EB-2021-0002

Enbridge Gas Inc.

Application for Multi-Year Demand Side Management Plan (2022 to 2027).

IGUA Compendium for Examination

GOWLING WLG

ENBRIDGE GAS INC.

Answer to Interrogatory from
Association of Power Producers of Ontario (APPrO)

Interrogatory

Issue 10e

Reference:

Exhibit E, Tab 1, Schedule 6, pp. 1 and 5-9

Preamble:

EGI's Direct Access Offering encourages large volume customers (LVCs) to maintain a focus on energy efficiency by encouraging the development of energy efficiency plans and encouraging action on identified efficiency opportunities.

Question(s):

a) For each of EGI's LVC rate class(es), please provide the following information in tabular format for 2020 (actuals), 2021-2022 (forecast), and 2023-2027 (proposed):

   (i) number of customers in each rate class and the proportion of those customers that are gas-fired generators (GFGs);
   (ii) number of customers in each rate class that participate in DSM programs and the proportion of those customers that are GFGs; and
   (iii) DSM costs allocated to the rate class (through base rates and deferral and variance accounts).

Response

a) i. As per EB-2021-0002, Exhibit E, Tab 1, Schedule 6, page 7 of 9 Large Volume Program Proposal, Eligibility Criteria:

> To be eligible for the offering, participants must be an Enbridge Gas customer in Rate T2 and Rate 100 in the Union rate zones as of January 1st in a given program year.

As such, there are no Large Volume Program Customers in the EGD rate zone.

Table 1
Large Volume Program Customers – Union Rate Zones

Union Rate Zones Rate Class	All Customers (2)			
	Actual	Unaudited (1)	Forecast	Forecast
	2020	2021	2022	2023-2027
T2 South	25	25	25	25
T2 South GFG	8	8	8	8
100 North	12	12	12	13
100 North GFG	1	1	1	1

Notes:
(1) 2021 Results are unaudited.
(2) Figures represent customer count at the beginning of each year.

ii.

Table 2
Large Volume Program DSM Participants – Union Rate Zones

Union Rate Zones Rate Class	DSM Participants	
	Actual	Forecast[1]
	2020	2021-2027
T2 South	18	TBD
T2 South GFG	3	TBD
100 North	9	TBD
100 North GFG	1	TBD

Notes:
(1) Enbridge Gas cannot forecast customer participation for 2021-2027.

iii. Please see Table 3 for the DSM costs included in rates for 2020, 2021, and 2022, as filed in the annual rates application for rate classes eligible for the Large Volume program.[1] Please see Exhibit F, Tab 1, Schedule 2, filed September 29, 2021, for the proposed DSM costs allocated to rate classes for 2023 to 2027. Note, Enbridge Gas has not filed DSM deferral and variance accounts for the referenced years. Please see response to Exhibit I.7.EGI.STAFF.17a for rate impacts inclusive of estimates for DSM deferral and variance accounts for 2023 – 2027.

Table 3
Board-Approved DSM Costs in Base Rates – Union Rate Zones

Union Rate Zones Rate Class	2020 EB-2019-0194 ($000s)	2021 EB-2020-0095 ($000s)	2022 EB-2021-0147 ($000s)
Rate T2	4,725	4,725	4,725
Rate 100	1,147	1,147	1,147

[1] The amounts provided include the total of program costs, overhead allocations and the low-income allocation.

Net Present Value ("NPV")	The NPV is the sum of the discounted yearly benefits arising from an investment over the lifetime of that investment.
Net Savings	Energy or natural gas savings that have been adjusted for net to gross or other adjustment factors as necessary.
Net-to-Gross Ratio	The ratio of net savings to gross savings for a particular DSM offering, program, or measure type. The ratio accounts for the amount of savings claimed by the utility that it has influenced. The ratio includes consideration of free ridership and spillover.
New Construction Measures	Efficiency measures in new construction or major renovations, whose baseline would be the relevant code or standard market practice.
Non Energy Benefits ("NEBs")	The wider socio-economic or environmental outcomes that arise from energy efficiency improvements, aside from energy savings. NEBs can include but are not limited to impacts such as improved safety, improved health, and job creation. For example, offering participants may benefit from increased property value, and improved health and comfort. The TRC-Plus test includes a 15% adder to the benefits calculation to account for NEBs.
Offering (DSM)	One or more DSM activities or measures which a utility may use to affect a specifically identified target market in their choices around the amount and timing of energy consumption.
Part 3 Building	As referenced in the Ontario Building Code, buildings exceeding 600 square meters in building area or exceeding three stories in building height and used for residential, businesses, mercantile or medium to low hazard industrial occupancies, as defined under Building Code Act, 1992, S.O. 1992, C.23.
Part 9 Building	As referenced in the Ontario Building Code, all buildings of three or fewer stories in building height, having a building area not exceeding 600 square meters, and used for residential occupancies, businesses, mercantile, or low hazard industrial occupancies, as defined under Building Code Act, 1992, S.O. 1992, C. 23.

- DSM Plans should be designed to provide opportunities for a broad spectrum of consumer groups and customer needs to encourage widespread customer participation over time and "ensure all segments of the market are reached."[7]
- DSM plans should include strategies to increase the natural gas savings by targeting key segments of the market and/or customers with significant room for efficiency improvements.
- DSM plans should minimize lost opportunities for energy efficiency and should be designed to pursue long term energy savings.

Direct Access Offering

Background

12. Enbridge Gas has been delivering the Direct Access offering to Large Volume customers since 2013. The self-direct model has been largely well received by participants with a few exceptions. The offering continues to drive substantial cost-effective results.

13. The program provides an important opportunity for Enbridge Gas Technical Account Managers to work with these key gas customers to continue to drive natural gas savings. The direct access approach compels these customers to work with Enbridge Gas Technical Account Managers to execute on identified energy efficiency opportunities and access their portion of available incentives and services. Importantly, even with current higher free-ridership rates, given the size of these customers and the volume of consumption, the program drives substantial net gas savings that are cost-effective.

14. Further, Enbridge Gas continues to believe, given the nature of the self-direct offering, all eligible customers are provided with the opportunity to use a distributed

[7] EB-2019-0003, OEB Letter Post-2020 Natural Gas Demand Side Management Framework (December 1, 2020), p. 5.

portion of the funds for energy efficiency upgrades reducing the risk of cross-subsidization.

Objective

15. The goal of this offering is to encourage Large Volume customers to maintain a focus on energy efficiency by encouraging the development of an Energy Efficiency plan and take action on identified efficiency opportunities.

Target Market

16. This offering is delivered to customers in Rate T2 and Rate 100 in the Union rate zones. These customers are generally classified as Industrial (steel, pulp and paper, auto manufacturers), chemical manufacturers and refineries, and gas fired electricity generators.

Offering Details

17. In order to participate in the Direct Access offering, customers must:
    - Submit an Energy Efficiency Plan ("EEP"), authored with the assistance of Enbridge Gas Technical Account Managers. The EEP serves as a roadmap allowing customers and Enbridge Gas to actively work together, driving energy efficiency projects at customers' sites and facilities. Projects identified on the EEP are earmarked for funding.
    - Work with Enbridge Gas Technical Account Managers to quantify and track annual natural gas savings achieved by each completed project.

18. To compel customers to participate in the offering and pursue cost-effective energy conservation opportunities, Enbridge Gas uses a direct access funding model. The direct access budget mechanism grants each customer access to the forecasted incentive budget they pay in rates. In this way, customers know how much funding

they have available each program year, allowing them to appropriately plan expenditures to reduce annual energy usage in their facility.

19. If a customer elects not to submit an EEP or if the direct access budget funds are not fully earmarked or used by a certain date, the unallocated funds are dispersed via an aggregated pool approach. Funds transferred to the Large Volume Aggregate Pool are available to fund additional energy efficiency projects for all other customers eligible for offering on a first-come-first-served approach. This approach is intended to focus the customer on energy efficiency through execution of the EEP and the "use it or lose it" nature of funding model.

Eligibility Criteria

20. To be eligible for the offering, participants must be an Enbridge Gas customer in Rate T2 and Rate 100 in the Union rate zones as of January 1st in a given program year.

Incentives/Enablers[8]

21. Participants can receive fixed incentives associated with the completion of eligible engineering projects as well as incentives which are commensurate with the Enbridge Gas approved natural gas savings estimates.

22. Incentives associated with eligible engineering projects contemplated at the time of submission include:

- Engineering Feasibility Study: 50% funded up to $10,000
- Process Improvement Study: 66% funded up to $20,000
- Steam Trap Survey: 50% funded up to $6,000
- Metering: 50% of meter costs funded up to $5,000

[8] Incentive details are provided as currently contemplated, Enbridge Gas routinely examines and adjusts incentive amounts in response to opportunities and market conditions, and in an effort to maximize program performance and results over the course of the Multi-Year term.

ENBRIDGE GAS INC.

Answer to Interrogatory from
Association of Power Producers of Ontario (APPrO)

Interrogatory

Issue 10e

Reference:

Exhibit E, Tab 1, Schedule 6, pp. 3-5
Exhibit E, Tab 4, Schedule 6, pp. 8-9

Preamble:

EGI notes that its Large Volume Program Strategy "builds on the successes and learnings of the existing Large Volume program, with modifications intended to be responsive to customer feedback."

EGI indicates that changes to the Large Volume program include reducing the Large Volume program budget which will decrease DSM related rate impacts in the Rate 100 and T2 large volume rate classes.

EGI indicates that it engaged a number of LVCs and stakeholders to provide an overview of the proposed Direct Access offering. EGI notes that some stakeholders were opposed to paying for DSM programming while others were supportive of increasing funding for the Large Volume program.

Question(s):

a) Please provide the expected rate impacts of the proposed Large Volume program for each rate class.

b) Please provide specific examples of the feedback EGI received, both in favour of the Large Volume Program and against the program. Did the consultation include gas-fired generators (GFGs)? If yes, how many? Please describe their feedback. If no, why not?

c) Please provide all working papers, analysis, and reports written or carried out supporting EGI's decision to reduce the incentive budget and total Direct Access offering budget for the base year and corresponding inflationary increases.

d) Please indicate in what way EGI is increasing the flexibility of the types of projects eligible for the Direct Access offering?

Response

a) Please see Exhibit F, Tab 1, Schedule 3 for the 2023 DSM Budget bill impacts. Enbridge Gas has not prepared rate class allocations based on individual programs.

b) The consultation included GFGs. Enbridge Gas received feedback from two-thirds of the total GFGs that are eligible to participate in the Large Volume DSM program. The high-level Summary feedback from the consultation process can be found in Exhibit E, Tab 4, Schedule 6, pages 7-8. The majority of gas-fired generators were supportive of the amended plan. In addition, Enbridge Gas received formal written support from two gas-fired generation facilities regarding the changes to the program and their eagerness to continue participating. Please see Attachment 1 for the letter of support.

c)

Table 1
Large Volume Program Incentives

Union Rate Zones Rate Class	**2016**	**2017**	**2018**	**2019**	**2020**
T2 South	$2,245,707	$1,689,390	$1,897,903	$2,341,189	$2,133,740
100 North	$195,526	$424,944	$442,996	$343,290	$753,276

The $2.499M incentive budget in 2023 was based on the 5 year (2016 to 2020, see Table 1 above) average historical incentive spend. Enbridge Gas provided the following analysis to IGUA to help their membership understand potential bill impacts.

					Components added Feb 19th								
Rate T2 DSM Allocation													
2019 LV Program (Forecast and included in rates)													
Component	**Total**		**% of incentive**	**Unit Rate**									
LV Program Incentives/Promotion	$	2,497,889										Filed: 9/30/2019	
LV Program Evaluation	$	49,958	2%		**Rate T2 Contract Carriage Service**	Current Approved Rates	2019 Forecast Usage	2019 DSM Budget ($000)	2019 DSM Rate (cents/m^3)			EB-2018-0305	
LV Program Administration	$	624,076	25%		Monthly Demand Charge							Exhibit F1	
DSM Portfolio Overhead	$	310,550	12%		First 140,870 m^3	32.0198	57,679	1,512	2.6219			Tab 2	
Total LV Program w/overhead	$	3,482,472		0.0763	All Over 140,870 m^3	16.9369	213,647	2,963	1.3868			Rate Order	
Low Income Allocation	$	1,129,744		0.0248	Interruptible Commodity Charge	1.0043	166,655	137	0.0822			Schedule 10	
Total DSM allocation in rates	$	4,612,216		**0.1011**	Total Rate T2			**4,612**	**0.1011**			Page 4	
2018 DSM deferral and variance account clearances													
Reference EB-2020-07-17, Ex C, T3, Sch 1, Table 7													
DSMIDA		$0											
LRAMVA		($9,315)											
DSMVA		($279,874)											
Total deferral balance		($289,189)											
Rate 100 DSM Allocation													
2019 LV Program (Forecast and included in rates)													
Component	**Total**		**% of incentive**	**Unit Rate**									
LV Program Incentives/Promotion	$	652,111										Same as above	
LV Program Evaluation	$	13,042	2%		**Rate 100 Large Volume Firm Servic**	Current Approved Rates	2019 Forecast Usage	2019 DSM Budget ($000)	2019 DSM Rate (cents/m^3)			Page 2	
LV Program Administration	$	162,924	25%										
DSM Portfolio Overhead	$	81,074	12%										
Total LV Program w/overhead	$	909,152		0.0892	Delivery Demand Charge	15.0877	41,307	833	2.0175				
Low Income Allocation	$	202,007		0.0198	Delivery Commodity Charge	0.2199	1,019,625	278	0.0272				
Total DSM allocation in rates	$	1,111,159		**0.1090**	Total Rate 100			**1,111**	**0.109**				
2018 DSM deferral and variance account clearances													
Reference EB-2020-07-17, Ex C, T3, Sch 1, Table 7													
DSMIDA		$0											
LRAMVA		($5,007)											
DSMVA		($1,075,320)											
Total deferral balance		($1,080,327)											

d) As described at Exhibit E, Tab 1, Schedule 6, page 8 of 9, paragraph 26:

