ArcelorMittal roadmap to net zero

Corporate Strategy
October 2022
Agenda

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• Decarbonisation roadmap
• Decarbonisation projects
• XCarb innovation fund
• Other initiatives to drive industry decarbonisation forward
About ArcelorMittal
<table>
<thead>
<tr>
<th>Description</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Steel manufacturing in</td>
<td>16 countries</td>
</tr>
<tr>
<td>Customers in</td>
<td>155 countries</td>
</tr>
<tr>
<td>Employees in 2021</td>
<td>155,000</td>
</tr>
<tr>
<td>Millions of tonnes of iron ore mined in 2021</td>
<td>50.9</td>
</tr>
<tr>
<td>Steel shipment tonnes totalled in 2021</td>
<td>62.9</td>
</tr>
<tr>
<td>Trademarked products</td>
<td>200+</td>
</tr>
<tr>
<td>Active patent families</td>
<td>700+</td>
</tr>
<tr>
<td>New products and solutions launched 2021</td>
<td>51</td>
</tr>
<tr>
<td>Research centres</td>
<td>11</td>
</tr>
<tr>
<td>R&amp;D programs in progress</td>
<td>100+ in progress</td>
</tr>
<tr>
<td>LCA studies conducted in 2021</td>
<td>37</td>
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Decarbonisation roadmap
Highlights from ArcelorMittal’s Climate Action Report

ArcelorMittal is at the forefront of the industry, developing clear industrial transformation plans and capturing commercial opportunities.

**Leading the industry**

- New target of a 25% reduction in Group CO₂e per tonne of steel by 2030 (scopes 1+2, steel + mining)
- Europe target accelerated to 35% (from 30%) reduction of CO₂e per tonne of steel by 2030

**World’s first full-scale zero carbon-emissions steel plant**

- World’s first full-scale zero carbon-emissions steel plant at Sestao by 2025
- Plans to produce a combination of physical zero carbon emissions steel and XCarb™ green steel certificates

**First to market**

- Customer appetite for “net zero” steel is real, as demonstrated by demand for our XCarb™ product offering launched in Q1’ 21

**Funding**

- $10bn total investment required to achieve 2030 Group decarbonisation target; expectation public funding to cover 50%
- Securing public funding support is central to our plans and provides an opportunity to accelerate
Net-Zero Roadmap

For the first time, we have disclosed a roadmap that shows our journey to net-zero.
Decarbonisation projects

Primary steel decarbonisation
Need to transition both secondary and primary steel production to achieve carbon neutrality

- **Secondary Steel Production**
  - Clean electricity

- **Primary Steel Production**
  - Clean electricity
    - Directly or via green hydrogen
  - Circular carbon
    - Sustainable biomass and circular waste thru carbon capture and use
  - Carbon capture and storage (CCS)
    - Neutralising emissions from remaining fossil fuels
Making Carbon-Neutral Steel: 1) The Smart Carbon Route

Evolving existing Blast Furnace technology with use of circular carbon and incorporating carbon capture, storage and use; longer term incorporating clean hydrogen as reductant.
Belgium: using innovative technology to leverage circular carbon and achieve net-zero steel
Transforming waste into energy and off-gases into renewable fuels and chemicals

**Carbalyst**
A family of technologies involving gas-fermentation technology using microbes to convert waste gases into advanced bioethanol for use in transport and to make plastics.

**CarbHFlex – bioplastics**
A technology that uses microbes to produce from its waste carbon acetone and isopropanol, both basic chemicals used to make plastics.

**Bioethanol**
- **Status**: Industrial scale demonstration plant
- **Cost**: ~€180m gross investment
- **Capacity**: 80 million liters of bioethanol
- **Expected completion**: 2022

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**Torero**
The pyrolysis of biomass and waste at low temperature (2-300ºC) to produce renewable energy in form of biocoal, biofuels, biogases.
This source of waste wood is considered hazardous material if burnt in an incinerator as it emits harmful gases. However, in a blast furnace no such pollutants can be formed.

