'20 vs. 0.50x in 2Q'20 and 0.82x in 3Q'19.



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# Steel in a Low Carbon and Circular Economy

# Leadership on climate strategy - overview

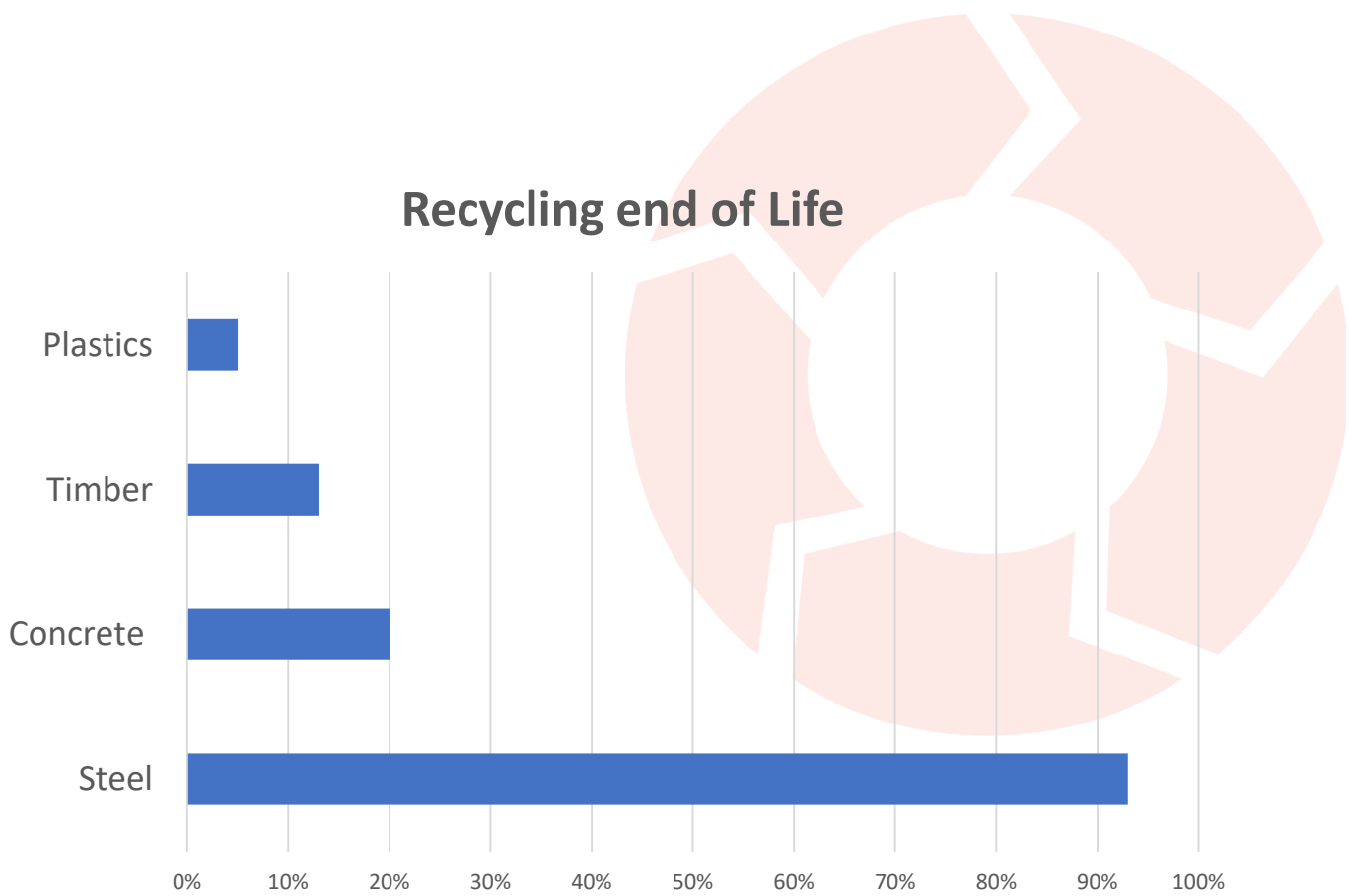
- Net zero target by 2050 for the Group made in September '20
- Group CO<sub>2</sub> target by 2030 to be published in second global Climate Action report
- Europe target of 30% CO<sub>2</sub> reduction by 2030 already in place
- First 'Climate Action in Europe' report released June'20, laying out our roadmap to 2030, in line with the EU's Green Deal.
- Emphasis that effective policy support is critical to the achieving the full potential of the technology we are developing.
- This includes an effective EU Carbon Border Adjustment to ensure a level playing field.
- Customer offering of green steel\* by end 2020 rising to 600kt by 2022
- Steel is expected to remain the **material of choice** for economic development & improved living standards





# Steel: a permanent material, recycled again and again...

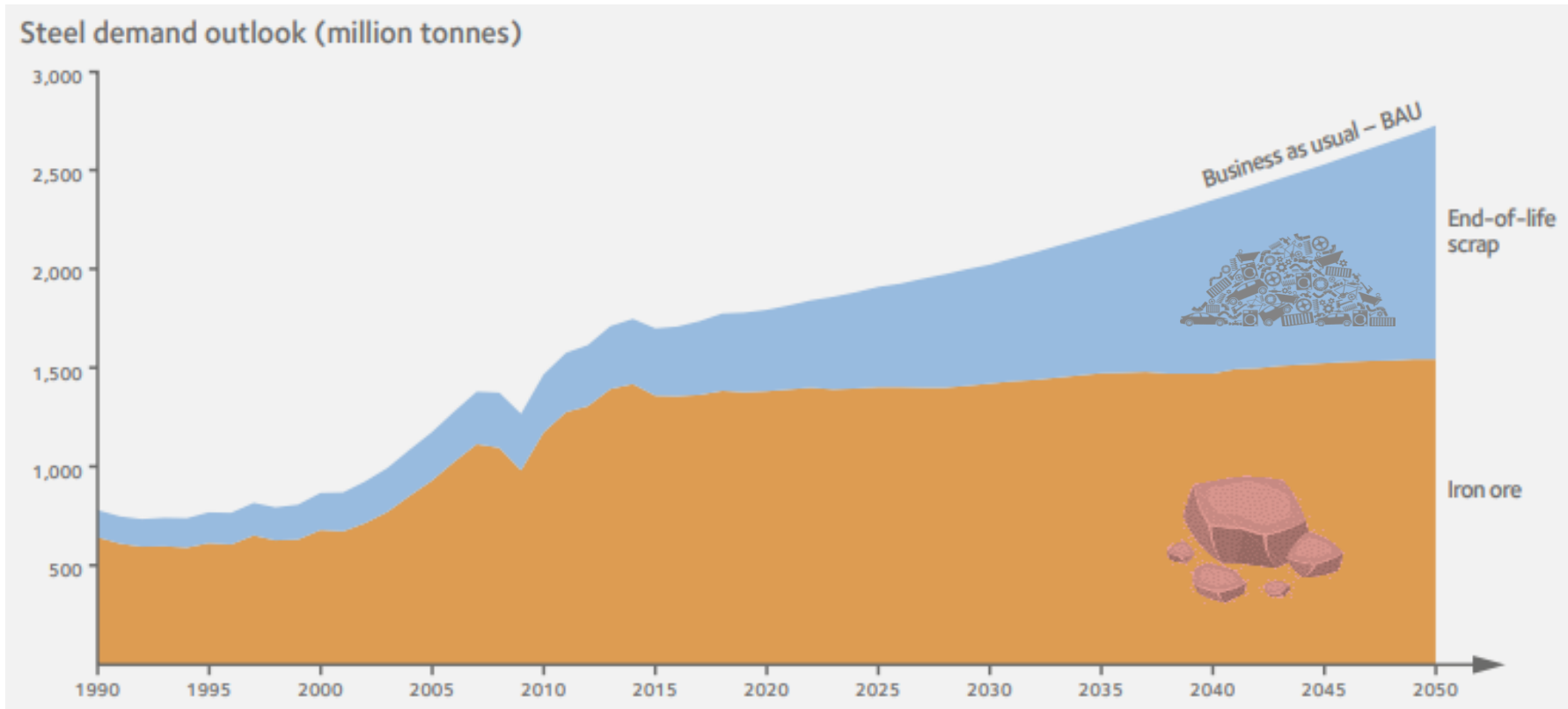
Steel is very easy to recycle – our recycle rate outperforms the materials we compete with