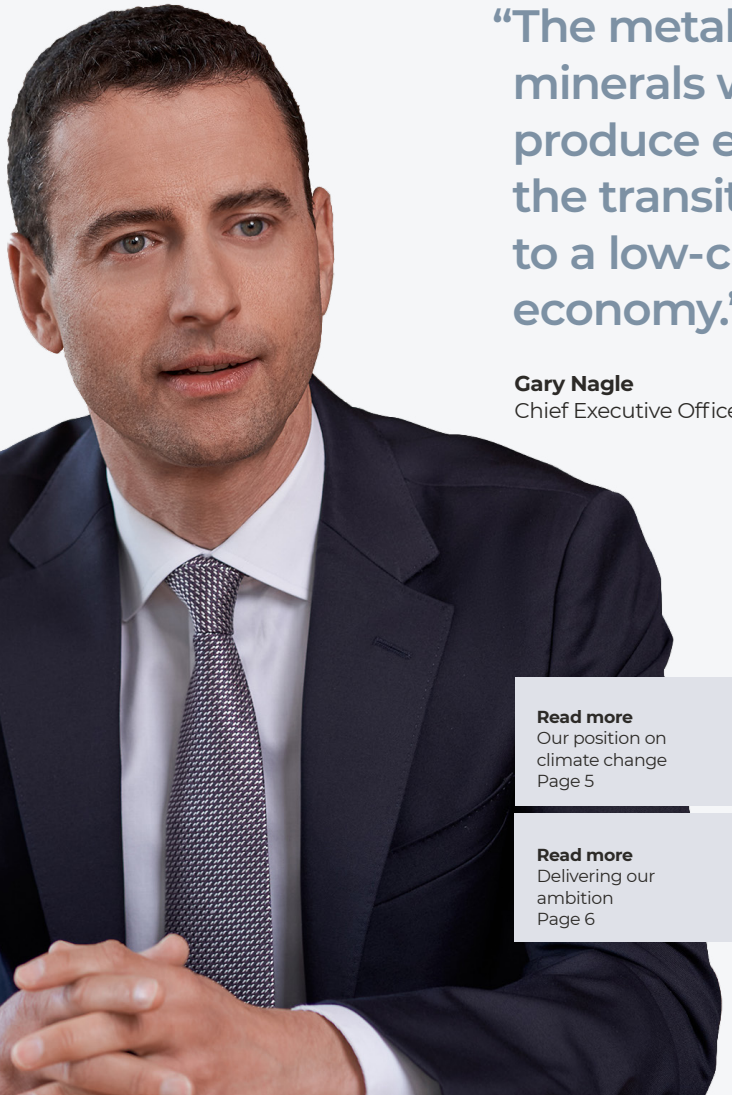
> In order to increase customer participation in the Large Volume offering, Enbridge Gas has removed limitations on eligible measures. This modification is responsive in particular to gas fired electricity generators, who have unique equipment which operates sporadically. In order to keep their equipment operating at peak efficiency levels, these customers need to complete expensive maintenance. **The measures being reintroduced include turbine filters, wash and overhauls.** [**Bold** added for emphasis.]

GLENCORE

Pathway to net zero

2021 progress report

Chief Executive's introduction



"The metals and minerals we produce enable the transition to a low-carbon economy."

Gary Nagle
Chief Executive Officer

Read more
Our position on climate change
Page 5

Read more
Delivering our ambition
Page 6

I am delighted to introduce my first Glencore Climate Report as chief executive. I have been involved in our strategic approach to climate change for a number of years – through my membership of our original Climate Change Working Group and now leading our new Climate Change Taskforce (CCT). The CCT is accountable to our Board and oversees our climate strategy and progress against our climate commitments.

Through the CCT, I am overseeing the implementation of the climate strategy we introduced in December 2020, and monitoring the Group's progress against the seven pathways to delivering our targets and net zero ambition.

Demand for our commodities

We believe that future demand growth for metals and minerals will be heavily driven by the global response to climate change.

All potential decarbonisation pathways require significantly more non-fossil fuel commodities. In particular, market drivers are likely to respond to the widespread adoption of renewable energy sources implemented as a means of decarbonising global energy supply. This demand will favour the commodities that currently underpin the infrastructure and battery chemistry required to power electric vehicles and energy storage systems.

We are a significant producer and recycler of these metals (copper, cobalt, nickel, zinc, silver and vanadium).

As a major supplier of energy and mobility transition metals, our portfolio is well-placed to respond to current and future demand and to meaningfully contribute to decarbonisation efforts.

We continue to monitor our portfolio's resilience against various scenarios.

Progress during the year

During 2021 we progressed the identification of carbon abatement opportunities across the portfolio and significantly expanded our Marginal Abatement Cost Curve (MACC). We further assessed the impact of carbon prices on the industry cost structure across each of our major commodity businesses and incorporated the results into our resilience analysis.

As a result of further work done on understanding our emissions profile and the opportunities to deliver reductions, we revised our medium-term emissions reduction target and introduced a new short-term target. We are committed to reducing our total emissions (Scope 1, 2 and 3) by 15% by 2026 and 50% by 2035, both on 2019 levels. Post 2035, our ambition is to achieve net zero total emissions by 2050, with a supportive policy environment.

Our targets and ambition reflect our commitment to align our business strategy with the goals of the Paris Agreement. We recognise there are multiple pathways to decarbonise our business, including through asset disposals. Our strategy of responsibly depleting our coal portfolio over time reflects our belief that we remain the best steward for these assets and that coal will be required to support meeting global energy needs in the short term.

Engaging with our shareholders

We value the ongoing constructive dialogue we have built with the investor group Climate Action 100+ (CA100+). CA100+ was established in 2017 as a five-year initiative to support the 167 highest-emitting listed companies in the world to align with the goals of the Paris Agreement. We consider the advice and insights of CA100+ in developing our climate strategy.

In Appendix Two, we have referenced our climate-related disclosures against the reporting requirements of CA100+'s Net Zero Company Benchmark (the Benchmark), which determines individual company's net zero alignment.

In 2021, CA100+ undertook Glencore's first assessment against the Benchmark and acknowledged the progress we have made in achieving positive scores for our net-zero commitment and targets.

As the Benchmark continues to evolve, we will maintain our engagement activities with both the CA100+ and other investor bodies such as the Institutional Investors Group on Climate Change (IIGCC).

We recognise that there is significant movement underway to strengthen and standardise accounting of climate-related risks and opportunities, including efforts by the IFRS Foundation. We also welcome the evolving scrutiny that a number of organisations are now providing on how corporates report and communicate on the impact of climate change on business resilience, as well as setting and progressing emission reduction targets.

In addition to CA100+, many of our shareholders have expressed the importance that they attach to climate change and their expectation for Glencore to align its business strategy with the goals of the Paris Agreement. At our 2021 AGM, we provided our shareholders with their first advisory vote on our three-yearly climate action transition plan. 94.4% of our shareholders voted in favour of this plan. Going forward, at each AGM, shareholders will have an advisory vote on our three-yearly climate action transition plan and its intervening progress reports, of which this report is the first one.

As the named executive for driving strategy relating to climate within our Board, relevant performance indicators have been added to my remuneration package. Of the scorecard that will be used for setting my annual variable compensation, 15% is reserved for indicators that chart our progress towards our short- and medium-term absolute emission reduction targets.

COP26

We welcome the Glasgow Climate Pact that was agreed as a result of the COP26 proceedings earlier this year. The Pact signals a continued ambition to keep the average rise in global temperatures to below 1.5C. The commitment to phase down the use of fossil fuels is consistent with our strategy of responsibly depleting our coal portfolio over time, as we prioritise investment in metals needed for the transition.

I look forward to continuing engagement with our stakeholders as we continue to implement our strategy and as it evolves over the coming years to respond to the global challenge of climate change.

Gary Nagle
Chief Executive Officer

Risks and opportunities

Carbon pricing

Pricing carbon, either through direct taxes or leakage avoidance mechanisms (such as border taxes) may create additional costs through the value chain, as well as provide opportunities to promote lower-carbon products.

Variations in carbon pricing mechanisms between multiple jurisdictions can affect both the cost and the importation of our products.

Mitigation

We operate successfully in multiple jurisdictions that have direct and indirect carbon pricing or regulations.

We use carbon prices consistent with the IEA across each of our scenarios to assess the risk of rising carbon prices.

We have identified some parts of our business that would likely have financial stress in a high carbon price environment. However, following analysis of the impact of carbon pricing on operational costs of the industry segments in which we operate, our conclusion is that our business overall remains resilient. We consider local regulation and carbon price sensitivities as part of our ongoing business planning for existing industrial assets, new investments and as part of our marketing activities.

We utilise our Marginal Abatement Cost Curve (MACC) to act on cost-ranked emission reduction opportunities to mitigate high carbon prices and are actively committing to lower emission sources in our businesses.

We make use of carbon pricing instruments and, where practicable, offsets to enhance the value of our products.

We assess that increasing demand for our metals commodities is likely to drive higher prices, in turn offsetting increases to processing costs arising from the implementation of carbon pricing instruments.

We are working with relevant industry organisations on developing lifecycle analysis to calculate our specific commodities' carbon footprint.

Risks and opportunities

Energy costs

We are a significant energy consumer. Energy is a key input and cost to our business as well as being a material source of our carbon emissions.

Governments may impose taxes or levies on procured energy sources, limit supplies/imports or introduce required purchasing or generation of renewable energy. The introduction of carbon tax and/or clean fuel standards may result in increased operating costs for our assets.

Mitigation

As the global patchwork of energy and climate change regulation evolves, we closely monitor international and national developments and their potential to impact our business.

We consider energy costs and our carbon footprint in our annual business planning process. Commodity departments are required to provide energy and GHG emissions forecasts for each asset over the forward planning period and provide details of mitigation projects that may reduce such emissions, including identifying and developing renewable energy generation opportunities.

Our assessment of potential mitigation and abatement projects forms the basis of our internal MACC.

Our business model is well placed to supply lower-carbon and renewable fuels to our industrial assets through the supplier network of our oil business.

Managing our operational footprint

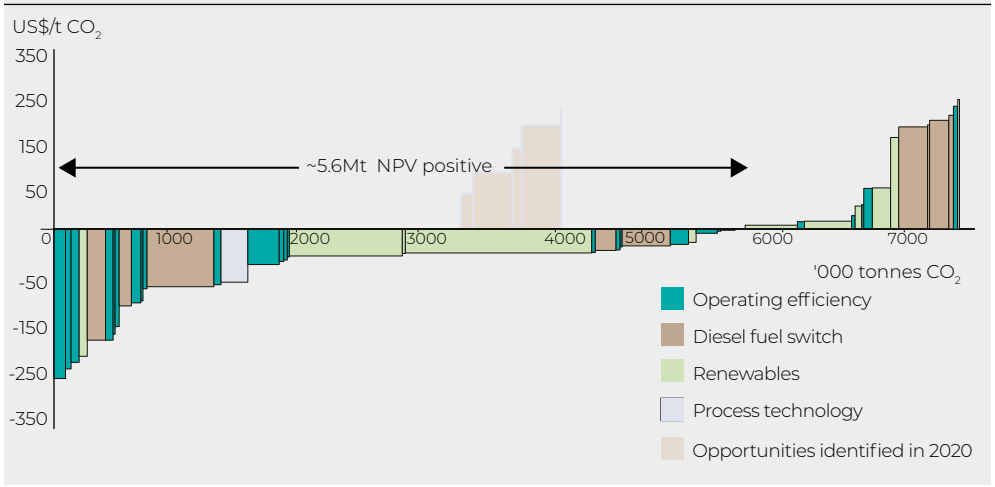
Our group-wide Marginal Adjustment Cost Curve (MACC) continues to evolve and identifies GHG reduction opportunities across our portfolio.

Identifying emission reduction opportunities

Our MACC enables an assessment of viable and economic abatement opportunities. When practically and economically viable, implementation of abatement opportunities will be rigourously pursued. For example, anticipating when increases to carbon prices and/or technological advancement at scale, make the building of renewable power installations more cost effective than purchasing grid-generated power.

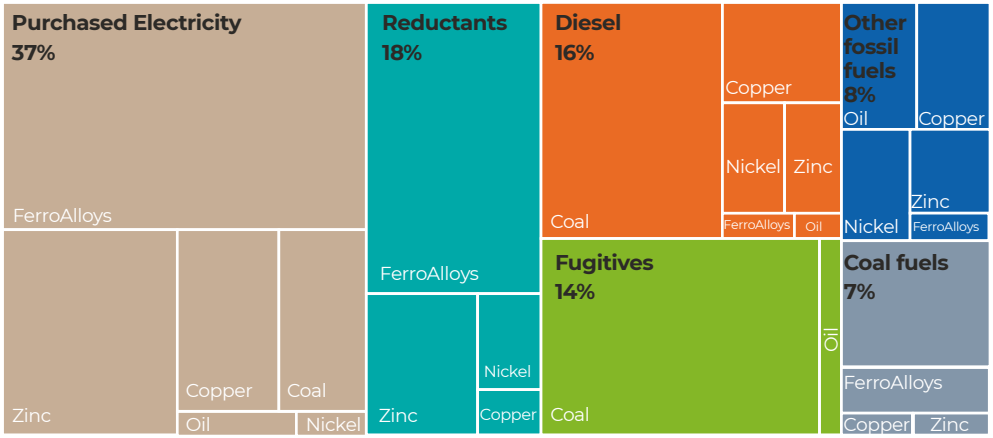
We undertake a uniform approach to MACCs at a commodity department level. This enables a group-wide aggregation of key decarbonisation opportunities and actions, which in turn supports a holistic approach to reviewing the pipeline of initiatives from concept to execution stage.

2021 Group Marginal Abatement Cost Curve

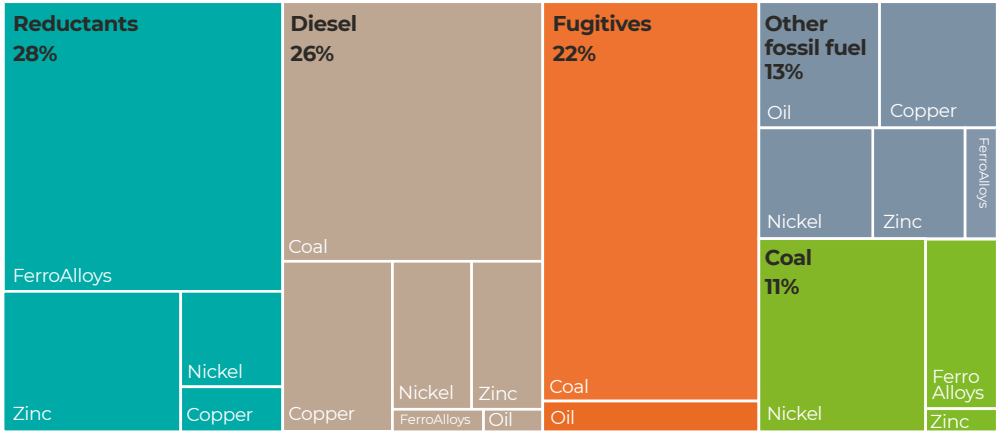


We review and update our MACC on an annual basis.