- **Status**: Industrial scale demonstration plant
- **Cost**: €55m gross investment
- **Capacity**: 2 reactors will each produce 40,000t of bio-coal pa for use in the blast furnace as a substitute for coal
- **Expected completion**: 2022 (reactor 1) & 2024 (reactor 2)

**Total cost Carbalyst/Torero**: €235m

**Annual emission savings**: Up to 350kt CO2eq

**Combined EBITDA contribution from both projects to generate €40m a year (from the sale of bioethanol fuels)**

**Status**
Shortlisted for IPCEI funding in 2021
Making Carbon-Neutral Steel: 2) The Innovative DRI-Based Route

Replacing traditional Blast Furnace technology with natural-gas based DRI-EAF (Direct Reduced Iron-Electric Arc Furnace) solutions to further innovate and decarbonise through the use of green hydrogen, and potentially bioenergy and carbon capture, transport and storage.
Spain: the world’s first full-scale zero carbon-emissions steel plant at Sestao

New DRI installation in Gijón coupled with EAF in Sestao will allow the plant to become carbon-neutral by 2025

**Project summary**
ArcelorMittal’s Sestao plant in Spain will become the world’s first full-scale zero carbon-emissions steel plant. Central to this development will be the construction of a 2.3Mt green hydrogen DRI unit in Gijón. Around 1Mt of DRI will be transported to Sestao to be used a feedstock for its two EAFs.

**Funding**
ArcelorMittal signed a memorandum of understanding (MoU) with the Spanish Government in July 2021 that will see a €1bn investment in decarbonisation technologies at ArcelorMittal Asturias’ plant in Gijón, including a 2.3Mt green hydrogen DRI plant and hybrid EAF.

**Asset plan and strategy**
- Metallic input into EAFs from zero carbon emission sources
- Increased % of circular, recycled scrap
- Green hydrogen-produced DRI from Gijón in Sestao’s two existing EAFs
- Powering all steelmaking assets (EAFs, rolling mill, finishing lines) with renewable electricity, either by establishing a renewable energy power purchase agreement (PPA) or buying renewable energy guarantees of origin certificates (GOOs)
- Several key emerging technologies to replace the remaining use of fossil fuel with carbon-neutral energy inputs, e.g. sustainable biomass or green hydrogen

**Cost**

<table>
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<tr>
<th>Cost</th>
<th>€1bn</th>
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<tr>
<td>Annual emission savings by 2025</td>
<td>4.8Mt CO₂eq</td>
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Hamburg: Europe’s only DRI-EAF facility, with ambitions to produce zero carbon emissions
Commitment of €55 million from Federal Government brings Hamburg closer to zero carbon-emissions steel production

Project summary
Europe’s only DRI-EAF plant where the switch to using hydrogen instead of natural gas in the iron ore reduction process is being prepared. Further project underway to test the ability of hydrogen to reduce iron ore and form DRI on an industrial scale, as well as testing carbon-free DRI in the EAF steelmaking process. Aiming to reach industrial commercial maturity by 2025, initially producing 100,000 tonnes of DRI/year.

Funding
The Federal Government has expressed its intention to provide €55 million of funding support towards the construction of the plant, which is half of the €110 million total capital expenditure required.

Asset plan and strategy
- Collaborating with Shell, Mitsubishi and other cross-industry companies to form the Hamburg Green Hydrogen Hub, with the goal of generating energy from renewable sources
- The process of reducing iron ore with hydrogen will first be tested using grey hydrogen generated from gas separation
- In the future, the plant should also be able to run on green hydrogen when it is available in sufficient quantities at affordable prices, with the clean energy for hydrogen production potentially coming from wind farms off the coast of Northern Germany
Canada: ArcelorMittal’s first major decarbonization announcement outside of Europe

CAD$1.8 billion investment at site in Hamilton will reduce 2.9Mt CO₂ within the next seven years

**Project summary**

ArcelorMittal Dofasco to reduce annual CO₂ emissions at ArcelorMittal’s Hamilton, Ontario operations by approximately 3Mt, within the next seven years. July 2021 the Government of Canada announced it would invest CAD$400m in the project and on Feb 15, 2022, the Government of Ontario announced it would invest CAD$500m in the project. This secured project funding and enabled ArcelorMittal to firm up the investment.