# Primary steel will continue to be needed to meet global demand until 2100

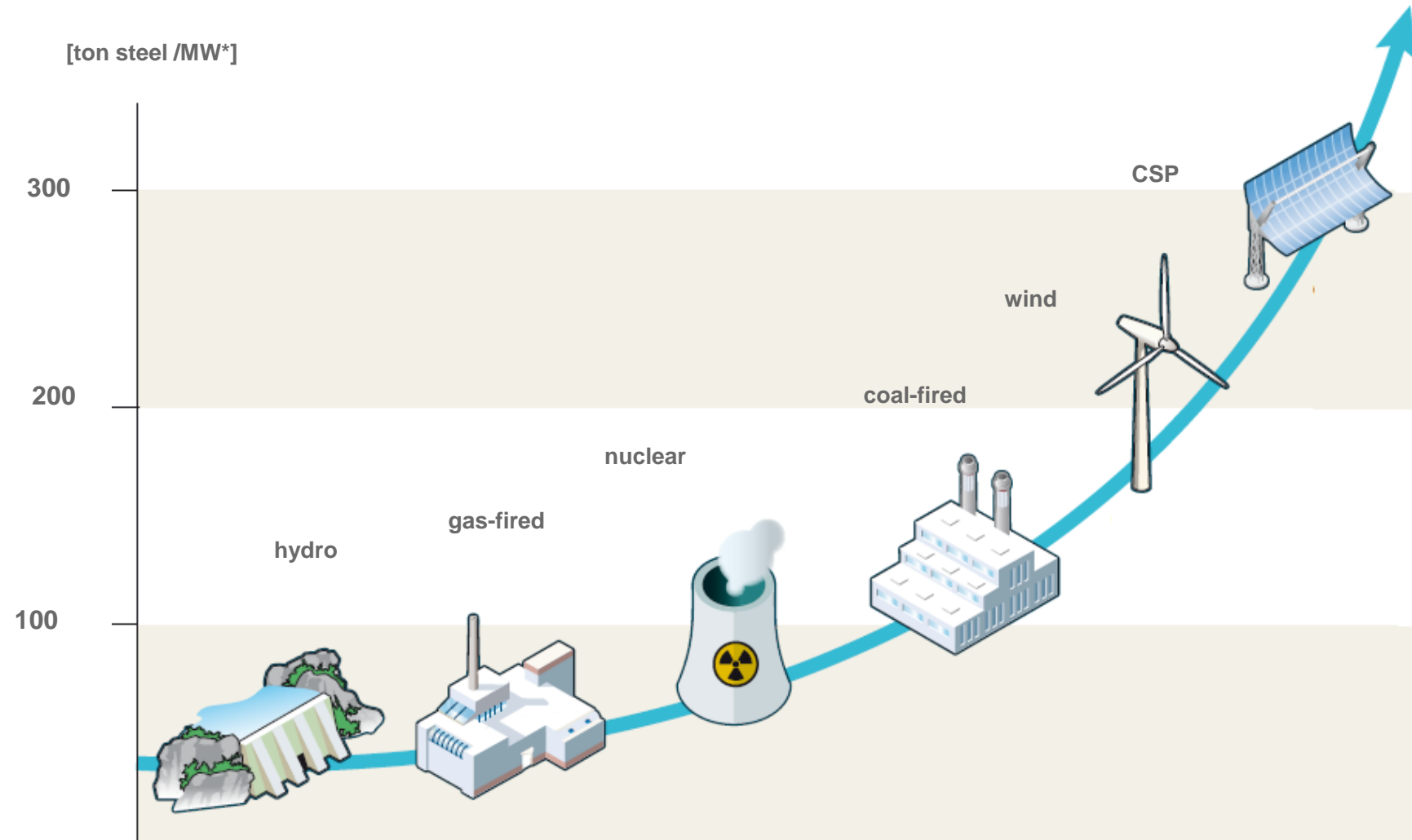
- Availability of scrap is limited due to its “finite” nature, dependent on disposal at end of life of products, equipment and buildings. Decarbonisation efforts must focus on primary steelmaking.



- Amount of secondary sources will increase over the coming decades; electricity will become green over this period
- Still, the world will continue to rely on primary sources to produce steel in 2050
- Today we use coal and natural gas as energy; steel industry will have to transition to clean energy sources

# Steel is essential in the energy transition

- Steel intensity in energy sector is increasing with the transition to low carbon sources of energy generation



\* steel consumptions per installed MW capacity

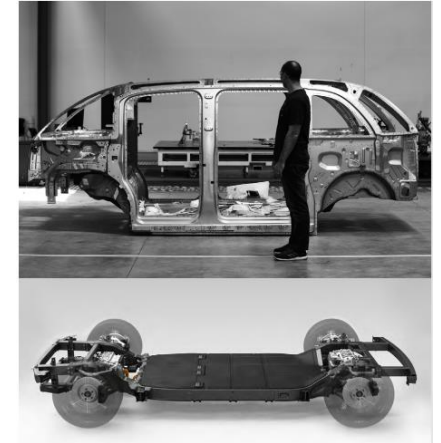
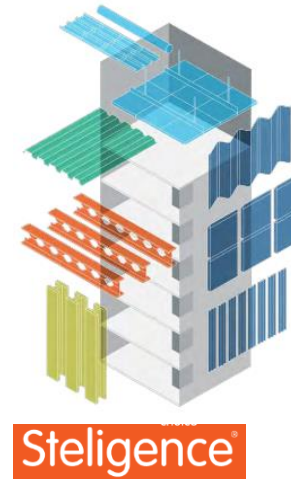
# Sustainable development runs throughout our Company

Our purpose is to invent smarter steels for a better world

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Our innovations offer our customers solutions to enhance their contribution to a low carbon and circular economy.

- **Steligen** enables architects and engineers to design building solutions that minimise material use while maximising space, flexibility and end of life recyclability
- Our new **S-in motion**<sup>®</sup> customisable chassis steel solutions enable carmakers to extend range and enhance safety at the most affordable cost.
- **Magnelis**<sup>®</sup> offers enhanced corrosion resistance for solar projects in harsh conditions, even in deserts and on water.
- The Company partners with **EcoCem** to produce low-emissions cement from blast furnace slag
- Offer green steel to customers by way of a certification system linked to CO2 savings, achieved through investment in decarbonization technologies, starting in 2020, with plans to scale up this offer to 600kt by 2022





# Steligence key figures

11%

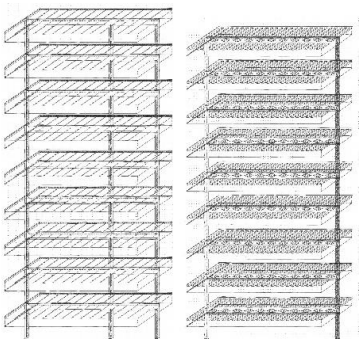
11% cost savings across facade, stairs and core elements due to **optimised space and height**

24%

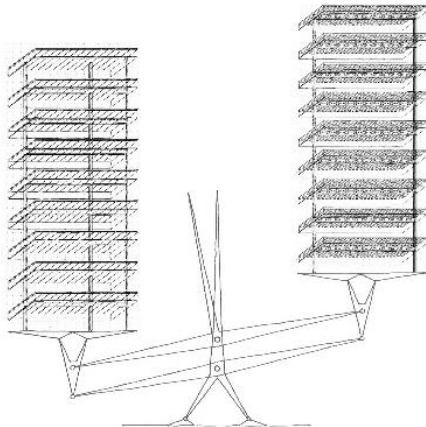
24% saving in construction costs due to **construction speeds** twice as fast as concrete equivalents

39%

39% foundation cost savings due to steel foundation solutions, weighting less than half equivalent structures