Scope 1+2 2019 Emissions 2019 Baseline



Scope 1 emissions 2019 Baseline



During 2021, we continued to collect asset-level data to improve our understanding of our abatement opportunities. We incorporated this work into our annual planning cycles, supporting our assessment of the carbon price scenarios required to trigger the investment in these opportunities.

Through understanding the impact of the different carbon prices from the key climate scenarios on our assets' cost curves and emission profiles, we can identify where and when to make investment in abatement opportunities. This ensures that we target value-accretive investments, thereby incorporating climate change considerations into our business strategy rather than considering emissions reduction as a standalone work stream.

Many of our industrial assets include downstream processing into final metal products, including copper, nickel, ferroalloys and zinc. As a result, carbon-based reductants are the largest emissions contributor to our Scope 1 operational footprint. These reductants are required for the smelting of mineral concentrates to produce final metals and are typical of a vertically-integrated supplier of the commodities required to drive the energy transition.

It is understood that emissions from the use of reductants are hard to abate and require a fundamental change to the existing process technology. For this reason, our decarbonisation pathway considers a longer timeframe needed to address emissions from the use of reductants.

Within our commodity departments there are a number of process technology and innovation programmes researching the ability to reduce emissions from the use of carbon-based reductants. These include research activities into the use of hydrogen as well as the use of bio-sourced carbon.

Diesel is one of the largest contributors to our Scope 1 emissions. We have identified three pathways to address this:

- In the near-term, we will consider deploying existing fleet electrification technologies at our large open-pit operations that are connected to national grids already utilising renewable energy sources.
- In the medium to longer term, our planning of mining fleet replacement will align with the expected arrival of new technology equipment not currently commercially available, such as battery electric or hydrogen fuel cell haul trucks. We anticipate these technologies becoming available before the end of this decade.
- In collaboration with our peers and equipment manufacturers through the ICMM, we continued to work to promote operational and technological innovation required to reduce emissions. The programme is working to accelerate the development of zero-emission mining equipment and ultimately aims to enable mining operations to adopt zero emission surface mining fleet by 2040.

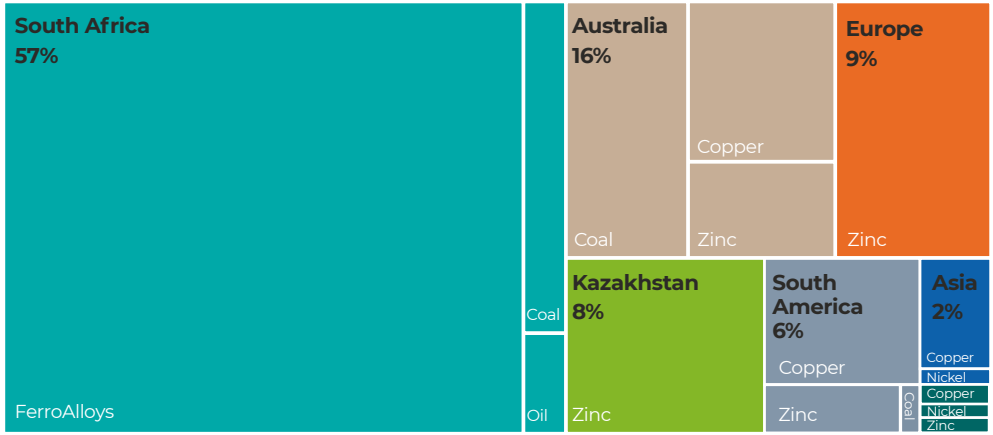
Along with our direct actions to reduce Scope 1 emissions within our ongoing operational boundaries, we recognise that our coal business is the largest consumer of diesel, as well as our largest source of fugitive emissions. On this basis, the responsible depletion of our coal assets will also be an important contributor towards reducing our Scope 1 emissions.

Building a mine for the future

While the emission reduction opportunities for underground mines are not as large as for open pit mines, zero-emission vehicles for underground mining are now becoming commercially available due to the added benefits of reducing ventilation requirements in deep underground mines. In Canada, we are in the process of establishing a fully electric vehicle fleet for our new Onaping Depth mine.

We have designed this deep nickel mine, currently under construction, to utilise battery-electric mobile mining equipment that maximises real-time remote operation, monitoring and management utilising advanced Wi-Fi systems. The benefits include the elimination of diesel emissions, reduced ventilation and lower noise pollution. We expect Onaping Depth to reduce its emissions by 7,500 tonnes of CO_2e per year, a reduction of around 45% compared to a similar mine with diesel-powered vehicles. This is achieved mainly from less ventilation and, as a consequence, less energy for heating during the winter.

Scope 2 emissions 2019 Baseline



The indirect emissions associated with the electricity consumed by our assets, our Scope 2 emissions, is also a major action area within our decarbonisation plans.

As a vertically-integrated producer of metals, the largest contributor towards our Scope 2 operational footprint is the consumption of electricity by our smelting assets.

Where our assets purchase electricity from grids where renewable energy sources are available, and it is economic to do so, we prioritise entering into Power Purchase Agreements that move our energy consumption to renewable sources, such as hydro, wind or solar.

For our assets that are not connected to grids and reliant on local electricity generation, we study options for installing on-site renewable energy systems, such as wind and solar.

In some of our operating jurisdictions, we are also delivering and investigating opportunities to support national grids' utilisation of renewable energy sources, as well as biofuels and energy storage.

In 2012, we agreed with Société Nationale d'Électricité (SNEL), the DRC's national electricity utility, for our operations to contribute US$375 million to a major electricity infrastructure refurbishment programme, including the rehabilitation of two turbine generators at the Inga Hydroelectric Project along with transmission and distribution upgrades. This facilitated a progressive increase in power availability

Category	kt CO_2e 2019	Methodology	GHG Accounting Approach
Category 11. Use of sold products	325,705	Group-level Direct-use phase for fuels and feed stocks	Emissions relate to the use of saleable fossil fuels (coal and oil), produced by industrial operations under our operational control.
Category 12. End-of-life treatment of sold products		N/A	Considered immaterial for metals due to recyclability. Considered in category 11 for hydrocarbons and coal.
Category 13. Downstream leased Assets		N/A	Excluded*.
Category 14. Franchises		N/A	Excluded*.
Category 15. Investments	2,238	Group-level Investment-specific method where possible (otherwise average data method)	Our share of Scope 1 and 2 emissions from our investments in Antamina, Century, Cerrejón, Collahuasi and Viterra.
Total Scope 3 emissions	343,000	Group-level	All categories of our Scope 3 emissions that are relevant and material to our operations.

* The listed inclusions/exclusions reflect the Group-level boundary assessment completed in 2016. GHG Protocol criteria for the identification of relevant Scope 3 activities, products, services are: size, influence, risk, stakeholders, outsourcing, and/or sector-guidance. The GHG Protocol allows for exclusions on the basis that accounting methods have not yet matured, or significant data gaps exist (i.e. lack of relevant emission factors).

Identifying and reducing our Scope 3 emissions

During 2021, we increased our engagement with our key equipment manufacturing suppliers and customers to improve our understanding of the emissions within our value chain. We are actively looking for opportunities to partner with our stakeholders to drive the uptake of carbon neutral solutions and low-emission technologies, as well as to develop robust and consistent emission tracking and data collection throughout our value chain.

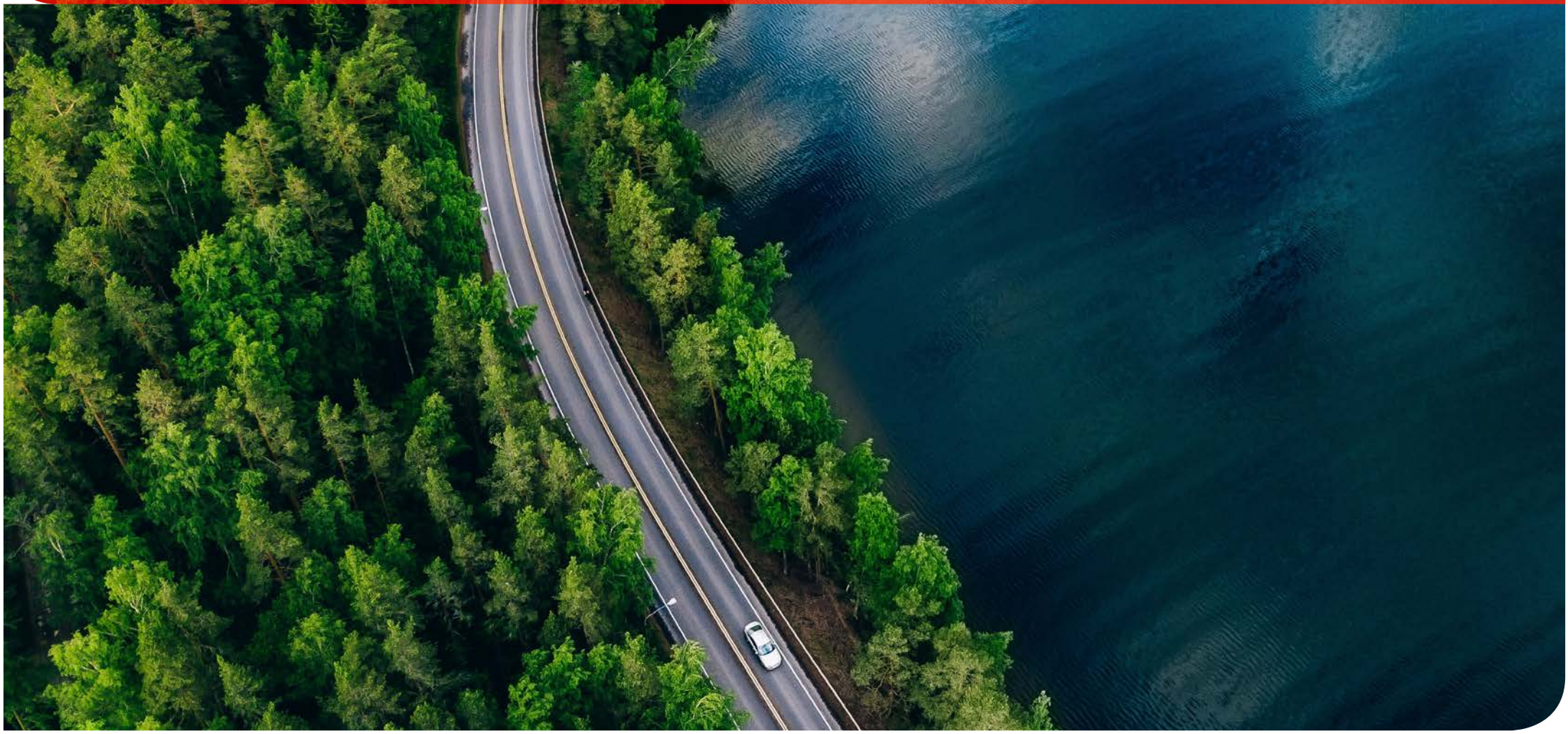
In the short term, we are actively monitoring our stakeholders' decarbonisation efforts and exploring partnership opportunities to develop and commercialise carbon-neutral goods, services, and processes. Over the medium term, we plan to systemise the integration of our climate targets into our supplier selection criteria and to develop internal systems that more accurately track value chain emissions that will feed into our annual Scope 3 inventory reporting.

We encourage our suppliers to develop decarbonisation roadmaps for the reduction of the carbon footprint of their products and associated handling and transportation, in line with the goals of the Paris Agreement.

As the reporting boundaries and methodology of our Scope 3 emission accounting evolve, we will restate the emissions baseline for our total emissions targets as needed.

ArcelorMittal

Climate Action Report 2
July 2021



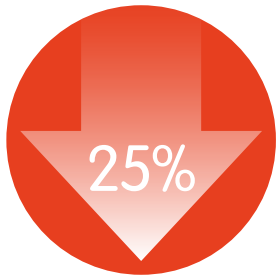
Forward-looking statements

This document contains forward-looking information and statements about ArcelorMittal and its subsidiaries. These statements include financial projections and estimates and their underlying assumptions, statements regarding plans, objectives and expectations with respect to future operations, products and services, and statements regarding future performance, as well as statements regarding ArcelorMittal's plans, intentions, aims, ambitions and expectations, including with respect to ArcelorMittal's carbon emissions. Forward-looking statements may be identified by the words "believe", "expect", "anticipate", "target", "accelerate", "ambition", "estimate", "likely", "may", "outlook", "plan", "strategy", "will" and similar expressions. Forward-looking statements include all statements other than statements of historical fact. Although ArcelorMittal's management believes that the expectations reflected in such forward-looking statements are reasonable, investors and holders of ArcelorMittal's securities are cautioned that forward-looking information and statements are subject to numerous risks and uncertainties, many of which are difficult to predict and generally beyond the control of ArcelorMittal, that could cause actual results and developments to differ materially and adversely from those expressed in, or implied or projected by, the forward-looking information and statements. These risks and uncertainties include those discussed or identified in the filings with the Luxembourg Stock Market Authority for the Financial Markets (Commission de Surveillance du Secteur Financier) and the United States Securities and Exchange Commission (the "SEC") made or to be made by ArcelorMittal, including ArcelorMittal's latest Annual Report on Form 20-F on file with the SEC. In particular, ArcelorMittal's carbon emissions targets are based on current assumptions with respect to the costs of implementing its targets (including the costs of green hydrogen and their evolution over time), government and societal support for the reduction of carbon emissions in particular regions and the advancement of technology and infrastructure related to the reduction of carbon emissions over time, which may not correspond in the future to ArcelorMittal's current assumptions. For example, the Company could face significant financial impacts in Europe if it is unable to make the necessary investments to decarbonise and reach its 35% target by 2030 due to the design of European policy. ArcelorMittal undertakes no obligation to publicly update its forward-looking statements, whether as a result of new information, future events, or otherwise.