**Funding**

Low emissions steelmaking in Canada; finalizing Government of Canada support and in discussions with Government of Ontario

**Employment**

- Sustaining well-paying skilled positions in advanced manufacturing
- Approximately 160,000 training hours required to transition our workforce to the new footprint.
- Up to 2,500 jobs during the engineering + construction phases

**Asset Plan**

- New 2Mt DRI plant and 2.4Mt EAF
- Modification of existing EAF and continuous casters to align productivity, quality and energy capabilities of all assets
- New DRI and EAF will be in production before the end of 2028
- High-quality steel products for automotive and packaging

**Cost**

<table>
<thead>
<tr>
<th>Cost</th>
<th>CAD$1.8bn</th>
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<tr>
<td>Annual emission savings by 2028</td>
<td>2.9Mt CO₂eq</td>
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Hon. Chrystia Freeland, Deputy Prime Minister and Minister of Finance, Government of Canada at the Dofasco announcement
Belgium: €1.1bn project for decarbonisation technologies at Gent

ArcelorMittal Belgium to reduce CO2 emissions by c.3.9Mtpa by 2030*

**Project summary**
ArcelorMittal Belgium will reduce CO2 emissions by 3.9Mtpa by 2030, by building a 2.5Mt direct reduced iron (DRI) plant and two electric furnaces at its Gent site, to operate alongside its state-of-the-art blast furnace that is ready to take waste wood and plastics as a substitute for fossil carbon.

**Funding**
ArcelorMittal has signed a letter of intent with the Governments of Belgium and Flanders, supporting a €1.1bn project (EC approval still required).

**Asset Plan**
- New 2.5Mt DRI plant and 2 new electric furnaces (EF)
- Gradual transition from BF to the DRI & EF (replacing one BF reaching end of life by 2030) resulting in 3Mt of CO2 emissions reduction each year
- New capacity to operate alongside Gents state-of-the-art BF B (restarted Mar’2021 with €195m investment). BF B ready to take waste wood and plastics as a substitute for fossil carbon
- DRI plant to operate alongside various decarbonisation projects including Gent’s Steelanol/Carbalyst and Torero projects (commissioned in 2022) – annual CO2 emissions reduction of ~900Kt by 2030
- Hybrid model of Smart Carbon and Innovative DRI steelmaking in Gent fits into ArcelorMittal Belgium’s CO2 roadmap

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<th>Cost of DRI/EAF shift</th>
<th>€1.1bn</th>
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<tr>
<td>Annual emission savings by 2030 for DRI/EAF</td>
<td>3.0Mt CO2eq</td>
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*3.9m reduction includes 0.9m CO2 reductions of Smart carbon initiatives*
Canada: ArcelorMittal Mines Canada to produce 10Mtpa DRI pellets by end 2025
Announcement of a CAD$205m investment with the government of Quebec to create one of world’s largest DRI pellet plants

Project summary
ArcelorMittal Mines Canada (AMMC) to invest CAD$205m in its Port-Cartier pellet plant, enabling this facility to convert its entire 10Mtpa annual pellet production to direct reduced iron (DRI) pellets by the end of 2025, delivering 200,000t direct CO₂ savings for AMMC - important role in ArcelorMittal’s efforts to reduce our group’s CO₂e emissions intensity by 25% by 2030

Funding
The Government of Quebec will contribute through an electricity rebate of up to CAD$80m

Employment
~250 jobs are expected to be created during the construction phase, from mid-2023 - end 2025