Baseline scenario    **Optimised steel scenario**



Baseline scenario    **Optimised steel scenario**



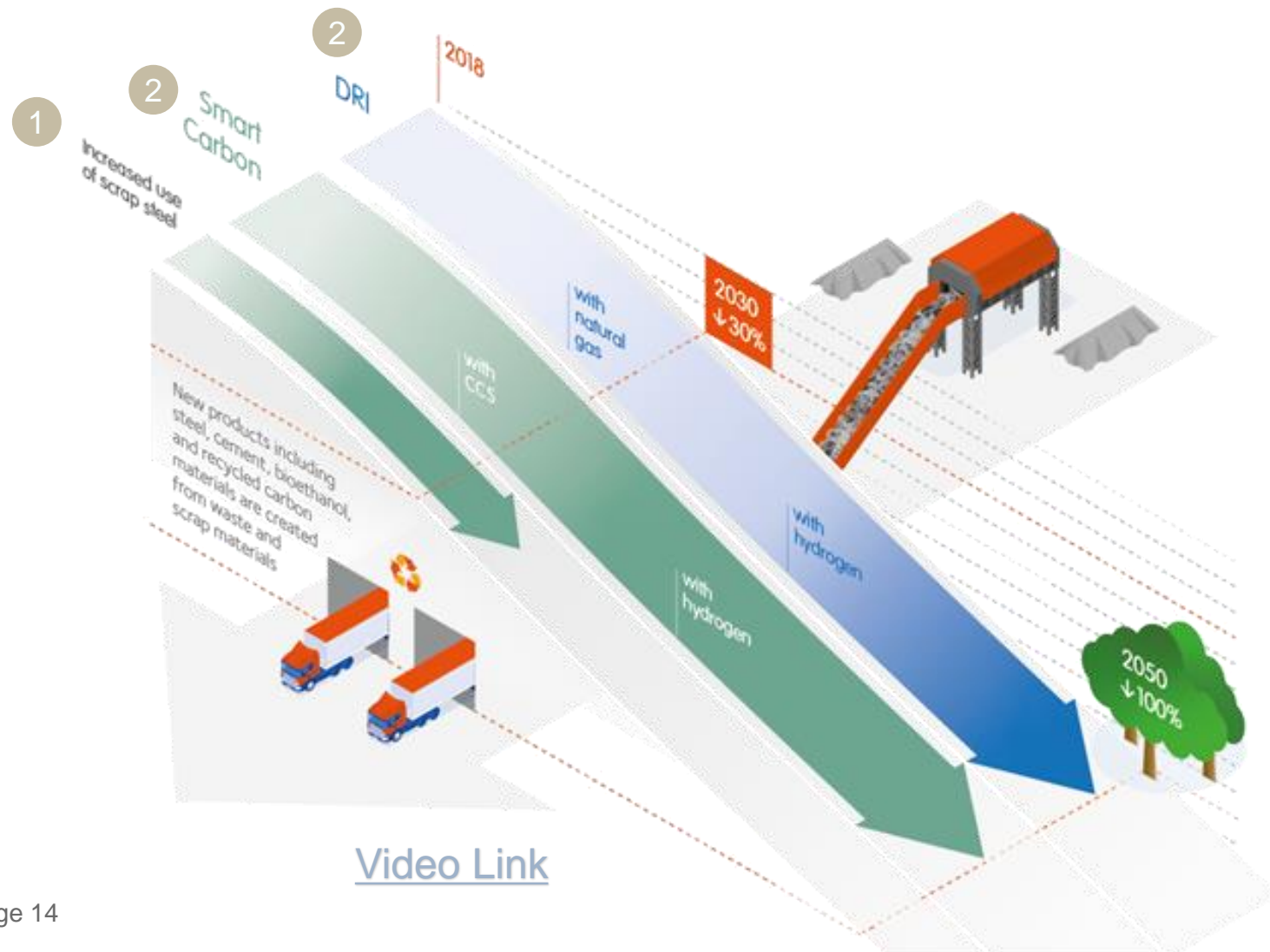
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Our climate strategy for  
low-emissions  
steelmaking

# ArcelorMittal roadmap to low-emissions steelmaking in Europe



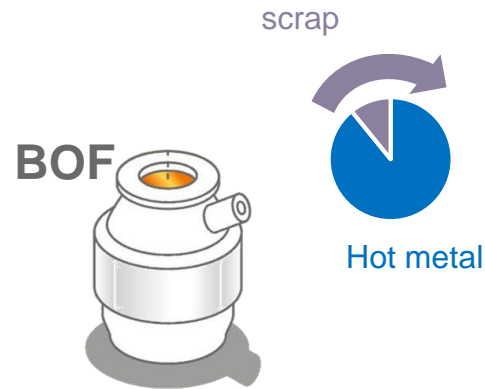
- 1 Increased use of scrap
- Two options for primary steelmaking:
  - 2 • Smart Carbon route with hydrogen
  - 2 • Hydrogen DRI route



# Increased use of scrap

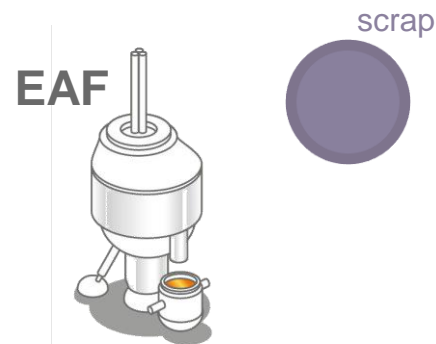
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## 1 INCREASE USE OF SCRAP



Increase amount of scrap  
versus hot metal in BOF

- Operational improvement
- Pre-melting technology

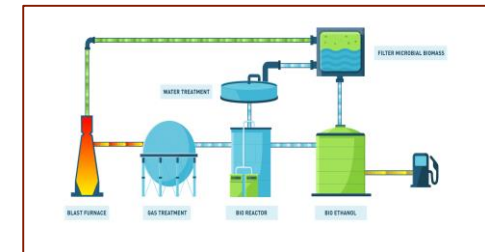


Invest in electric arc  
furnace technology to  
increase steel produced  
using scrap

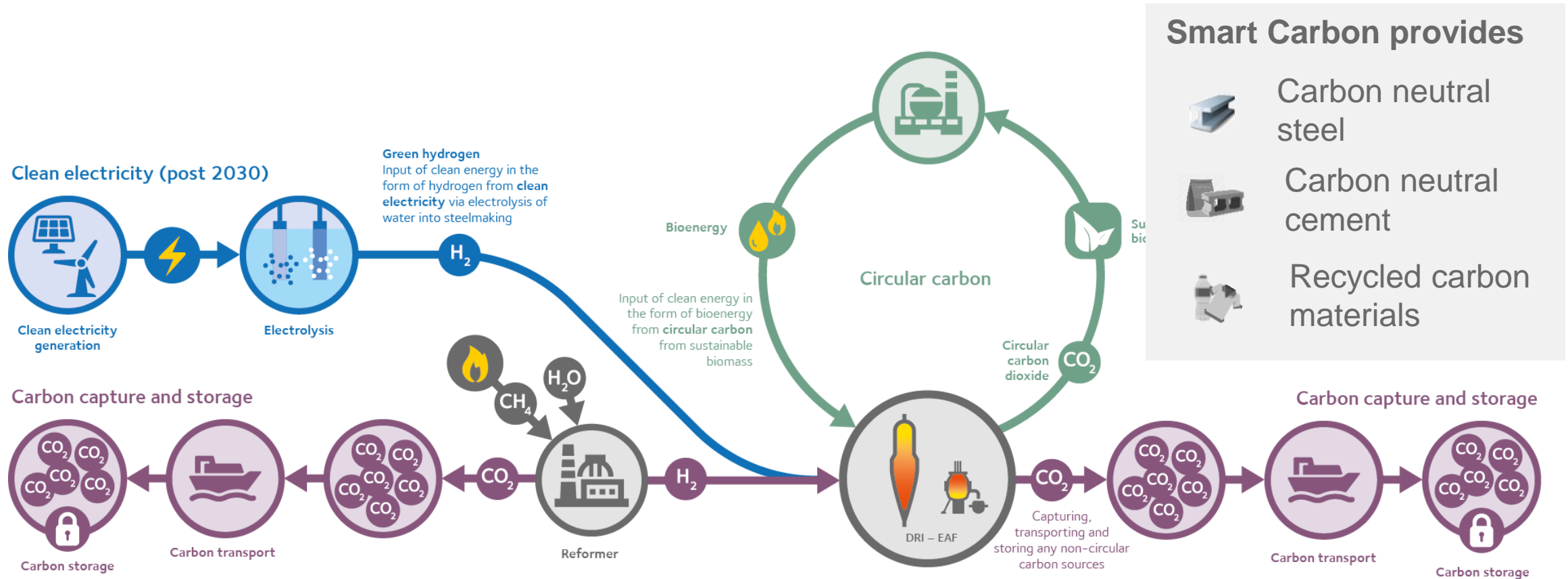
*Disproportionate increase in scrap consumption in Europe would lead to shift in scrap trade flows, leading to increased iron ore based steel production in laxer CO<sub>2</sub> jurisdictions outside of Europe*

# Two routes to carbon neutral steel: 1) Smart carbon with hydrogen

Replacing coal, with renewable / recycled carbon



# Two routes to carbon neutral steel: 1) Smart carbon with hydrogen



Evolving existing Blast Furnace technology, with use of bioenergy and incorporating carbon capture, storage and use; incorporating hydrogen as reductant - longer term this will be green hydrogen



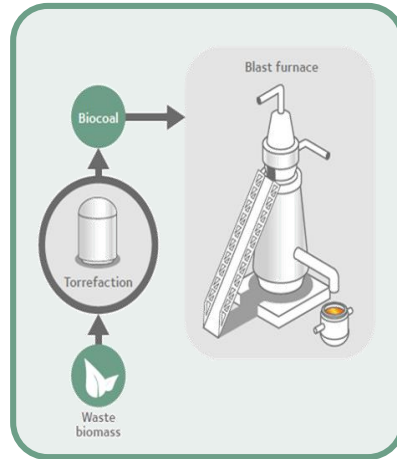
# Smart carbon – our technologies

## Torero

Industrial scale demo plant in Ghent, Belgium converting waste biomass into biocoal via two reactors, each producing 40kt bio-coal/yr. €50m investment cost.