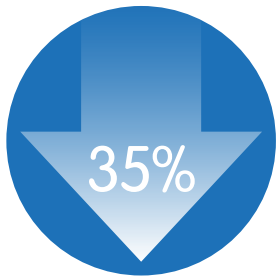
Highlights from this report

Leading the industry

- New Group target of a 25% reduction in CO_2e emissions intensity by 2030 (scope 1 and 2)



- Europe target increased to 35% reduction in CO_2e emissions intensity by 2030 (scope 1 and 2)



World's first zero carbon-emissions steel plant

- World's first full-scale zero carbon-emissions steel plant in Sestao, Spain, by 2025

- Plans for further steelmaking transformation in Europe and NAFTA

First to market

- Customer appetite for low-carbon steel is real, as demonstrated by demand for our XCarb™ product

XCarb™
Towards carbon neutral steel

- Competitive advantage with greater volumes, capturing commercial opportunities

Funding

- $10 billion total investment required to achieve 2030 Group decarbonisation target
- Securing public funding support is a key focus and an opportunity to accelerate
- ArcelorMittal's expectation is that public funding covers 50% of the total cost of decarbonisation (capex and higher opex) so that companies are not rendered uncompetitive during the transition period

Photo: © ArcelorMittal

Contents

Introduction

"Steel is already the material of choice due to its lower carbon footprint and infinite recyclability. Crucially, as we decarbonise further, zero carbon-emissions steel has the potential to be the backbone of the buildings, infrastructure and transport systems that will enable governments, customers and investors to meet their net-zero commitments."

Aditya Mittal, CEO ArcelorMittal

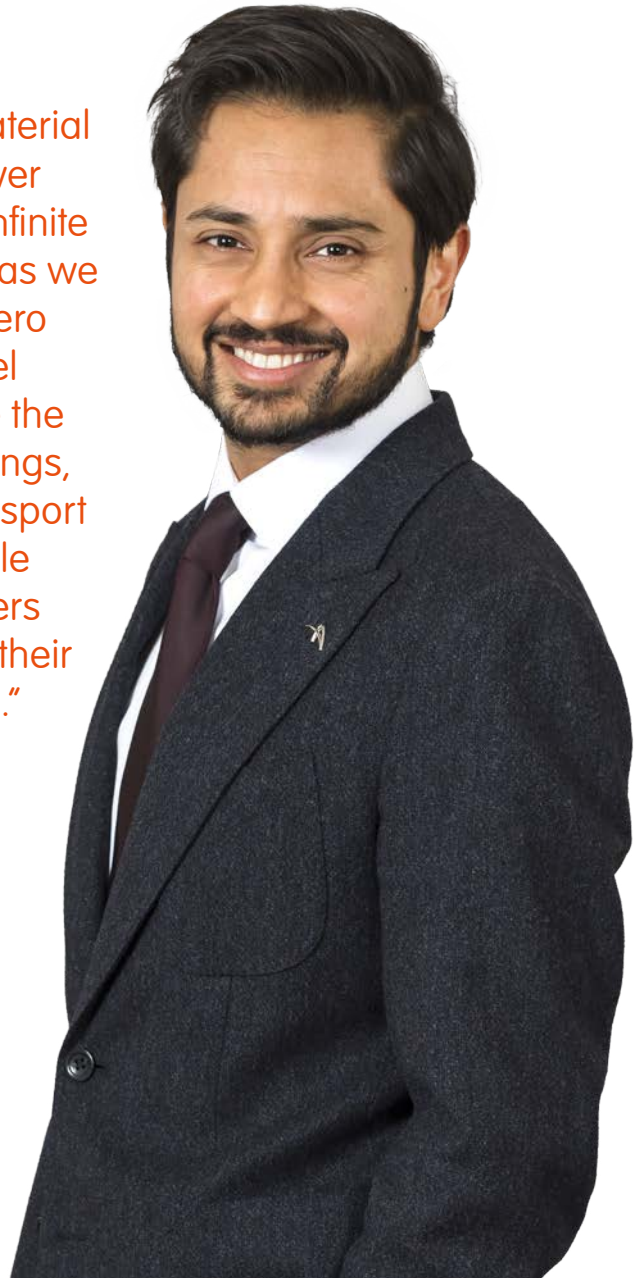


Photo: © ArcelorMittal

Dear Stakeholders,

Welcome to ArcelorMittal's second Climate Action Report (CAR2). This follows our first group-wide Climate Action Report published in 2019 and our first Europe Climate Action Report published in 2020.

We have seen a lot of progress since we published our first report – globally and within ArcelorMittal.

Covid-19 has only further increased the momentum. The requirement to stimulate the economy post-Covid is aligning with a desire to "build back better" thereby tackling two crises simultaneously.

In May 2019, just 2.4% of the global economy was covered by a net-zero target. Two years later, more than 70% of the economy is now covered – although we must acknowledge that this is not yet backed up by plans to deliver.

ArcelorMittal now has a net-zero by 2050 target and has recently announced plans for the world's first full-scale zero carbon-emissions steel plant in Sestao, Spain. These plans will enable us to be ahead of our sector in the net-zero transition, generating significant opportunities in multiple aspects of our business.

Our progress enables us to offer customers net-zero equivalent steel for the first time via an audited certification scheme. The first XCarb™ certified tonnes were sold in 2020. In 2021, the amount of this product available will increase to 120,000 tonnes, rising to 600,000 tonnes in 2022 as we continue to drive down our emissions following investments in new technologies.

This is real and meaningful progress that is testament to the capabilities of our people. But we know we must continue to challenge ourselves to move faster. As we look ahead to COP26 at the end of the year, and even further ahead to what will be a decisive decade for charting the course to a net-zero economy, we must play our part in driving the systems change required globally to achieve net-zero by 2050.

This is important because steel has a vital role to play in a net-zero world. Indeed, we believe zero carbon-emissions steel has the potential to be the backbone of the buildings, infrastructure, industry and machinery, and transport systems that will enable governments, customers, and investors to meet their own net-zero commitments.

This report represents a further step forward in this regard.

We have, for the first time, set a 2030 group CO_2e emissions intensity reduction target. At 25%, this reflects the unequal pace of change that is the reality of the world's decarbonisation journey. In regions like Europe, where we are observing an 'Accelerate' policy scenario, we can be more ambitious – with plans to reduce CO_2e emissions intensity by 35% within the next decade. In other regions, we must recognise that without sufficient incentives and policy support, it is much harder for steel to decarbonise – and being a first mover will only result in being rendered uncompetitive in that market.

Introduction

We expect the pace of change to accelerate as other parts of the world become more ambitious with their transition plans. That optimism has given us the confidence to commit to publishing a Science Based Target within two years. We look forward to collaborating with the Science Based Targets initiative through a project to define a fit-for-purpose methodology to develop additional science-based target resources for the steel industry, building on the work we have been leading with our peers across our sector. Our hope is that this accelerates progress not only for ArcelorMittal, but across the entire industry.

For our target setting today, midway through 2021, we assume progress in other regions of the world will be at least five years behind Europe.

Policymaking therefore has a catalytic role to play. The Energy Transitions Commission, of which we are an active member, estimates that the required additional investments to achieve a zero carbon-emissions economy in 2050 – while significant in absolute dollar terms – will amount to no more than 1% to 1.5% of global GDP (~US$1 trillion to US$2 trillion per year). Steel represents approximately 7-9% of global emissions. Investments that are comparatively small by global standards but massive for the industry have the potential to deliver outsized returns on the global carbon footprint. That makes it a sound goal of policy.

We will continue to step up our advocacy for policies that support the acceleration of this transition, addressing the fact that both capex and opex costs will be significantly higher, at least in the short to medium term. This includes developing clean energy infrastructure, providing access to transition finance, and addressing the carbon leakage resulting from the unequal regional pace of change in an industry that is globally traded.

Against this context, we believe it is sensible to continue to develop two pathways that have the potential to achieve zero-carbon emissions steel: Innovative DRI (Direct Reduced Iron) and Smart Carbon. A third pathway, Direct Electrolysis of Iron, also represents considerable potential – albeit within a longer time horizon.

In Europe, our strategy at present is largely focused on the Innovative DRI pathway. This reflects the commitment in Europe to prioritise the availability of green hydrogen at competitive prices. Countries including Spain and Germany plan to accelerate the availability of renewable energy that will support the introduction of green hydrogen. This is the foundation of zero carbon-emissions through the DRI-EAF (Direct Reduced Iron-Electric Arc Furnace) route and supports our plans in these countries.

Smart Carbon also has the potential to achieve zero carbon-emissions. With the potential to also become carbon-negative, Smart Carbon harnesses bio-energy and carbon capture utilisation and storage (CCUS) – all technologies that the International Energy Agency and the UN Intergovernmental Panel on Climate Change see as critical to achieving net-zero by 2050.

We are convinced that both of these technologies offer a real pathway for the steel industry to be competitive.

However, these technologies today are still far from being competitive.

The intention is that over time low carbon technologies will become more competitive as the carbon price increases and is applied globally and the decarbonisation technologies themselves become more mature and efficient. But this will take at least ten years and in the transition period support will be required to support the development of innovation while moderating capital spend which will not yield an immediate return and ensuring operational competitiveness.

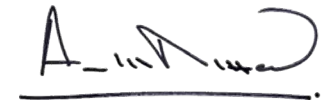
That is why we are asking for support with capex – estimated to be US$10 billion – to achieve our 25% target, as well as support on opex costs in the short to medium term.

In many respects, the challenges confronting steelmaking today resemble those faced by renewable energy over a decade ago. In that case, the importance of solar and wind power was widely acknowledged yet the technology remained economically prohibitive. The levels of investment, innovation and adoption we have seen since, have reached up to 90 billion of annual European subsidies per annum and have driven the cost of solar and wind power down to be cheaper than coal. They were assisted by targeted, reliable and thoughtful policies that enabled both companies and their financing partners to make long-term planning decisions. We are optimistic that the same will happen in steel. It is too critical a material on so many levels for that not to be the case. And, as developing economies continue to grow, the world will need more steel – not less – to give a better quality of life to millions of people.

Our activity and progress will continue to be overseen by a robust governance structure that includes an executive-level Climate Change Committee and the board-level Sustainable Development Committee, chaired by our lead independent director. Having set a 2030 group target, we will now link this to executive remuneration. In terms of our investment decision-making, each major capex project proposal is required to demonstrate its CO_2 impact to the Investment Allocation Committee (IAC). The IAC considers both the potential future carbon cost as well as the capital cost of decarbonisation, to maximise our chances of achieving our targets while ensuring each project is economically justifiable and earns its cost of capital. It is a crucial part of our strategy to manage risk and deliver long-term growth.

Over this past year, we have engaged with our stakeholders on climate more than ever before. I hope this report demonstrates how seriously we take your input, how closely we have listened to your questions, and how committed we are to providing solutions.

We expect that the year ahead will enable us to make further progress on our journey to decarbonise. We look forward to leading the steel industry's path to decarbonise.



Aditya Mittal
Chief executive officer

Section 1 Progress overview

1.1 Progress in 2020

The steel industry's transition to net zero by 2050 is a big challenge. Clearly, the steel sector has a central role to play in a successful transition. Additionally, as we have explained in our previous Climate Action Reports, the industry's progress will be faster if there is a collaborative effort by all its stakeholders.

Since the publication of our first Climate Action Report in July 2019, we have joined a number of important platforms that bring critical stakeholder groups together to identify the key levers required for the steel industry's net-zero transition. These include the Energy Transition Commission (ETC), the World Economic Forum and the Centre for Climate Aligned Finance – all part of the Mission Possible Partnership – as well as other stakeholders in order to play an active role in accelerating progress, including ResponsibleSteel, the International Energy Agency and the Science-Based Targets Initiative.

Over the past two years, we have been encouraged by the active interest these groups and organisations have shown, the time they have taken to understand the unique challenges faced by the sector, and the willingness they have shown to work together to unlock and accelerate progress.

Similar to Mission Possible Platform, we believe a number of key goals will support transition: coalition building, finance, policy engagement, demand signals and net-zero roadmap. Those levers can be powerful tailwinds to help us achieve our short-, medium- and long-term targets.

- **Technology roadmap:** Technology progress continues to be encouraging. We remain confident that both the Innovative DRI route and the Smart Carbon route offer the potential to achieve net-zero by 2050. Low and zero carbon-emissions steelmaking projects are under construction and are expected to be operational in 2022. We are also developing a third technology route that utilises direct electrolysis.
- **Demand signal:** One of the main challenges of the transition is that low-carbon steel costs considerably more to produce than the current ways of steelmaking. A customer demand signal for this premium steel is therefore an important foundation of the transition. Earlier this year, ArcelorMittal launched the first products under its new XCarb™ brand. XCarb™ green steel certificates and XCarb™ recycled and renewably-produced steel have both been very well received by customers and attracted a premium price. This gives us confidence that a demand signal, at least in Europe where the first products have launched, is real.
- **Finance:** Given the high levels of capex and opex required for the transition, it is critical there are policies in place to support regional and global competitiveness of assets that are first movers in the transition to net zero carbon steel and to create the necessary market conditions to ensure net zero steelmaking is commercially viable. Access to "green" or "transition" finance will be imperative for hard-to-abate sectors like steel. We continue to see encouraging progress on this front with considerable funds being made available by governments at both a national and continental level, for example, the EU Innovation Fund for which our CarbHFlex project was shortlisted. Financial institutions also have a vital role to play and the creation of a sub-group of the Centre for Climate Aligned Finance to look specifically at the steel sector is another welcome development. It is critical that both funding and finance is available to companies for which the transition is costly, but which cannot finance the transition by themselves.
- **Policy engagement:** It is now generally well understood that without a supportive policy environment the steel industry will find it very hard to make significant decarbonisation progress. We are encouraged that stakeholders have taken the time to understand the specific policy instruments that will be required to accelerate the transition and are open to publishing joint policy positions with the industry. Policy is not uniform across the world and therefore it is logical to accept that those regions that are more ambitious with targeted policy will decarbonise their steel industry faster, provided they also take into account the requirement to protect against carbon leakage. As our own thinking on the optimum policy combination to accelerate progress develops, we intend to actively engage with governments in the regions where we operate to share that thinking and help shape policy.

Photo: © Shutterstock

Section 1 Progress overview

1.2 ArcelorMittal's timeline since publication of its first Climate Action Report

May 2019

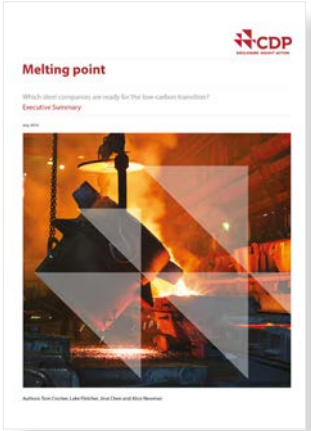
ArcelorMittal publishes first Climate Action Report

In its first Climate Action Report, ArcelorMittal announced its ambition to significantly reduce CO_2e or greenhouse gas emissions globally and become carbon-neutral in Europe by 2050. The report set out two technology pathways that can lead to net zero steelmaking and a range of low and zero carbon-emissions technologies.