Asset Plan
✓ expands ArcelorMittal’s ability to produce high-quality DRI-ready pellets
✓ shift from current mix of 7Mtpa blast furnace pellets / 3Mtpa DRI-ready pellets to 10Mtpa DRI-ready pellets annually
✓ will feed significant demand for DRI pellets in ArcelorMittal’s planned DRI-EAF steelmaking plants in Canada and Europe

Carbon reduction
✓ direct annual CO₂e reduction of ~200,000 tonnes at Port-Cartier pellet plant via reduction in the energy required during the pelletizing process
✓ equivalent to >20% of the plant’s total annual CO₂e emissions

Cost
CAD$205m

Annual emission savings by 2028 (tCO₂e)
200,000
XCarb innovation fund
What are we looking for?

- Companies that are developing a technology which holds strong potential to decarbonise steelmaking
- Commercially scalable technologies
- Any geography will be considered
- There are no restrictions or limit to the number of companies we can hold in the portfolio; we are looking to invest in the best and brightest companies and ideas on the market
- Similarly, there is no set limit on the monetary figure of individual investments. Each potential investment opportunity is assessed on its own merits
- We prefer to be amongst the only strategic investors to the business

Our target technology domains:
- Disruption in steelmaking
- Waste to gas or biocarbon
- Gases reforming/Gases transformation technologies
- Disruptive hydrogen technologies
- Carbon capture, utilisation and storage
- Long-duration, large-scale energy storage technologies
- Clean energy technologies

Carbon neutral by 2050
Annually investing... $100m
To date committed... $180m
ArcelorMittal’s XCarb™ Innovation fund was launched in early 2021. The Company anticipates investing up to $100 million annually through the fund.

Aligned with ArcelorMittal’s purpose, ‘Smarter steels for people and planet’, the XCarb™ Innovation Fund invests in companies with the potential to accelerate the transition to low, and ultimately zero, carbon emission steelmaking, enabling them to develop more quickly and achieve the scale needed for their technologies to become commercially viable.

To date, ArcelorMittal has invested $80 million across four targets:

- Heliogen, a renewable energy company which focuses on unlocking the power of sunlight to replace fossil fuels
- Form Energy, which is working on the development of its breakthrough energy storage technology
- LanzaTech, a carbon recycling company
- H2Pro, which is developing a disruptive way of producing hydrogen from water.

ArcelorMittal is also an anchor partner in the Breakthrough Energy Catalyst, committing to an equity investment of $100 million over the next five years.

“The fund adds an exciting new element to our CO₂ technology strategy. It is a further sign of our commitment to aiding the development of technologies which can help to support the decarbonisation of our company and our industry.”

Aditya Mittal, Chief Executive Officer, ArcelorMittal
Other initiatives to drive industry decarbonisation forward
We are helping to define the low-carbon emissions steel standard

Supporting the creation of market demand for physical steel products which would be classified as lower, and ultimately near-zero, carbon emissions steel

3 core principles:

1. **Dual score system**
   - LCA value for finished products (EPD for construction products)
   - Decarbonisation progress rating system

2. **Sliding scale based on the % of scrap used in production**
   - Focuses decarbonisation on technology shifts rather than just increasing scrap rates with existing technology
   - Aligns with ResponsibleSteel™ and International Energy Agency (‘IEA’) low-carbon emissions steel models

3. **Clearly defined system boundary for decarbonisation rating, including**
   - All iron and steelmaking processes up to hot rolled product
   - Upstream material inputs, excluding ferroalloys

Complements methods to reward virtual low-carbon steel, at least until significant amounts of physical low-carbon steel are available
Engaged in internal initiatives and external forums to advance progress towards net zero steel

- TCFD compliant climate scenario analysis
- Just transition planning
- Preparing for new mandatory and voluntary disclosure requirements
- Scope 3 development
- SBTi science-based target setting methodology
- Supporting multi-stakeholder initiatives on steel decarbonisation
Thank you