Status: under construction

Production expected to start via reactor #1 2022 and reactor #2 2024

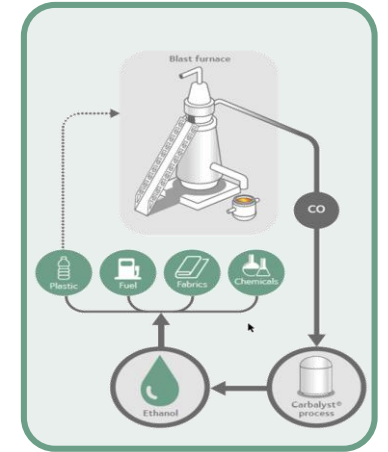


## Carbalyst (Steelmanol)

1) Industrial scale demo plant in Ghent, Belgium capturing carbon off-gases and converting into 80m litres recycled carbon ethanol pa. €165m investment cost

Status: under construction

Production expected to start 2022

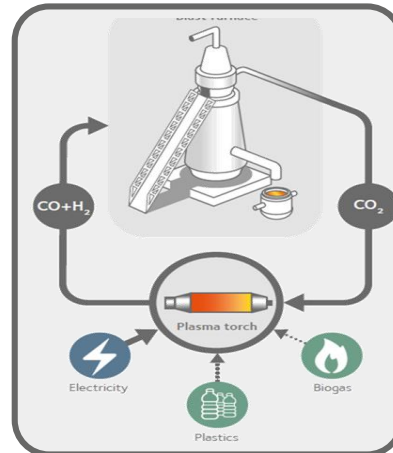


## IGAR

Pilot project in Dunkirk, France to capture waste CO<sub>2</sub> and waste hydrogen from steelmaking and convert into reductant gas.

€20m project budget

Completion expected 2022

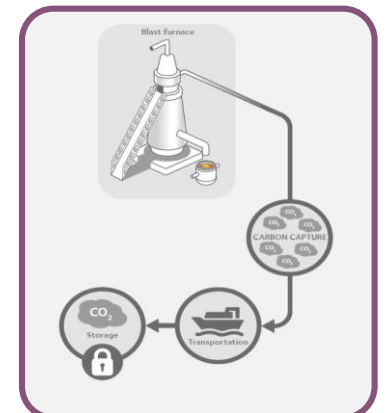


## 3D

Pilot project in Dunkirk, France to capture CO<sub>2</sub> off-gases (0.5 metric tonnes of CO<sub>2</sub>/hour) for transport/storage.

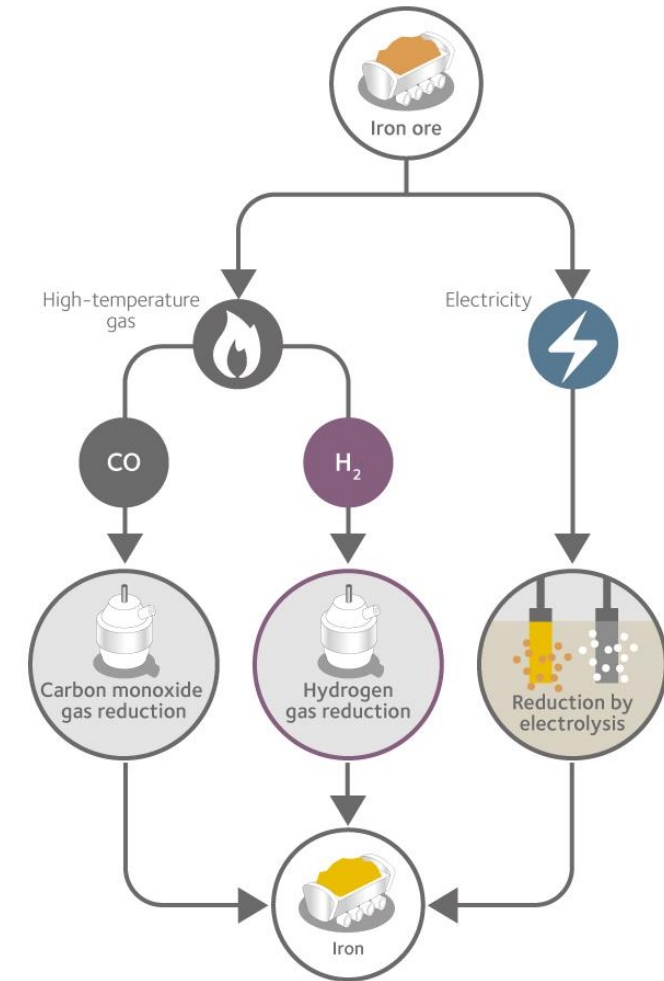
€20m project budget

Completion expected 2021

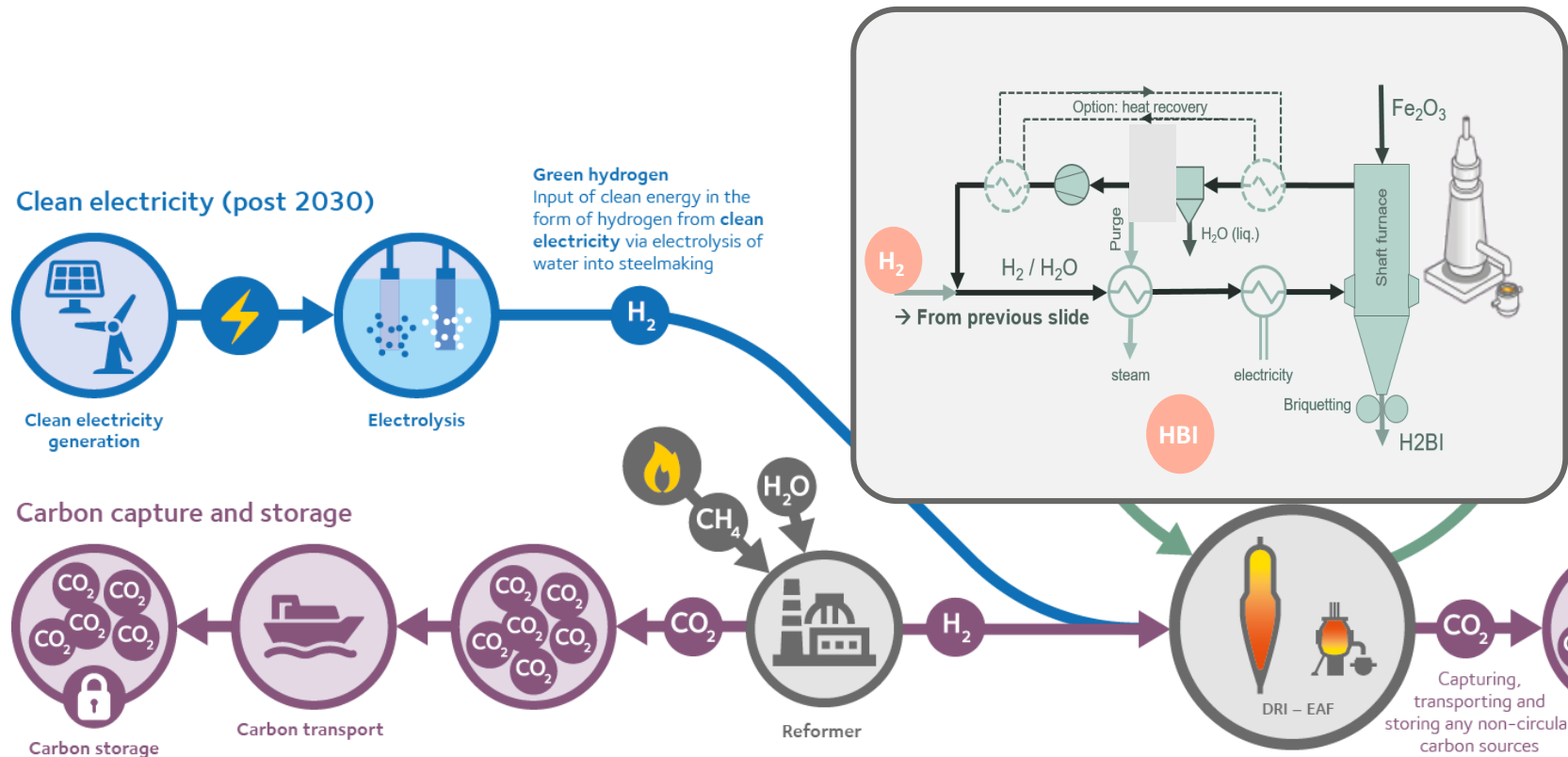


# Smart carbon – hydrogen in the BF complements circular carbon

- Several projects using increased hydrogen in blast furnaces across Europe, including:
  - BF gas injection across Flat Products sites using H<sub>2</sub>-containing gases from different sources.
  - Grey hydrogen at Asturias starting in 2021
  - IGAR project Dunkirk using plasma technology to create a reducing gas from waste gases, to enable gas injection in the BF
- A number of other hydrogen projects are planned, pending innovation funding



## Two routes to carbon neutral steel: 2) Hydrogen DRI-based route



- **H2 Hamburg** Industrial scale demo producing direct reduced iron via 100% hydrogen at existing plant in Hamburg, Germany to produce 100,000t sponge iron pa. Research project and feasibility study ongoing Production start up expected **2023-5** **dependent on funding**