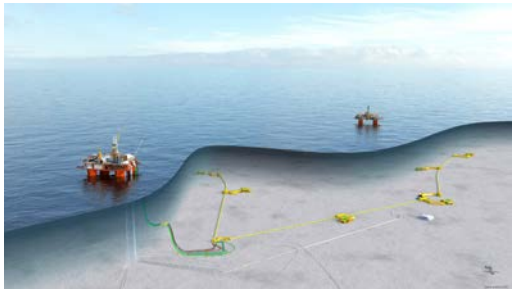
July 2019

ArcelorMittal ranked best steel company for low carbon innovations

CDP's Melting Point report ranked ArcelorMittal first in five categories relating to steel companies' readiness for a low carbon transition. The categories were low carbon innovations, transition opportunities, data transparency, renewable energy use, and board and executive climate management.



© CDP 2019



© Equinor

September 2019

ArcelorMittal commits to Equinor-led carbon capture and storage project

The company signed a Memorandum of Understanding with international energy firm, Equinor to develop value chains in carbon capture and storage. ArcelorMittal will participate in a number of joint activities, including the development of logistics, exploring potential commercial models, and advocating on the topic of carbon capture and use (CCU) or storage (CCS).

ArcelorMittal commissions design of demonstration plant for hydrogen steel production in Hamburg

ArcelorMittal commissioned technology provider Midrex Technologies to design a demonstration plant at its Hamburg site to produce steel with hydrogen. The demonstration plant will produce around 100,000 tons of direct reduced iron per year, initially with grey hydrogen sourced from natural gas and eventually green hydrogen from renewable energy sources.

ArcelorMittal unveils Belgium's largest solar roof

The installation of more than 27,000 solar panels on the roof of ArcelorMittal in Ghent was completed, creating the largest solar roof in Belgium. The project will aid ArcelorMittal Belgium's journey to low-carbon steelmaking as the power generated will be used internally in Ghent.

October 2019

worldsteel acknowledges ArcelorMittal's excellence in sustainability

For the third consecutive year, ArcelorMittal won worldsteel's Steelie Award for excellence in sustainability. The award highlights the company's industry leadership on sustainability and was given in recognition of ArcelorMittal publishing the steel sector's first Climate Action Report in May 2019.

December 2019

ArcelorMittal Europe sets target to cut carbon emissions by 30% by 2030

ArcelorMittal Europe announced its roadmap and plans to reduce CO_2e emissions by 30% by 2030. The target is in line with the company's ambition to become net zero in Europe by 2050 which was announced in May 2020.

Section 1 Progress overview

1.2 ArcelorMittal's timeline since publication of its first Climate Action Report

January 2020

CDP recognises ArcelorMittal as a global leader on climate action

CDP recognised ArcelorMittal for its leadership on corporate transparency and action on climate change from among over 8,000 companies worldwide that were scored on their 2019 disclosures. ArcelorMittal scored an A- in the 2019 CDP Climate Change assessment, an improvement from C in 2017, which means the company has now reached leadership level. The score put ArcelorMittal amongst the top 11% of companies within our industry.

May 2020

European Investment Bank makes €75 million loan to finance breakthrough technology

The European Investment Bank, with the support of the European Commission, granted a €75 million loan to ArcelorMittal for the construction of two ground-breaking projects at the company's Ghent facility in Belgium. The Carbalyst and Torero projects require total investment of €235 million and will save 350,000 tonnes of CO_2 by converting waste and by-products into valuable new products.

You can read more about these projects in chapter 2.2.2

June 2020

ArcelorMittal Europe sets out path to net-zero by 2050

In its Climate Action in Europe Report, ArcelorMittal Europe announced details of how it plans to become net-zero by 2050. By investing in two routes for low carbon-emissions steelmaking – Smart Carbon and Innovative DRI – ArcelorMittal Europe can significantly reduce CO_2e emissions by 2030 over a 2018 baseline.

Photo: © ArcelorMittal

September 2020

ArcelorMittal sets 2050 net-zero target

ArcelorMittal announced a group-wide commitment to becoming net-zero by 2050, building on the commitment made in 2019 for its European business to reduce emissions by 30% by 2030, and become net zero by 2050.

October 2020

ArcelorMittal Europe starts producing 'green steel'

ArcelorMittal Europe announced details of the CO_2e emissions technology strategy that will enable it to offer its first green steel solutions to customers. Production will rise from 30,000 tonnes in 2020 to 120,000 tonnes in 2021 and 600,000 tonnes by 2022.

December 2020

ArcelorMittal ranked at global leadership level on climate action

ArcelorMittal was again recognised by CDP for its strong performance in corporate transparency and action on climate change. ArcelorMittal successfully retained its A- score in the 2020 CDP Climate Change assessment, putting the company within the top quartile of all metal smelting, refining and forming companies and the top 10% of the steel industry.

Section 1 Progress overview

1.2 ArcelorMittal's timeline since publication of its first Climate Action Report

January 2021

Vow ASA and ArcelorMittal join forces to build biogas plant in Luxembourg

Specialist provider of technology for decarbonising industry, Vow ASA, signed a strategic Memorandum of Understanding with ArcelorMittal to work on a project to build a biogas production plant that will reduce CO_2 emissions produced during the steelmaking process. The Rodange biogas plant is planned to come online in 2023.

Photo: © Shutterstock

February 2021

ArcelorMittal Asturias starts coke-oven gas injection for Blast Furnace B

ArcelorMittal Asturias announced its coke-oven gas injection project for Blast Furnace B in its Gijón plant. The Smart Carbon technology allows gases from various sources to be injected into the blast furnace, resulting in a reduction in CO_2 emissions of 125,000 tonnes a year, equivalent to the emissions generated by the annual consumption of 84,000 Spanish households.

March 2021

Air Liquide and ArcelorMittal join forces to decarbonise steel production in Dunkirk

Air Liquide and ArcelorMittal signed a Memorandum of Understanding with the objective of implementing solutions to produce low-carbon steel in Dunkirk. The companies will join forces to develop innovative solutions involving low-carbon hydrogen and CO_2 capture technologies.

ArcelorMittal launches XCarb™

ArcelorMittal launched its first three XCarb™ initiatives as part of the company's journey to deliver on its 2050 net-zero commitment. XCarb™ will bring together all of ArcelorMittal's reduced, low and zero-carbon products and steelmaking activities, as well as wider initiatives and green innovation projects, into a single effort focused on achieving demonstrable progress towards net zero steel. The three XCarb™ branded initiatives launched include: XCarb™ green steel certificates, XCarb™ recycled and renewably produced and the XCarb™ innovation fund.

ArcelorMittal plans major investment in German sites

ArcelorMittal announced plans to build a large-scale industrial plant for DRI and EAF-based steelmaking at the company's site in Bremen. It also disclosed plans for an Innovative DRI pilot plant and EAF in Eisenhüttenstadt, following the announcement of the planned expansion of Germany's hydrogen infrastructure. Using green hydrogen, up to 3.5 million tonnes of steel could be produced by the Bremen and Eisenhuttenstadt sites by 2030, with significantly lower CO_2 emissions.

June 2021

ArcelorMittal XCarb™ innovation fund makes its first investment

ArcelorMittal announced the completion of its first XCarb™ innovation fund investment since launching the initiative in March 2021. The Company has invested an initial $10 million in Heliogen, a renewable energy technology company that focuses on "unlocking the power of sunlight to replace fossil fuels". Heliogen's technology will harness solar energy by using a field of mirrors that will act as a multi-acre magnifying glass to concentrate and capture sunlight. The sunlight will then be subsequently converted into heat (HelioHeat™), electricity (HelioPower™) or clean fuels (HelioFuel™). All three Heliogen products have the potential to be applicable to the steelmaking process and support the steel industry's transition to carbon-neutrality.
In addition to the $10 million investment, ArcelorMittal and Heliogen have signed a Memorandum of Understanding that aims to evaluate the potential of Heliogen's products in several of ArcelorMittal's steel plants.

XCarb™
Towards carbon neutral steel

Section 1 Progress overview

1.2 ArcelorMittal's timeline since publication of its first Climate Action Report

Photo: © ArcelorMittal

July 2021

ArcelorMittal Sestao to become the world's first full-scale zero carbon-emissions steel plant

The development is the result of a memorandum of understanding signed with the Government of Spain that will see an investment of €1 billion in the construction of a green hydrogen DRI plant at its plant in Gijón, as well as a new hybrid EAF. The DRI installation in Gijón will also enable ArcelorMittal Sestao to be the world's first full-scale zero carbon-emissions steel plant. By 2025, the Sestao plant – which manufactures a range of flat steel products for the automotive and construction sectors, and general industry – will produce 1.6 million tonnes of zero carbon-emissions steel.

ArcelorMittal celebrates industry-first with ResponsibleSteel™ site certifications

The company's steelmaking sites in ArcelorMittal Belgium (Geel, Genk, Gent and Liège), Luxembourg (Belval, Differdange and Rodange) and Germany (Bremen and Eisenhüttenstadt) are the first steel plants globally to be independently audited and found to meet the standards required for ResponsibleSteel, the industry's first global multi-stakeholder standard and certification initiative.

Agreement concludes second investment in ArcelorMittal's XCarb™ innovation fund

ArcelorMittal announced it has completed its second investment in the Company's recently launched XCarb™ innovation fund, serving as lead investor in Form Energy's $200 million Series D financing round, with a $25 million equity injection.

ArcelorMittal and SEKISUI CHEMICAL announce carbon recycling partnership

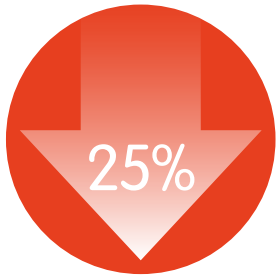
ArcelorMittal and SEKISUI CHEMICAL announced they are partnering on a project to capture and re-use carbon waste gases from the steelmaking process, which holds the potential to reduce dependence on fossil resources and contribute to the decarbonisation of steelmaking.

ArcelorMittal publishes second Group Climate Action report

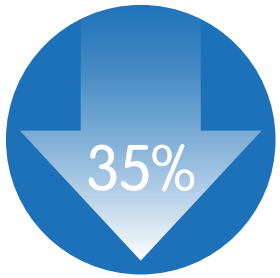
ArcelorMittal announced publication of the second Group Climate Action report targeting 25% global reduction in CO_2e emissions intensity by 2030 (scopes 1+2) with anticipated cost of US$10 billion; Europe target increased to 35% reduction in CO_2e emissions intensity by 2030 (Scopes 1+2) reflecting recent announcement that Sestao will become Europe's first full-scale zero carbon-emissions plant; new collaboration announced with Science Based Targets initiative; targets to be linked to executive remuneration.

Section 2 Our decarbonisation strategy

2.1 Our targets



New Group target of a 25% reduction in CO_2e emissions intensity by 2030 (scope 1 and 2)



Europe target increased to 35% reduction in CO_2e emissions intensity by 2030 (scopes 1 and 2)

ArcelorMittal is committed to reaching net-zero on a global basis by 2050.

We have now adopted an ambitious set of carbon targets with which to lead our sector: by 2030, we are targeting a 25% reduction in our CO_2e emissions intensity across our global steel and mining operations, with an increased European target of 35% (up from 30%). Both targets cover both scope 1 and 2.

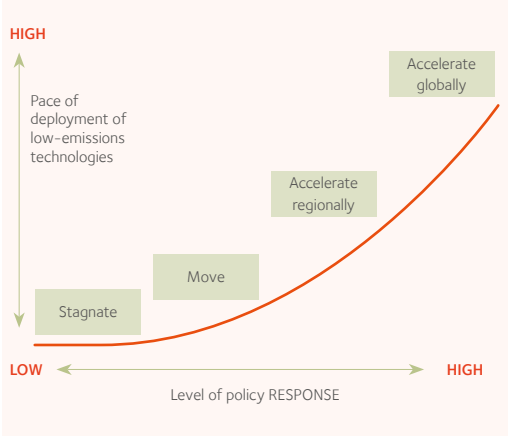
These targets create the milestones we need to achieve in order to meet our long-term target of net-zero by 2050, and are set against our 2018 baseline.

For the purpose of setting a group target, we have made a key set of assumptions as a base case:

- The cost of green hydrogen will become increasingly competitive over the next decade but will still require government support
- Carbon capture, utilisation and storage infrastructure will take time to be built at scale. While Europe is expected to take the lead, CCUS infrastructure has the potential to expand quickly in the US and Canada – providing some potential upside to our assumptions
- Different regions of the world will continue to move at very different paces and the level of climate ambition will differ between jurisdictions at any given time
- The introduction of climate-friendly policies in other regions will be 5-10 years behind Europe
- As it has been reported, 2060 may not be a realistic net-zero target for developing economies, which may mean emissions do not peak until 2030

These assumptions form the basis of the policy-based outlook we outlined in our first Climate Action report, in which we demonstrated how the speed of decarbonisation by steelmakers is linked to policy developments.

Our decarbonisation strategy in each part of the world where we operate is now based on the same assumptions. In some countries, for example Europe and Canada, we see sufficient policy incentives to enable ArcelorMittal to 'Accelerate' its decarbonisation plans. Where these conditions do not yet exist, we will continue to make improvements to 'Move', but it is difficult to 'Accelerate' without becoming uncompetitive in that market.



Our policy-based scenarios demonstrate the role of policy support in driving the pace of decarbonisation.

ArcelorMittal's decarbonisation plans will accelerate in each jurisdiction as the necessary policy conditions are in place. See section 2.5 for more details.

ArcelorMittal's expected response
Based on anticipated policy developments in next 5 years

Jurisdiction	2021-25	2026-30	2031-35
EU*	Accelerate	Accelerate	Accelerate
Canada**	Accelerate	Accelerate	Accelerate
USA	Move	Accelerate	Accelerate
Mexico	Move	Move	Accelerate
Kazakhstan	Move	Move	Accelerate
Ukraine	Move	Move	Accelerate
Brazil	Move	Accelerate	Accelerate
South Africa	Move	Accelerate	Accelerate

* Scope and extension conditional upon appropriate level of European Union and Member States financial support as well as final revised ETS system and CBAM Canada

** Federal + Ontario, Quebec

Section 2 Our decarbonisation strategy

2.2 Our net-zero roadmap

For the first time, we are disclosing a roadmap that shows our journey to net zero.