# Costs - reaching carbon neutrality by 2050?

	Investment needed		Production cost increase
	ArcelorMittal Europe steel footprint	Clean energy infrastructure	
<b>Smart Carbon</b>	€15-25 billion	€15-165 <sup>1</sup> billion	+30-60% <sup>1</sup>
<b>Innovative DRI route</b>	€30-40 billion	€40-200 <sup>2</sup> billion	+50%-80% <sup>2</sup>

1. Lower end of range leveraging bioenergy and carbon capture storage (CCS) infrastructure; high end of range leveraging green hydrogen infrastructure
2. Lower end of range leveraging carbon capture storage (CCS) and blue hydrogen infrastructure; high end of range leveraging green hydrogen infrastructure



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Policy enablers

# IEA steel roadmap (October 2020)



## Iron and Steel Technology Roadmap

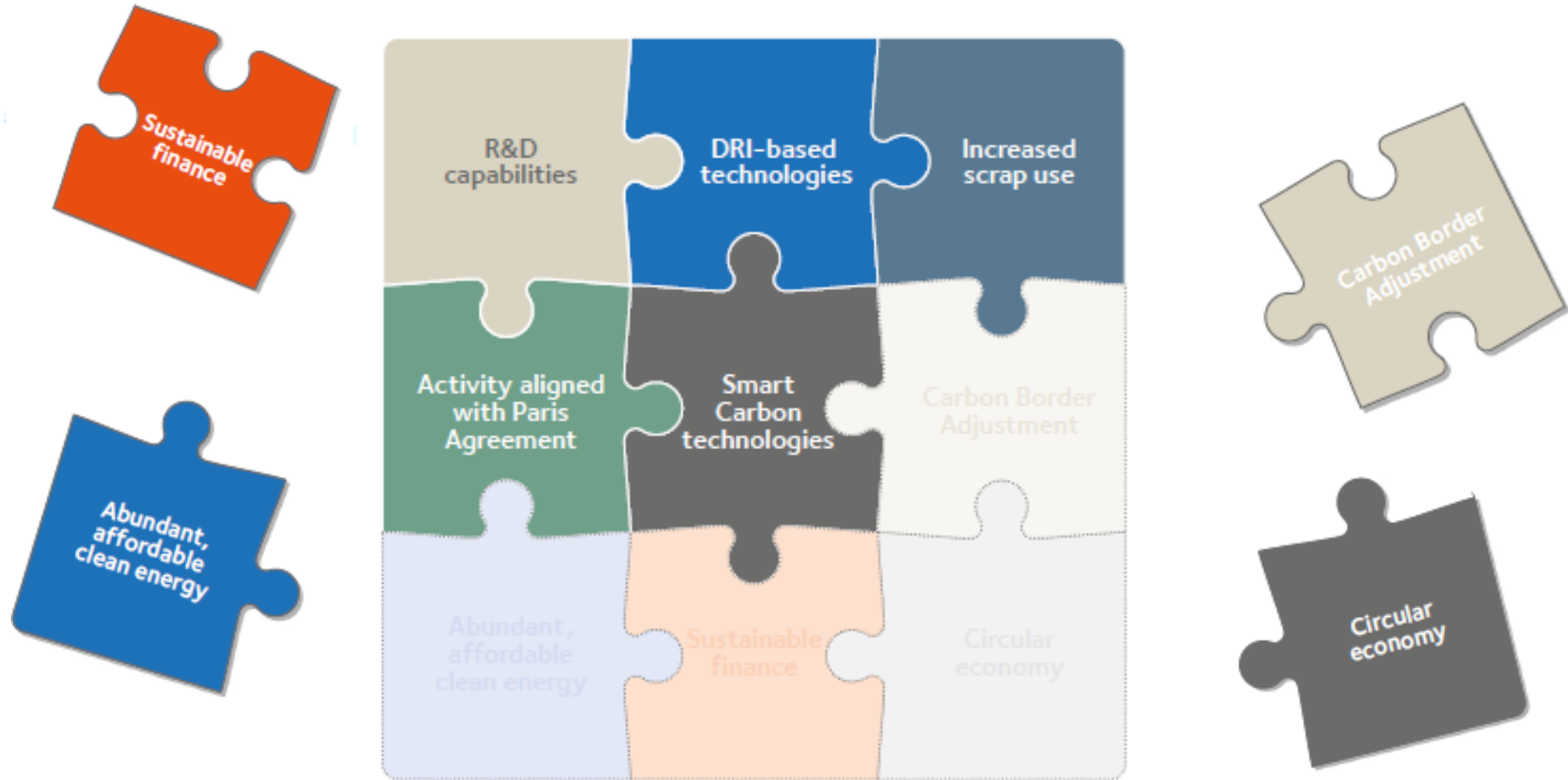
Towards more sustainable steelmaking

- uses Sustainable Development Scenario which envisages limiting global temperature increase to 1.8°C (66% probability) and so **net zero by 2070** for the industry.
- average carbon intensity of steel should fall **to 0.6tCO<sub>2</sub>/ts by 2050 – a 60% reduction** in the average sectoral direct CO<sub>2</sub> intensity of crude steel since 2019
- acknowledging the challenges for steel companies of adopting higher cost low emissions technologies whilst maintaining competitiveness;
- Level playing field is a ‘necessary enabling condition’

*“New technology must be deployed at a blistering pace, with new infrastructure to boot.”*

# Carbon neutral steel

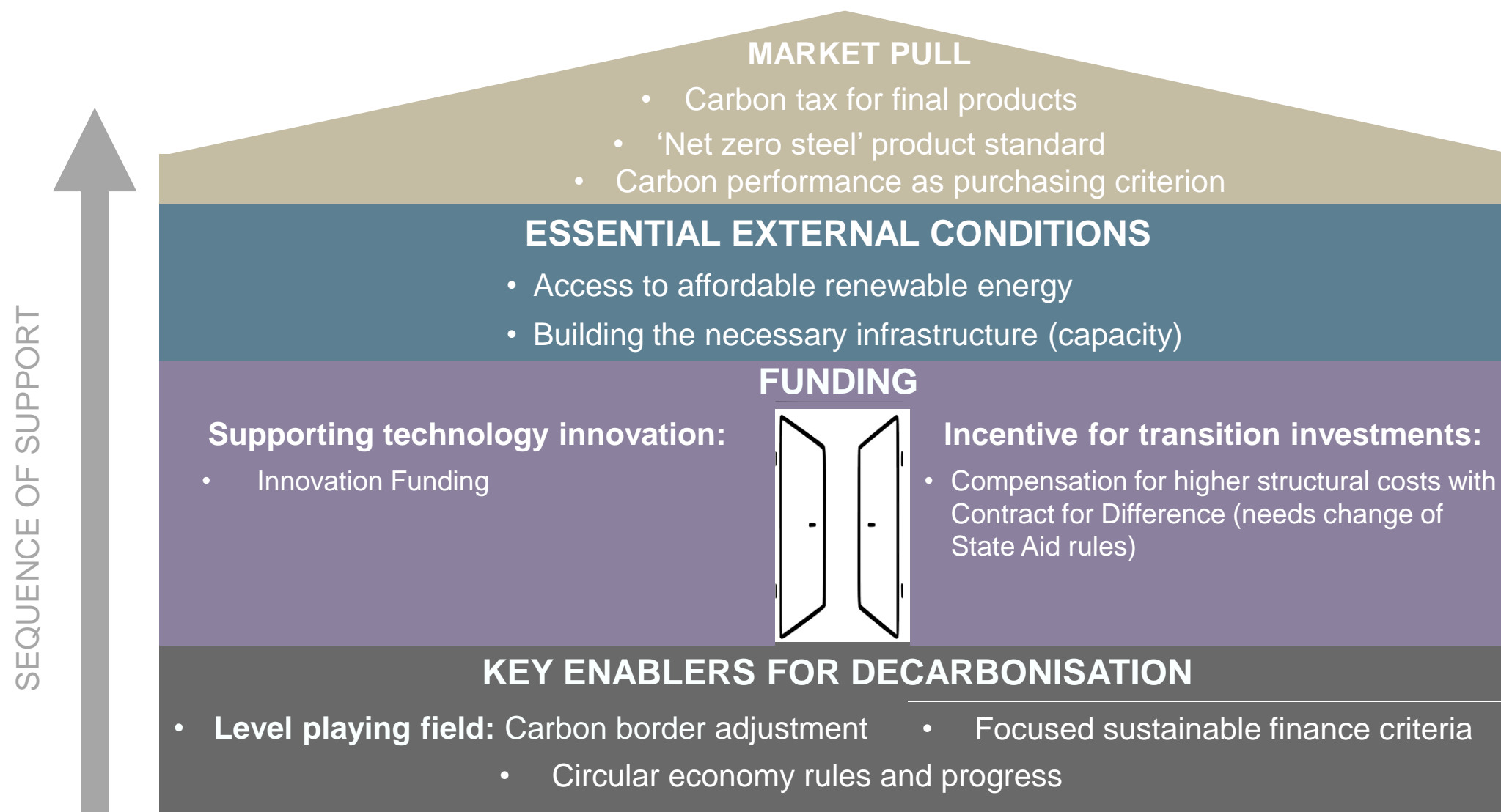
We bring key pieces of the puzzle; but we need policymakers to complete the missing pieces



Creating an environment where carbon-neutral steel is more competitive than steel that is not carbon-neutral



# Policy Landscape - Building key EU policy enablers for low-emissions steelmaking



# Green steel

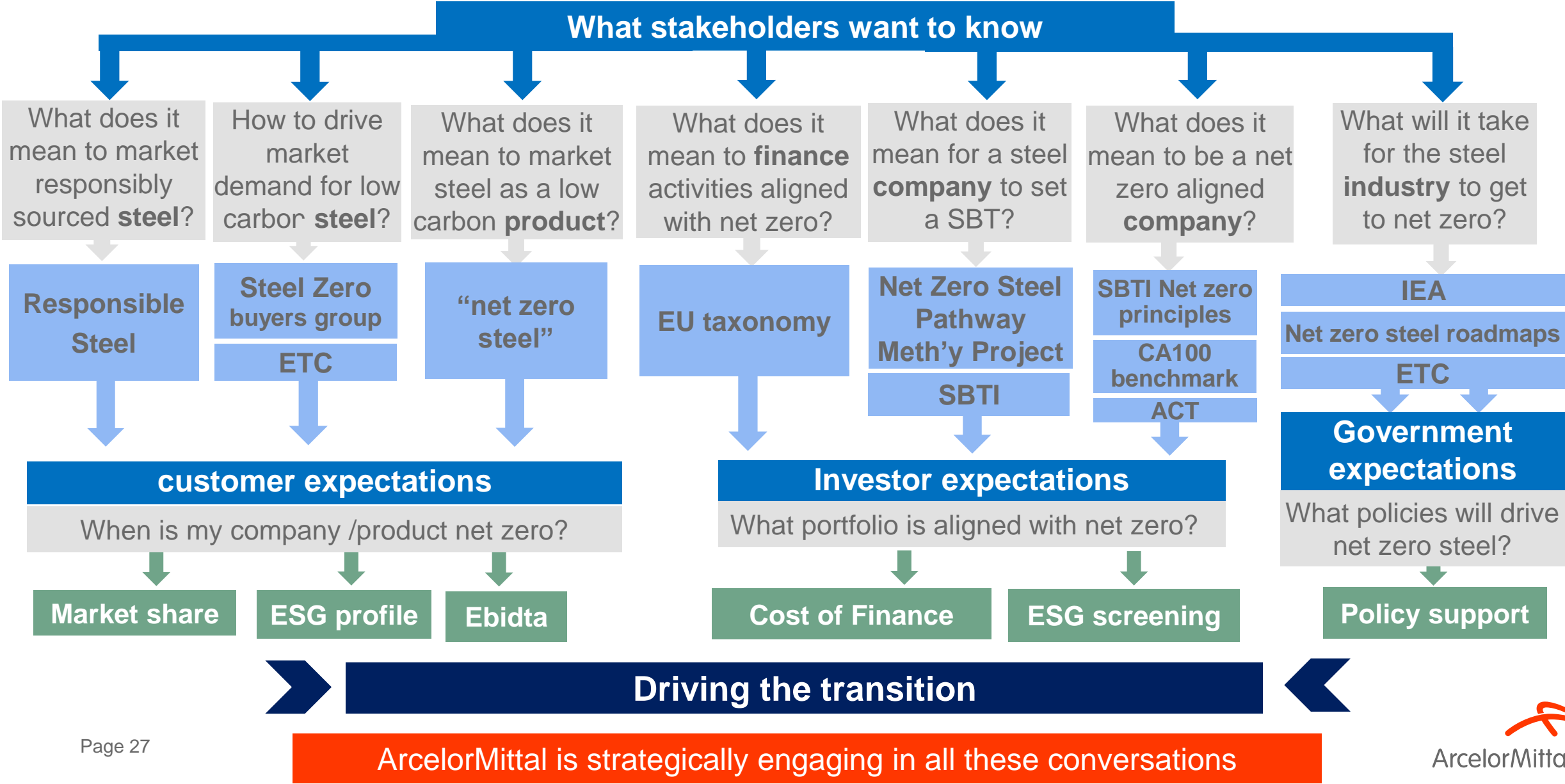
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## New commercial offering:

- Response to rising customer demand for low carbon steel
- ArcelorMittal is now offering **green steel**\* → 30kt this year rising to 600kt in 2022
- System of CO<sub>2</sub> savings certificates, issued by an independent auditor, equivalent to the CO<sub>2</sub> per tonne of steel produced in 2018 as a reference
- CO<sub>2</sub> savings linked to the Group's investments in decarbonization technologies. Starting with Carbalyst and Torero technologies, and increased hydrogen injection in blast furnace.
- The certificates will relate to the tonnes of CO<sub>2</sub> saved in total, as a direct result of the decarbonization projects being implemented across a number of its European sites.



# Explosion of net zero collaborations driving commitment, action and change





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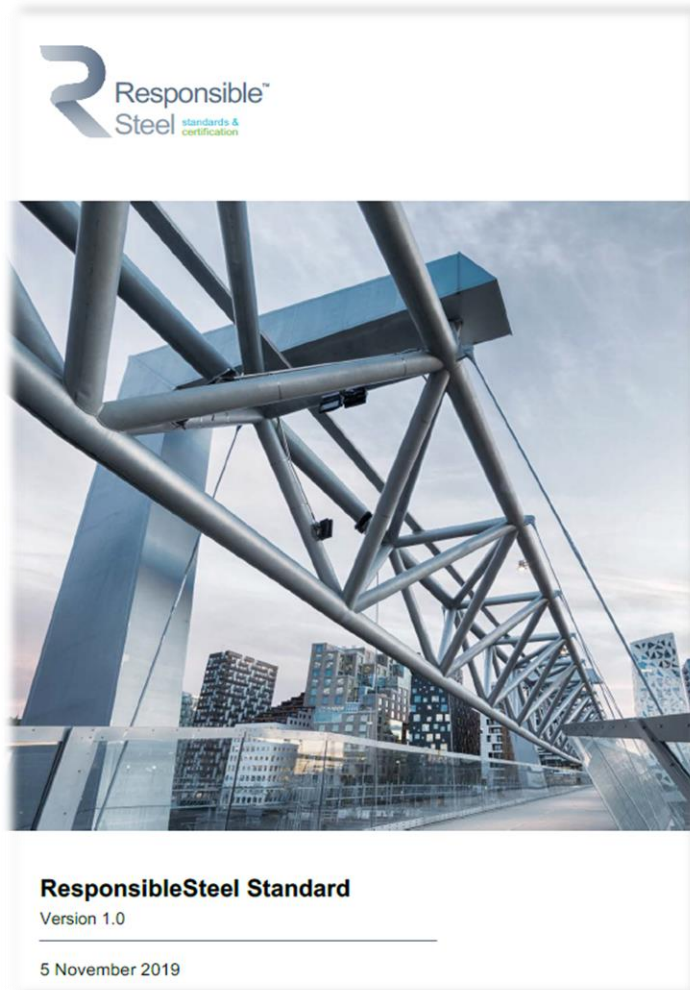




# ResponsibleSteel

A new global sustainability standard for the steel industry

- Providing a multi-stakeholder forum to build trust and achieve consensus;
- Developing standards, certification and related tools;
- Driving positive change through the recognition and use of responsible steel makers and products.



- Multi-stakeholder standard
- Independent assurance and oversight
- Intended to drive up standards over time
- Value to customer and steelmaker

# ResponsibleSteel members

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## Business members

- Anglo-American
- Aperam
- ArcelorMittal
- Australian Steel Mill Services
- BlueScope
- BMW
- Carport Central
- CLN Group
- Daimler
- HARSCO
- HBM Group
- Heathrow
- HSBC
- Lendlease
- Outokumpu
- Tata Group
- Teck
- VAMA
- Venlaw Park
- Voestalpine

## Civil society members

- CDP
- Clean Air Task Force (CATF)
- Fauna & Flora International
- IndustriALL
- IUCN
- Mighty Earth
- The Climate Group
- We Mean Business

## Associate members

- ACRS
- Afnor Group
- AURA Financial
- Australian Steel Institute
- Better Coal

- CARES
- Challenge Sustainability
- Climate Bond Initiative
- DNV GL
- EGGA
- Equitable Origin
- European Outdoor Group
- Exova – BM Trada
- Green Building Council of Australia (GBCA)
- GUTcert
- HERA
- International Manganese Institute (IMnI)
- International Zinc Association
- IRMA
- Levin Sources
- Lloyds Register Germany GmbH

- MAC-TSM
- MERG
- Minería Responsable Consultores
- Pacific Institute
- RTQMS
- Russian Academy of Sciences – Institute of Geography
- Sourcemap
- Steel Research & Technology Mission of India
- Sustainability Assurance Services (SAS) Global
- Sustainable Steel Council
- Track Record Global
- United Certification Systems (UCS)
- University of Waterloo

# Twelve principles

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## Governance Principles

1. Corporate Leadership
2. Social, Environmental, Governance Management Systems

## Social Principles

3. Occupational Health and Safety
4. Labour Rights
5. Human Rights
6. Local Communities
7. Stakeholder Engagement and Communication

## Environment Principles

8. Climate Change and Greenhouse Gas Emissions
9. Noise, Emissions, Effluents and Waste
10. Water Stewardship
11. Biodiversity

12. Decommissioning and Closure

# ArcelorMittal commits to ResponsibleSteel Site Certification



ArcelorMittal

**Target:** all Europe Flat sites to be ResponsibleSteel certified by end 2021.



“Responsible production techniques and standards have become increasingly important to our customers and consumers. It’s at the heart of how we do business, giving our customers the reassurance that we meet their sustainability expectations.”