2.2.1 Five levers

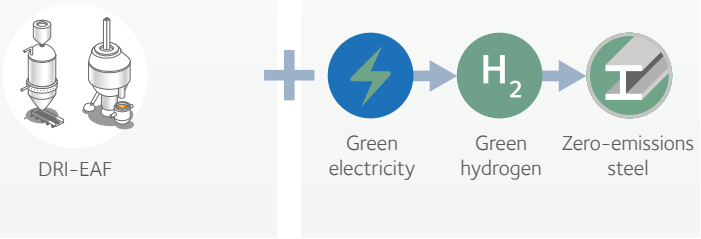
Our roadmap features five levers – in essence, groupings of actions and initiatives – that act as stepping stones to achieving carbon neutrality by 2050. These are:

- **A.** Steelmaking transformation
- **B.** Energy transformation
- **C.** Increased use of scrap
- **D.** Sourcing clean electricity
- **E.** Offsetting residual emissions

A. Steelmaking transformation

In the course of the coming decades, the steel industry will undergo a transformation of the assets used to make steel on a scale not seen for over 100 years. This includes switching ironmaking from the BF-BOF (Blast Furnace-Basic Oxygen Furnace) to the DRI, and from iron ore preparation in the sinter plant (using heat or pressure to compact a material) to the pellet plant (which compresses or moulds the iron material into the shape of a pellet). Ironmaking with pellets in the DRI is usually coupled with EAF.

Historically there has been limited use of the DRI-EAF route except in regions with a very low natural gas price. However, given the increasing cost of carbon and the requirement to reduce emissions, transitioning to natural-gas based DRI-EAF can be a first step with a proven technology that has the potential to further innovate and decarbonise through the use of green hydrogen.



B. Energy transformation

Over recent decades, the steel industry has made enormous efficiency improvements in the efficient use of energy in BF-BOF steelmaking via multiple technologies. Further innovations continue to evolve which reduce CO_2 emissions, such as the use of coke oven gas in the tuyeres of the blast furnace, drawing on the rich hydrogen content of the gas. However, these innovations continue to rely significantly on the use of fossil fuels.

The energy used to make steel in future years will undergo a further and more radical transition of the industry to clean energy vectors, as we have described in our previous climate action reports. This will involve shifting to one or combination of three alternatives: clean electricity (which could be in the form of green hydrogen), continued use of fossil carbon coupled with CCS to ensure no carbon is emitted, and use of circular carbon either through natural or synthetic carbon cycles. Natural carbon cycles include use of sustainable forestry and agriculture residues, to produce bioenergy for use in steelmaking. Emissions from use of this bioenergy will be captured by the regrowth of the biomass waste used. Synthetic carbon cycles rely on use of waste plastics as energy source, transforming the carbon in waste gases through CCU into equivalent new plastics, and ensuring no emissions are generated.

C. Increased use of scrap

As well as using scrap in the EAF, we can increase the use of low-quality scrap in BF-BOF steelmaking process by improving steel scrap sorting and classification, installing scrap pre-melting technology and adjusting the steelmaking process to accommodate scrap.

D. Clean electricity

Reducing our scope 2 emissions means mainly focusing on sourcing low-carbon electricity. This will be an increasing challenge for ArcelorMittal as we launch projects to transition from BF-BOF technology to scrap and DRI-EAF technology, which will result in electricity becoming a greater part of the energy mix we use to make steel.

We recognise we cannot rely on the electricity grid becoming more decarbonised as a whole and need to focus on increasing the amount of clean electricity we consume. We plan to do this by purchasing renewable energy certificates and by direct power purchase agreements (PPA) with suppliers from renewables projects.

E. Offsetting residual emissions

While ArcelorMittal is committed to achieving net zero by reducing CO_2e emissions to the atmosphere from its operations, there are likely to remain residual emissions for which either there will be no feasible technological solution or the solution involves excessively high economic or social costs.

For these residual emissions – today we estimate less than 5% of total emissions – ArcelorMittal will buy high-quality offsets or launch projects to generate high-quality carbon credits that would not have happened without the company's intervention.

Section 2 Our decarbonisation strategy

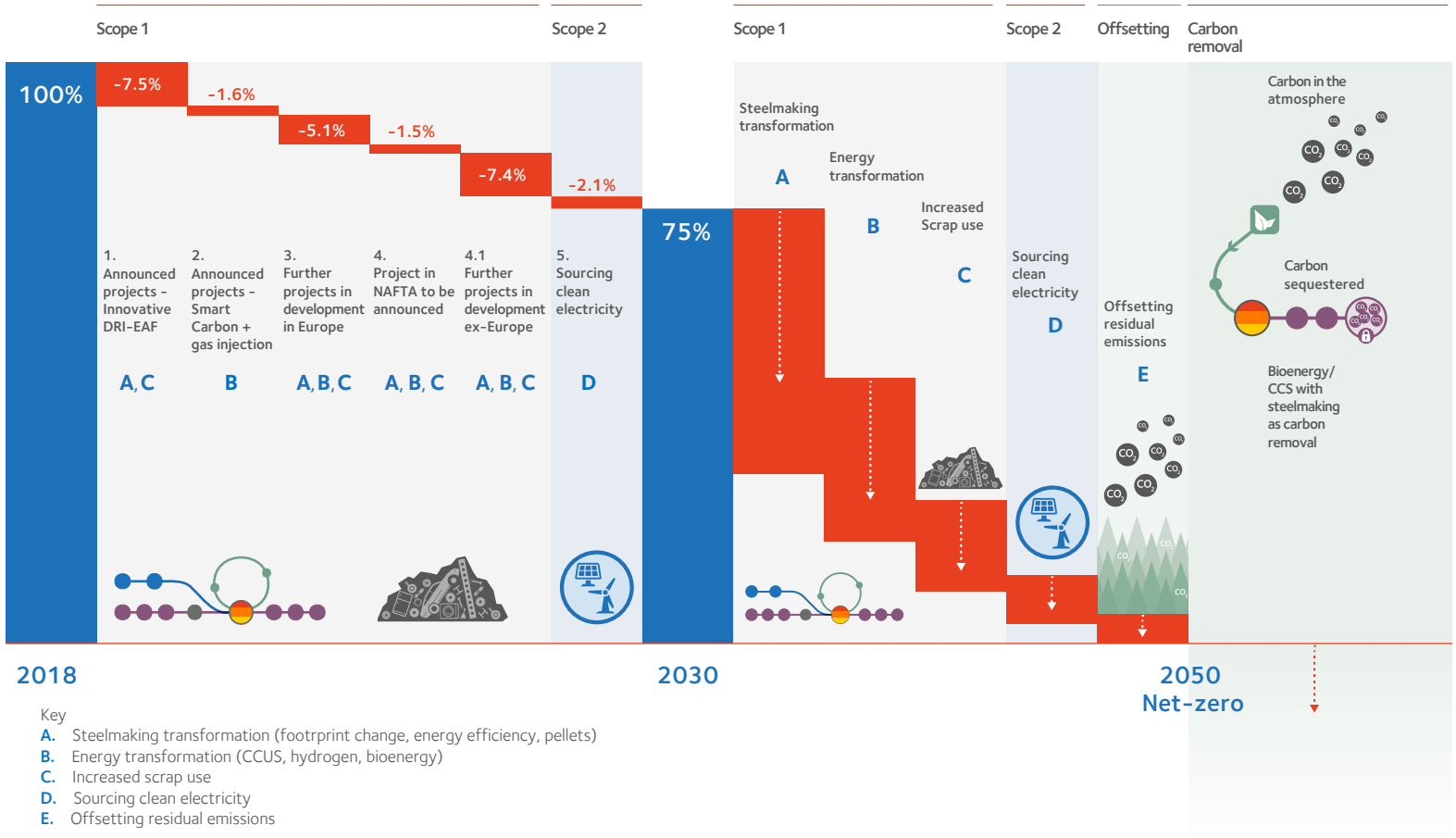
2.2 Our net-zero roadmap

Up to 2030, the waterfall chart shows a breakdown of the 25% global reduction in CO_2e emissions intensity we are targeting, taking into account announced projects and initiatives we expect to announce over the coming years.

1. Announced projects – Innovative DRI-EAF
2. Announced projects – Smart Carbon and gas injection
3. Further projects in development in Europe
4. Project in NAFTA to be announced; further projects in development ex-Europe
5. Sourcing clean electricity

We provide details of announced projects in Section 2.3.

The waterfall chart 2030-2050 breakdown is for illustrative purposes only



Key
- **A.** Steelmaking transformation (footrprint change, energy efficiency, pellets)
- **B.** Energy transformation (CCUS, hydrogen, bioenergy)
- **C.** Increased scrap use
- **D.** Sourcing clean electricity
- **E.** Offsetting residual emissions

Section 2 Our decarbonisation strategy

2.2 Our net-zero roadmap

2.2.2 Technology pathways

As we have explained in previous climate action reports, we have identified two viable decarbonisation technology pathways for steel: Innovative DRI and Smart Carbon, and a third pathway, direct electrolysis, which is promising but not yet mature.

We have done a lot of work developing technologies for the two viable routes since the publication of our last report. While these technologies are still far from being commercially competitive, this work has reinforced the potential that both pathways have to produce net-zero steel.

In Europe, the policy environment has enabled ArcelorMittal to accelerate plans to decarbonise steel. EU policy combined with support for significant projects to kickstart the development of hydrogen infrastructure in Europe and reduce the costs, alongside ambitious national commitments to deliver abundant supplies of clean energy and provide funding support for decarbonisation, make it possible to envision zero carbon-emissions steelmaking in first-mover countries across scope 1 and 2 emissions within the next five years: as set out in our detailed plan for our Sestao plant in Spain.

As renewable and low-carbon electricity becomes increasingly available, the production of affordable, industrial-scale green hydrogen becomes a possibility and the prospect of zero carbon-emissions steel made via the green hydrogen–DRI–EAF route becomes viable. In Europe, our strategy is largely focused on the Innovative DRI pathway. This reflects the commitment in Europe to prioritise the availability of green hydrogen at competitive prices. Given the significant variation across countries and regions in existing CO_2 policy frameworks and in the availability and cost of the clean energy, we will continue to develop our Smart Carbon route. This combines bio-energy, carbon capture and utilisation – all technologies that the International Energy Agency (IEA) and the UN Intergovernmental Panel on Climate Change (IPCC) see as critical to achieving net-zero by 2050. Crucially, Smart Carbon gives us flexibility to adjust our carbon emission reduction plans to local steelmaking conditions.

We are also cautiously optimistic about a third potential technology pathway – direct electrolysis of iron – which is currently in the research and development phase and showing good potential in our Siderwin project (see section 5.1 for more information).

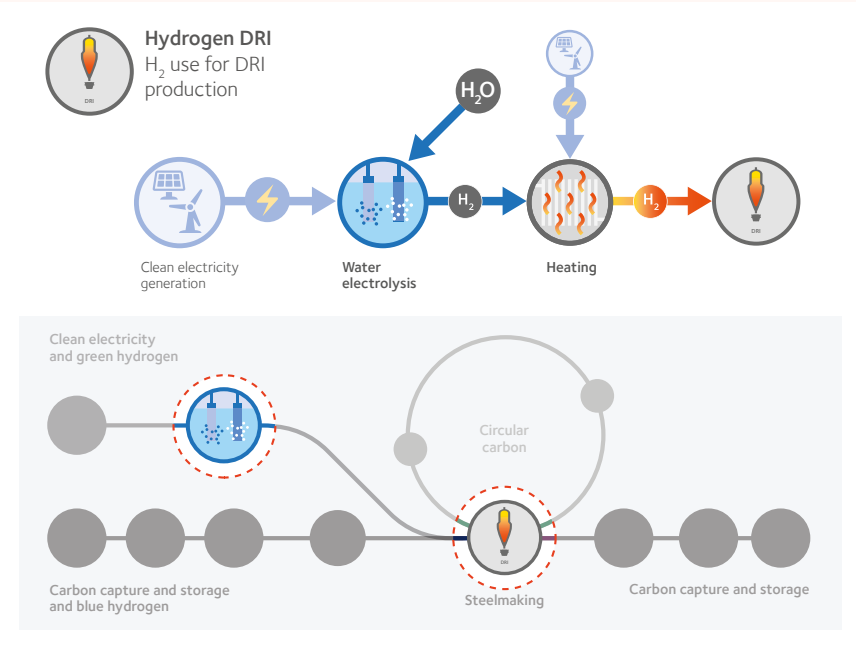
Hydrogen costs

Hydrogen DRI technology continues to advance, yet at today's green hydrogen cost of $3.5-5/kg, we estimate that green hydrogen based DRI production would increase the cost of steel production by $150 to $250 per tonne compared to natural gas based DRI. On a like-for-like basis (excluding CO_2 costs), hydrogen would need to fall below $1/kg to compete with natural gas DRI in Europe, and below $0.7/kg to compete in USA.

If renewable energy costs – the highest contributor to green hydrogen costs – continue to fall, we estimate green hydrogen costs could drop to ~$1.5/kg by 2030. This still means that green hydrogen DRI would require significant public support beyond 2030 to be competitive versus other carbon neutral steelmaking routes.

ArcelorMittal has recently joined the Hydeal consortium, which is focussed on creating the right environment to improve both the supply and market conditions required to drive down the price of green hydrogen to €1.5/kg. At this level it can start to be competitive with fossil fuels in the steel-making process.

Should the costs of green hydrogen fall more quickly than our estimates – which could happen as a result of accelerated regulation and strong government support – then we will be ready to utilise green hydrogen in our DRI-EAF plants. At this point, we expect green hydrogen DRI-EAF to play a significant part in our emissions reduction after 2030.



Section 2 Our decarbonisation strategy

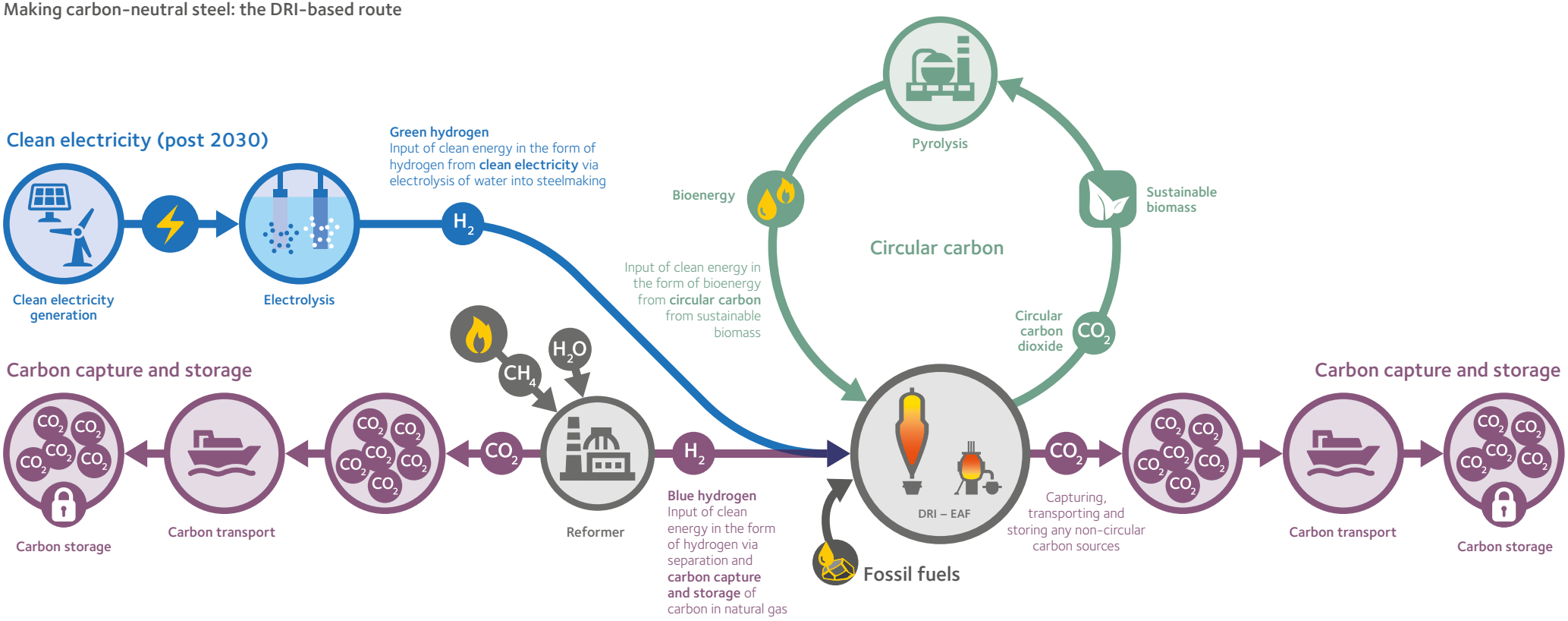
2.3 Our plans: the DRI-based route

2.3.1 Decarbonisation projects 2021-2030

2.3.1.1 Announced projects – Innovative DRI-EAF

At the forefront of our announcements in 2021 are detailed plans to develop a zero carbon-emissions steel plant in Sestao, Spain. It will produce zero carbon-emissions steel across scope 1 and 2 emissions by 2025. We are also working on other new technologies for low carbon-emissions steelmaking.

Making carbon-neutral steel: the DRI-based route



Section 2 Our decarbonisation strategy

2.3 Our plans: the DRI-based route

ArcelorMittal Spain

Sestao: zero carbon-emissions steel plant
Gijon: new DRI and EAF

ArcelorMittal's facility in Sestao will become the world's first full-scale zero carbon-emissions steel plant. To achieve this, a ~2 million tonne green hydrogen-powered DRI unit will be constructed at our nearby Gijón plant, from which tonnes of DRI will be transported to Sestao to be used as feedstock for its two EAFs.

By 2025, the Sestao plant – which manufactures a range of flat steel products for the automotive and construction sectors, and general industry – will produce 1.6 million tonnes of zero carbon-emissions steel by:

- Changing the metallic input by increasing the proportion of circular, recycled scrap, and using green hydrogen-produced DRI from Gijón in its two existing EAFs. This means the metallic input into Sestao's EAFs will be from zero carbon emission sources (covering scope 1 and 2).
- 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 (GOOs) certificates.
- Introducing several key emerging technologies that will replace the small, remaining use of fossil fuel in the steelmaking process with carbon-neutral energy inputs, such as sustainable biomass or green hydrogen. This will bring the plant to zero carbon-emissions on a scope 1 and 2 basis.

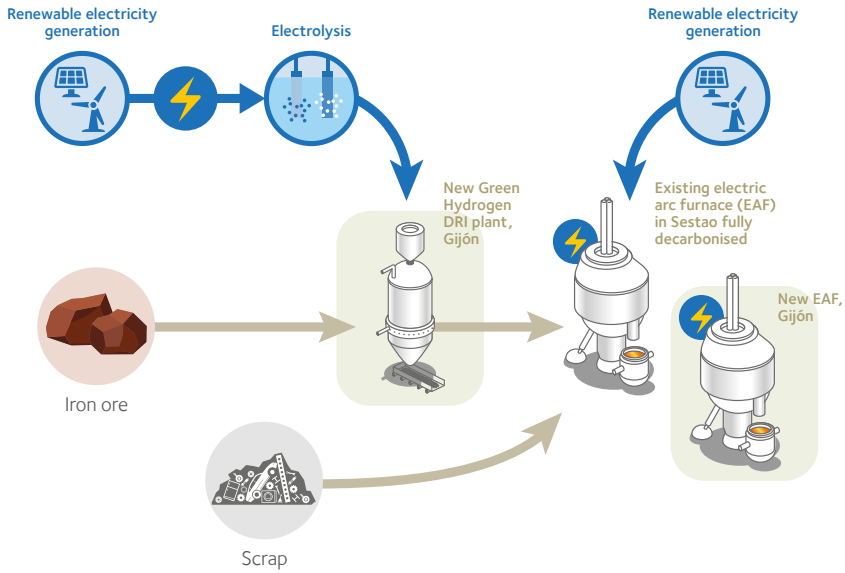
We will also construct a new hybrid EAF in Gijón. The construction of the DRI and EAF units will transition the Gijón plant away from BF-BOF steelmaking to DRI-EAF production, which generates a significantly lower carbon footprint.

We have signed a Memorandum of Understanding with the Spanish government that will underpin the EUR1 billion required for the transition.

Government support for this project is crucial, firstly from a funding perspective, given the significant cost associated with the transition to net zero steelmaking. Secondly, because it will enable ArcelorMittal to have access to green hydrogen supplied through a consortium of companies that will cooperate in the construction of the infrastructure required in order to produce hydrogen in the Iberian Peninsula using solar-powered electrolysis and to transport it directly through a network of pipelines. The initiative involves the construction of multiple large-scale solar farms, with the hydrogen produced in the same location, thereby reducing production costs, and transported directly via pipeline to Gijon and Sestao.

Expected completion date: 2025

This is how we will reduce CO_2 from ArcelorMittal Spain by 2025



Section 2 Our decarbonisation strategy

2.3 Our plans: the DRI-based route

ArcelorMittal Germany

Bremen and Eisenhüttenstadt: supporting zero carbon-emissions steelmaking

We are planning to build a large-scale industrial plant for DRI and EAF-based steelmaking at our site in Bremen, as well as an innovative DRI pilot plant and EAF in Eisenhüttenstadtat. The Bremen plant will produce ~2 million tonnes of DRI per year and supply ArcelorMittal EAFs in Bremen and Eisenhüttenstadt.

Bremen and Eisenhüttenstadt will produce up to 3.5 million tonnes of steel by 2030, with significantly lower CO_2e emissions.

Depending on the amount of hydrogen available, CO_2e savings of more than 5 million tonnes could be possible.

Hamburg: Europe's only EAF-DRI facility

In Germany, ArcelorMittal already operates Europe's only DRI-EAF plant in Hamburg, where the switch to using hydrogen instead of natural gas in the iron ore reduction process is being prepared. A project is 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. The objective is to reach industrial commercial maturity of the technology by 2025, initially producing 100,000 tonnes of DRI a year.

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.

Supporting green hydrogen production

To support and enable the availability of hydrogen for steel production, ArcelorMittal is participating in the establishment of regional hydrogen networks. These include North German hydrogen projects: the Clean Hydrogen Coastline to benefit Bremen and the Hydrogen Cluster East Brandenburg to enable hydrogen supply for Eisenhüttenstadt.

ArcelorMittal is also 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.

Section 2 Our decarbonisation strategy

2.3 Our plans: the DRI-based route

ArcelorMittal France

Dunkirk: preparing for the transition

ArcelorMittal is currently studying the implementation of an innovative solution to produce low carbon steel in Dunkirk in partnership with Air Liquide. The project aims to combine a Direct Reduction Plant with arc furnaces to produce 2 Mt/y hot metal which would be a first of a kind. The project includes low carbon hydrogen use and would lead to CO_2e savings.

Commissioning is planned for 2025.

This partnership between Air Liquide and ArcelorMittal is a first step towards the creation of an ecosystem at the forefront of low-carbon hydrogen and CO_2 capture solutions that will be a source of competitiveness and attractiveness for various players in the Dunkirk industrial and port basin.

ArcelorMittal Canada

Contrecoeur: Testing incremental use of hydrogen in existing facilities

Status: Operational

Our existing DRI plant in Quebec produces 1.7 million tonnes of DRI each year. In 2021 we are testing hydrogen injection in our DRI facility. The test is a "proof of principle" type aiming at building our knowledge about this greenhouse emission abatement technique and exploring its potential and viability beyond theoretical calculations or process modelling. The test will start with a limited injection of 5% within the energy mix and further phases are planned in the future. This is mostly attractive because renewable sources – specifically hydroelectric – provide 99% of Quebec's energy.

The role of hydrogen

There is growing international consensus that clean hydrogen can and should play an important role in the world's transition to a sustainable energy future. Hydrogen is a versatile energy carrier and is easy to use with many potential applications. These include powering road vehicles and ships, and serving as a primary fuel for steelmaking. Hydrogen – especially green hydrogen – has an important role to play in the future of steelmaking, in both the Innovative DRI and Smart Carbon technology pathways.

Hydrogen can be produced from a range of sources with little to no carbon emissions. Green hydrogen uses solar or wind power to separate the hydrogen from water through electrolysis. Blue hydrogen extracts the hydrogen in natural gas and sequesters the resulting CO_2 to minimise emissions. It has the potential to be a game-changer, as our recent announcement in Spain demonstrates, but widespread adoption of clean hydrogen faces significant challenges.

Producing clean hydrogen today is expensive, 2 to 5 times costlier than CO_2-emitting hydrogen produced today (grey hydrogen) and cannot compete on its own with other fuels such as natural gas, even when factoring in CO_2 costs.

Easy to use as a fuel, manipulating and transporting hydrogen is difficult due to its low density and logistics challenges are a formidable obstacle to widespread hydrogen use. Being one of the lightest gases with low energy density, transporting pure hydrogen long distances requires dedicated piping network, or alternatively hydrogen needs to be liquefied for road or ship transport. Only some of the necessary transport technology is commercially mature today and transporting hydrogen, particularly in liquid form, adds significant additional costs to using hydrogen.

Policymakers, particularly in Europe and Japan, are supporting the development of green hydrogen production, pipeline and liquefaction infrastructure through to 2030 through various forms of public funding. This investment drive in hydrogen, together with further anticipated reductions in solar PV and wind power costs, will have a scale effect that is likely to lead to electrolyser and transport costs for hydrogen coming down significantly.

However, with a high cost starting point, we believe that significant policy support may be needed in many jurisdictions beyond 2030 in both hydrogen production and the necessary transport infrastructure to sustain and expand hydrogen use in the steel industry.

Photo: © Adobe

Section 2 Our decarbonisation strategy

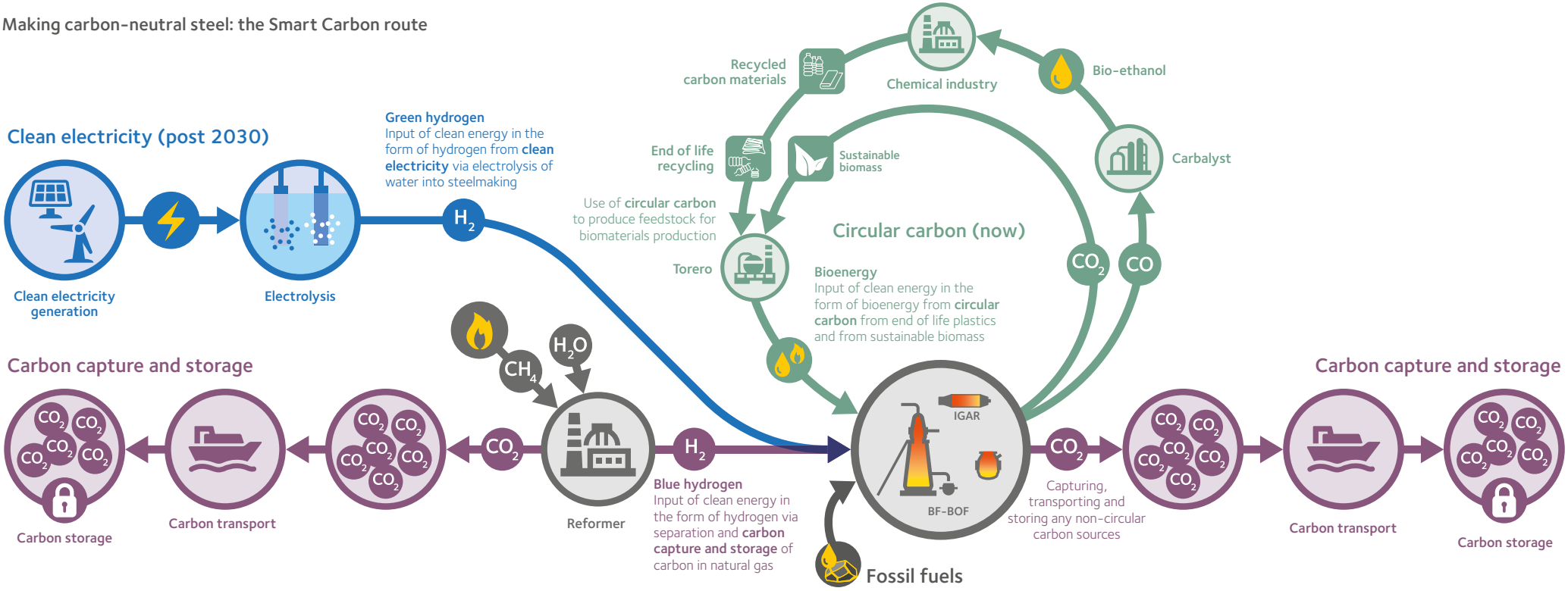
2.3 Our plans: the Smart Carbon route

2.3.1 Decarbonisation projects 2021-2030

2.3.1.2 Announced projects – Smart Carbon

We are constructing several commercial-scale projects to test and prove a range of Smart Carbon technologies, with key projects coming on-stream from 2022.