**Geert Van Poelvoorde, CEO  
ArcelorMittal Europe – Flat Products**



# ResponsibleSteel will work with mining certification schemes



ArcelorMittal Mining has committed to IRMA certification of all marketable sites by 2025



ArcelorMittal Mining Canada has already achieved assurance against TSM



We have asked our top suppliers of coal and iron ore to join one of these schemes.







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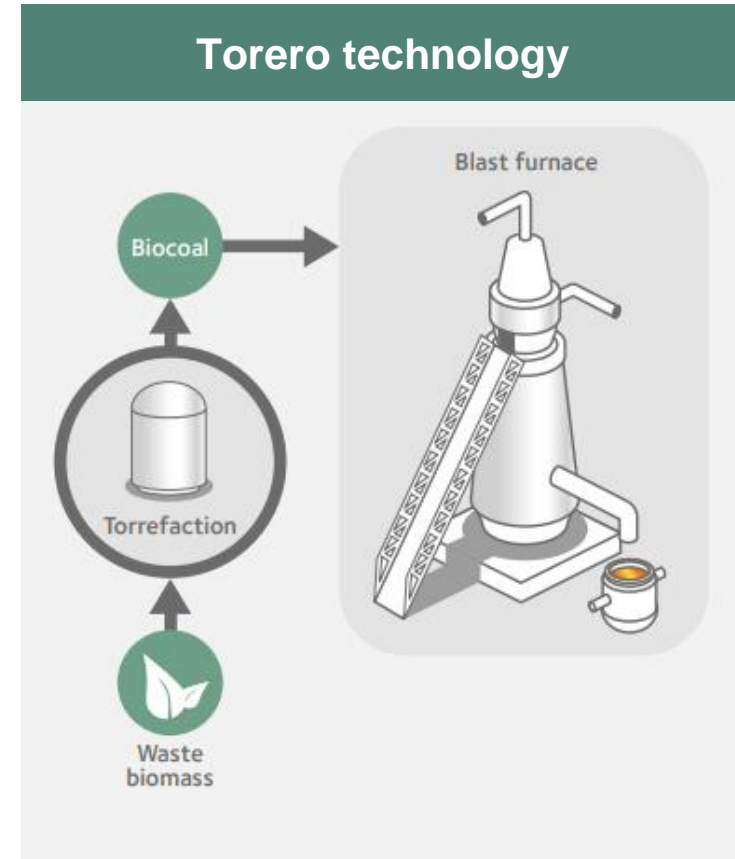
Appendix

# Torero

Reducing iron ore with waste carbon

- Developing our first **industrial-scale Torero demonstration plant** in Ghent, Belgium, with two reactors
- Targets the **production of 'circular carbon' inputs**, such as bio-coal from waste wood to displace the fossil fuel coal currently injected into the blast furnace
- €50 million investment; aims to convert 120,000 tonnes of waste agricultural and forestry residues into bio-coal annually
- Production via first reactor expected 2022; and via second reactor 2024
- Future projects would see expansion of sources of circular carbon to other forms of bio- and plastic waste

A 'smart carbon' technology

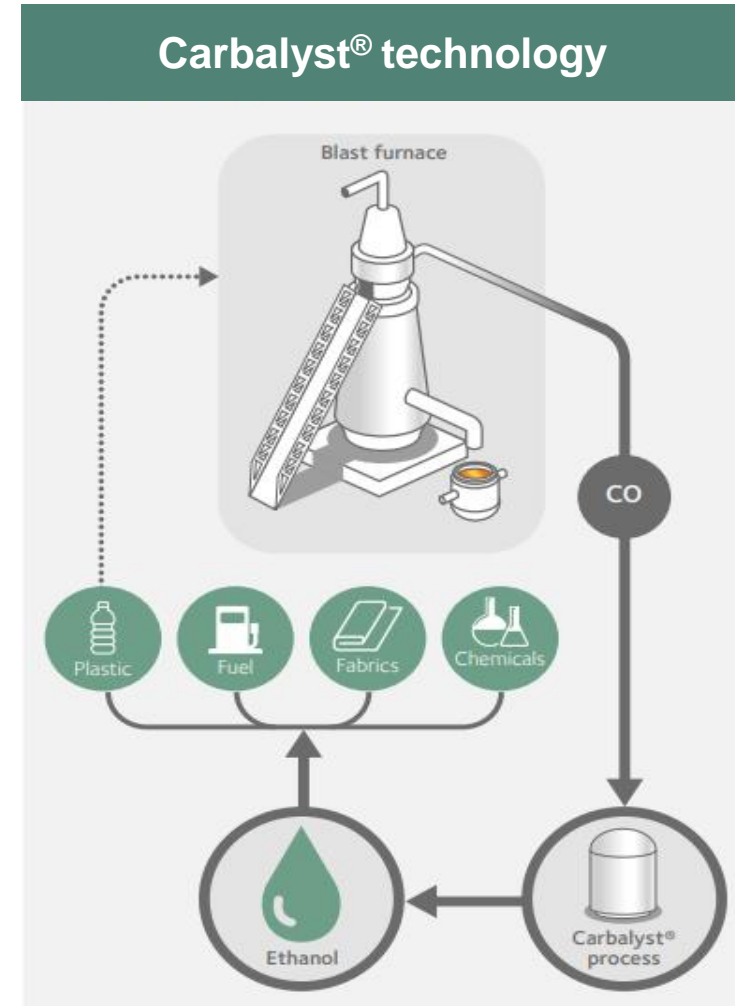


# Carbalyst®

Capturing carbon gas and recycling into chemicals

- Working with LanzaTech in Ghent, Belgium, to build **first industrial-scale demonstration plant to capture carbon off-gases** from the blast furnace **and convert** into a range of Carbalyst® **recycled carbon products**
- Project started in 2018; €165m investment cost; completion expected 2022; will capture ~15% of available waste gases and convert into 80m litres of ethanol annually
- LCA studies predict a **CO<sub>2</sub> reduction of up to 87%** from Carbalyst® bio-ethanol **compared with fossil transport fuels**
- This alone has the **potential to reduce CO<sub>2</sub> emissions equivalent to 100,000 electrical vehicles** on the road or 600 transatlantic flights annually

A 'smart carbon' technology



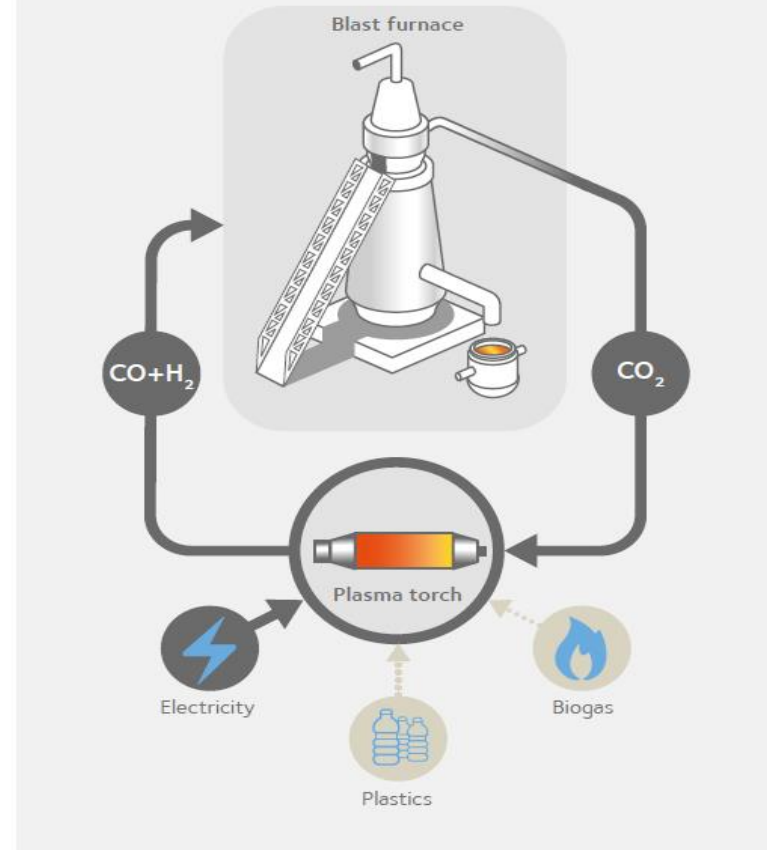
# IGAR: reforming carbon to reduce iron ore

Reforming carbon from waste gases or plastics to reduce iron ore

- The IGAR **pilot project** aims to capture waste CO<sub>2</sub> from the blast furnace and convert it into a synthetic gas (syngas) that can be reinjected into the blast furnace in place of fossil coal.
- In Dunkirk, ArcelorMittal is running a €20 million project, supported by the French ADEME, to construct a form and test the syngas.
- Future plans to reform waste plastics

A 'smart carbon' technology

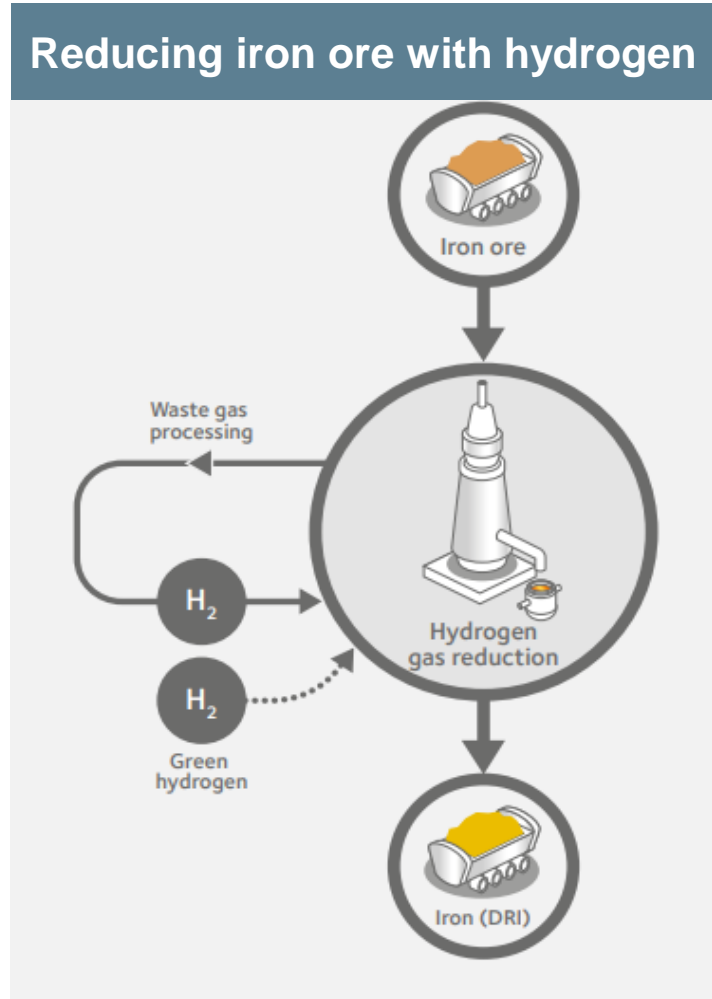
## The IGAR process



# H<sub>2</sub> Hamburg

Reducing iron ore with hydrogen via the DRI

- **Industrial scale demonstration** project at our Hamburg site
- Innovative DRI installation on 100% pure hydrogen for the direct reduction of iron ore for the steel production process
- Installation will generate hydrogen from natural gas and/or from the waste gases at the existing plant and demonstrate the hydrogen technology with an annual production of 100,000 tonnes of iron per year
- In the future, the plant should also be able to run on green hydrogen (generated from renewable sources) when it is available in sufficient quantities at affordable prices.
- Production start up expected 2023-5 dependent on funding





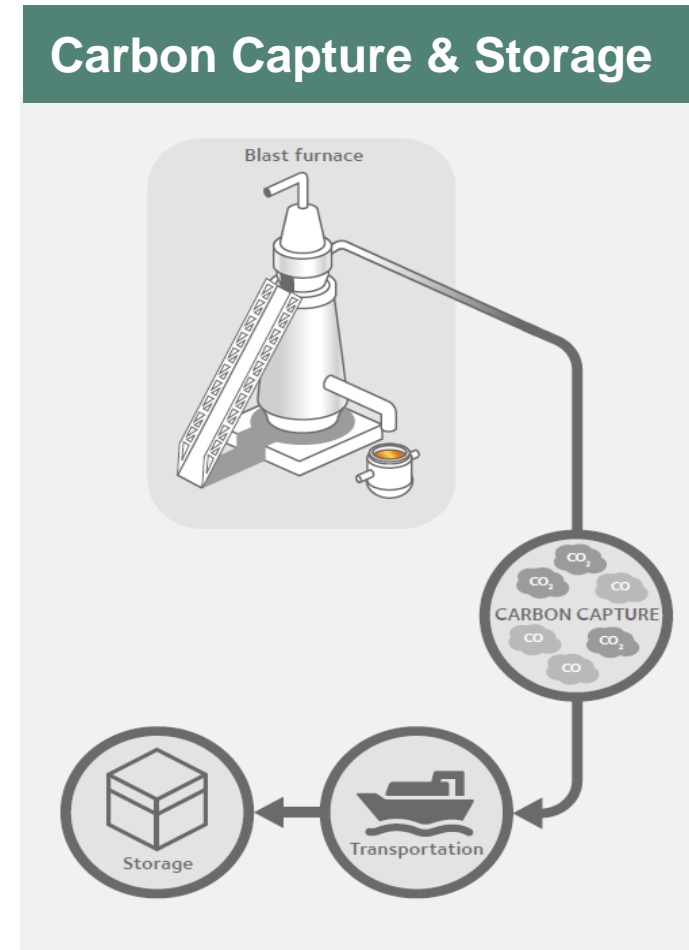
# Carbon capture: capturing fossil fuel carbon for storage or reuse

## “Carbon2Value”

- Developing cost-effective technologies to capture and separate CO<sub>2</sub> from our waste gases, and liquefy it for subsequent transport and storage or reuse.
- Combining this with a circular carbon energy input would further reduce CO<sub>2</sub> emissions.
- A pilot plant to capture CO<sub>2</sub> has been built in Gent, together with DOW Chemicals as part of the Carbon2Value project.

## “3D”

- €20m pilot project in Dunkirk, France to capture CO<sub>2</sub> (0.5 metric tonnes of CO<sub>2</sub>/hour) for transport/storage using only low-temperature waste heat.
- Completion expected 2021



# Policy requirements – the ‘missing pieces’

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The medium-term market conditions needed include:

- Creating an environment where carbon-neutral steel is more competitive than steel which is not carbon neutral
- A fair competitive landscape that accounts for the global nature of the steel market, addressing domestic, import and export steel dynamics, as well as the distinction between primary and secondary sources to make steel.
- Access to finance: innovation funding and compensation for high costs of roll out.
- Access to abundant, affordable clean energy: the scale of the steel industry’s energy needs are such that concerted cross-sector and government efforts will be required to develop the necessary clean energy infrastructure.
- Public instruments to accelerate innovative technology deployment to transition to carbon neutral steelmaking.



# The European Green Deal as the EU's recovery strategy

## Funding for low carbon transition:

- Innovation fund (€10bn for 7yrs) – ArcelorMittal has made several applications
- Existing initiatives – SPIRE (energy); Clean Steel Partnership / Horizon Europe (steel)
- IPCEI – additional funding for steel to overcome obstacles to roll out
- EU has identified Carbon Border Adjustment as source of budget funding
- Revision of State Aid guidelines under consideration to enable support mechanisms for industry transition e.g. Contracts for Difference

## Focus on core steel markets:

- **Construction:** Renovation in buildings & infrastructure and a more circular economy
- **Renewable energy projects:** wind, solar, kick-starting clean hydrogen economy
- **Automotive industry:**
  - Purchasing facility for clean vehicles to reduce CO<sub>2</sub> / pollutant emissions in line with EU standards
  - Clean automotive investment fund to accelerate investments in zero-emission drive trains
  - Doubling EU investment on electric car recharging infrastructure
- **Mobility:**
  - Rails investment (€40bn): Rolling stock/ development of corridors for passengers and freight
  - Urban mobility cycling, public and individual transport



# Significant stimulus deployed

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## EU: Automotive stimulus package

### France

- Increased subsidies: ex €7k for individual to buy EV and €5K for corporate; subsidies to change vehicles (ICE or EV);
- Relocalisation and support for local EV production → Target 1 Million EV/yr by 5 years

### Germany

- €130bn for all economy
- €6K euro incentive for battery electric cars costing <€40K
- Passenger car incentives: lowering VAT to 16% from 19%
- Motor vehicle tax reform. From Jan'21, cars with an emission of >95 grams/CO<sub>2</sub> per/km face staggered tax



# Our approach to Human rights: through the lens of management control