Making carbon-neutral steel: the Smart Carbon route



Section 2 Our decarbonisation strategy

2.3 Our plans: the Smart Carbon route

Circular carbon: "Torero" and "Carbalyst"

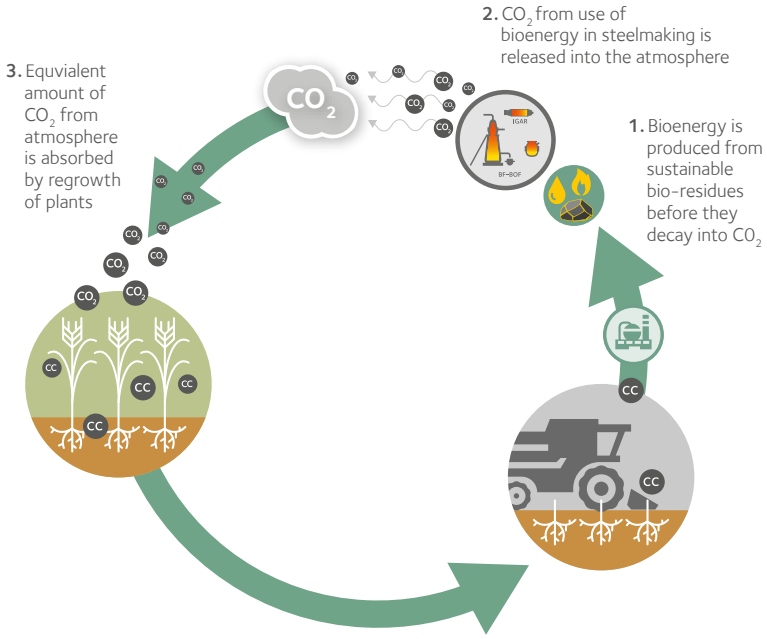
Circular carbon uses carbon-based energy that does not add carbon to our biosphere. It can be in the form of bioenergy from the natural carbon cycle, such as waste from sustainably-sourced construction wood, agriculture and forestry residues, where regrowth of managed forests and crops will recapture the CO_2 emitted from the bioenergy used.

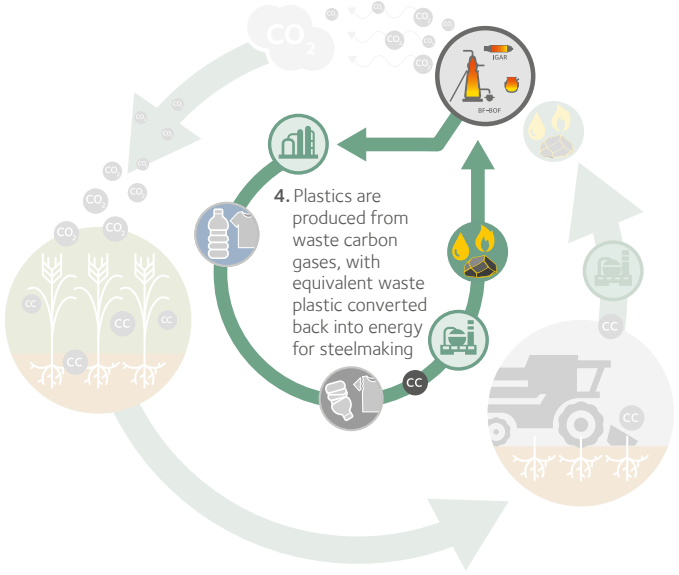
It can also be from capturing carbon gases produced by the iron and steelmaking process and converting into recyclable products. For example, plastic waste used as energy, for which exhaust carbon gases are turned back into equivalent amount of new plastics. Equivalency in the carbon content of waste plastics used and new plastics produced ensures the process is carbon neutral. This cycle also provides the plastics industry a circularity that it lacks today.

We are developing two key technologies to enable use of circular carbon.

"Torero" is a torrefaction process to make steel-specific renewable energy from waste wood and waste plastic.

"Carbalyst" allows us to use steelmaking waste gases to produce basic chemicals such as bio-ethanol, which are the key building blocks of plastics.





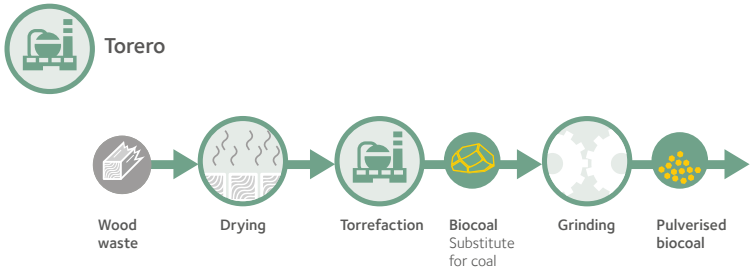
Section 2 Our decarbonisation strategy

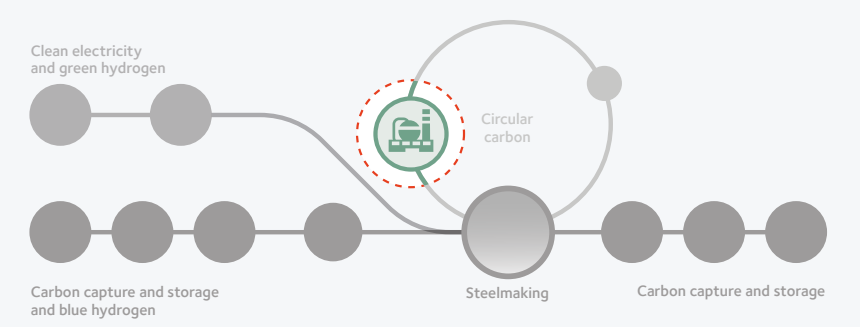
2.3 Our plans: the Smart Carbon route

ArcelorMittal Ghent, Belgium

"Torero": At ArcelorMittal Ghent, we are constructing an industrial-scale demonstration plant that converts waste wood into renewable energy through a process called torrefaction. This source of waste wood is considered hazardous material if burnt in an incinerator as it emits harmful gasses. However, in a blast furnace no such pollutants can be formed. At the Ghent plant, two reactors will each produce 40,000 tonnes of bio-coal annually that can be used in the blast furnace as a substitute for coal. Construction of the €55 million project started in 2018: reactor #1 is expected to start production in 2022 and reactor #2 in 2024.

Expected completion date: 2022 (reactor 1) & 2024 (reactor 2)





Section 2 Our decarbonisation strategy

2.3 Our plans: the Smart Carbon route

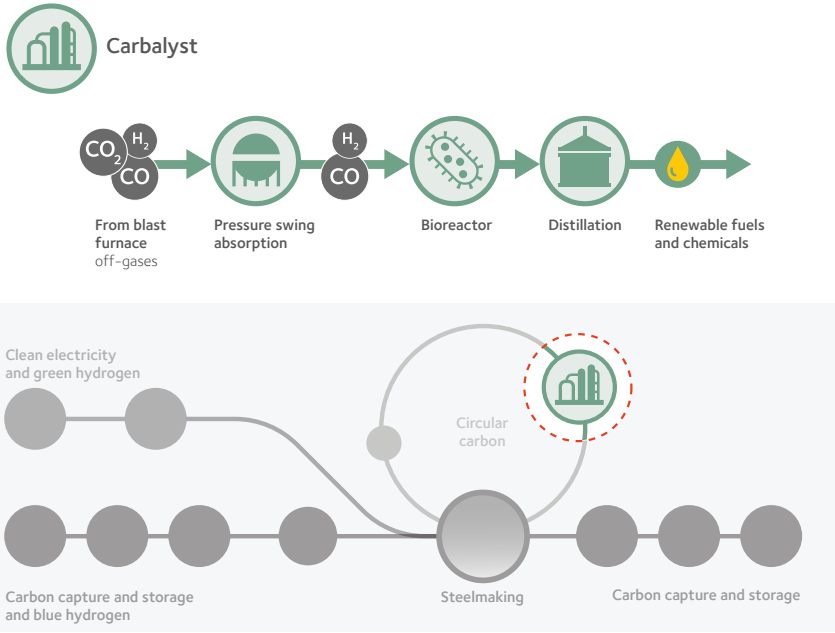
"Carbalyst" is a family of technologies that capture carbon from the steel-making process for use elsewhere, either a biofuel or biochemical for use by the plastics industry.

"Steelanol" uses gas-fermentation technology to transform carbon-rich industrial waste gases into advanced bioethanol for use in the transport sector and to make plastics.

We are in the process of constructing an industrial scale Steelanol demonstration plant in Ghent, Belgium that will capture carbon off-gases from the blast furnace and convert them into bioethanol using microbes. The ~€180 million plant is expected to be completed in 2022 and will produce 80m litres of bioethanol annually.

"CarbHFlex" is a process that uses microbes to produce acetone and isopropanol, both basic chemicals used to make plastics. This project has been shortlisted for IPCEI funding.

Expected completion date: Steelanol 2022



Section 2 Our decarbonisation strategy

2.3 Our plans: the Smart Carbon route

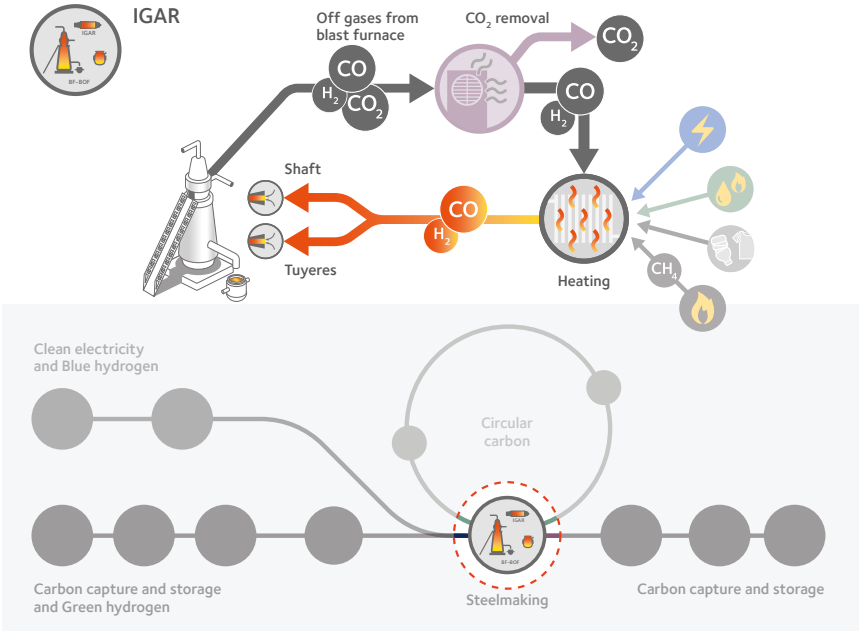
Circular gas and IGAR

Status: demonstration

IGAR (Injection of Gas Reductant in blast furnace) is a transformative technology for the blast furnace, key to transition to carbon neutral blast furnace technology. IGAR increases the re-use of off-gases in the blast furnace, reducing the consumption of coal per tonne of steel produced and cutting CO_2e emissions by up to 20%.

It will capture waste carbon monoxide and hydrogen from steel gases and reinject into the blast furnace as a reductant gas. Additionally, this technology increases the concentration of hydrogen in blast furnace off-gases, increasing the amount of carbon captured in Carbalyst processes by increasing the production of biofuels and biochemicals. This technology will also allow green hydrogen to be injected directly into the blast furnace, as and when it becomes available and commercially viable.

This technology can be further leveraged by injecting additional carbon monoxide and hydrogen from external clean energy sources, such as green hydrogen, further reducing coal use, CO_2e emissions and waste gases of other industries e.g. chemicals.



Section 2 Our decarbonisation strategy

2.3 Our plans: the Smart Carbon route

Dunkirk: 3D

Status: Pilot

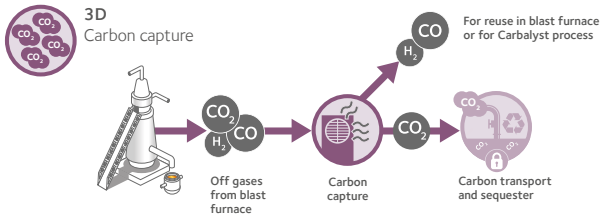
A pilot project in Dunkirk aims to capture CO_2 off-gases at a rate of 0.5 metric tonnes of CO_2 per hour for transport and storage. The process uses low temperature heat available across the plant to separate CO_2 from other off-gases from the blast furnace to create a pure low-pressure CO_2 gas stream suitable for internal reuse or piping for storage. This process could significantly lower CO_2 capture costs versus alternative technologies. Regional infrastructure would be requested for all local industrial companies in order to optimise usage and efficiency of the solution.

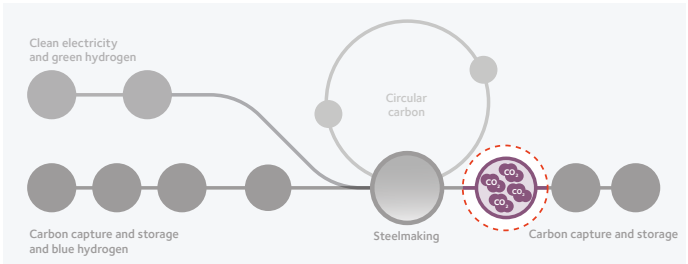
Expected completion date: 2023

3D impact and ramp up

This carbon capture technology has the potential to be adopted across our blast furnace footprint but scaling will be highly dependent on development of CO_2 transport and storage infrastructure in the regions we operate. We are actively engaged in carbon transport and storage at several locations in Europe and exploring the possibility in other regions.

Deployment of our 3D technology will be linked to the development of CO_2 pipeline infrastructure, as well as deployment of CO_2 reuse technologies in our blast furnaces.





2.3.1.3 Announced projects – Blast furnace gas injection across ArcelorMittal Flat Europe sites

ArcelorMittal Europe is implementing projects in almost all its flat products sites to use gases from different sources for blast furnace injection. Injecting hydrogen-rich coke oven gas is an efficient, cost-effective method that allows steelmakers to reduce CO_2 emissions now.

ArcelorMittal Asturias has the most advanced coke oven gas project, with injection of recovered hydrogen and methane containing gases from the coke ovens, announced in February 2021.

The use of this innovative technology will result in a reduction in CO_2 emissions of 125,000 tonnes a year.

Section 2 Our decarbonisation strategy

2.3 Our plans: increased use of scrap

Increased use of scrap

As well as using scrap in the EAF, we can increase the use of low-quality scrap in BF-BOF steelmaking process by improving steel scrap sorting and classification, installing scrap pre-melting technology and adjusting the steelmaking process to accommodate scrap.

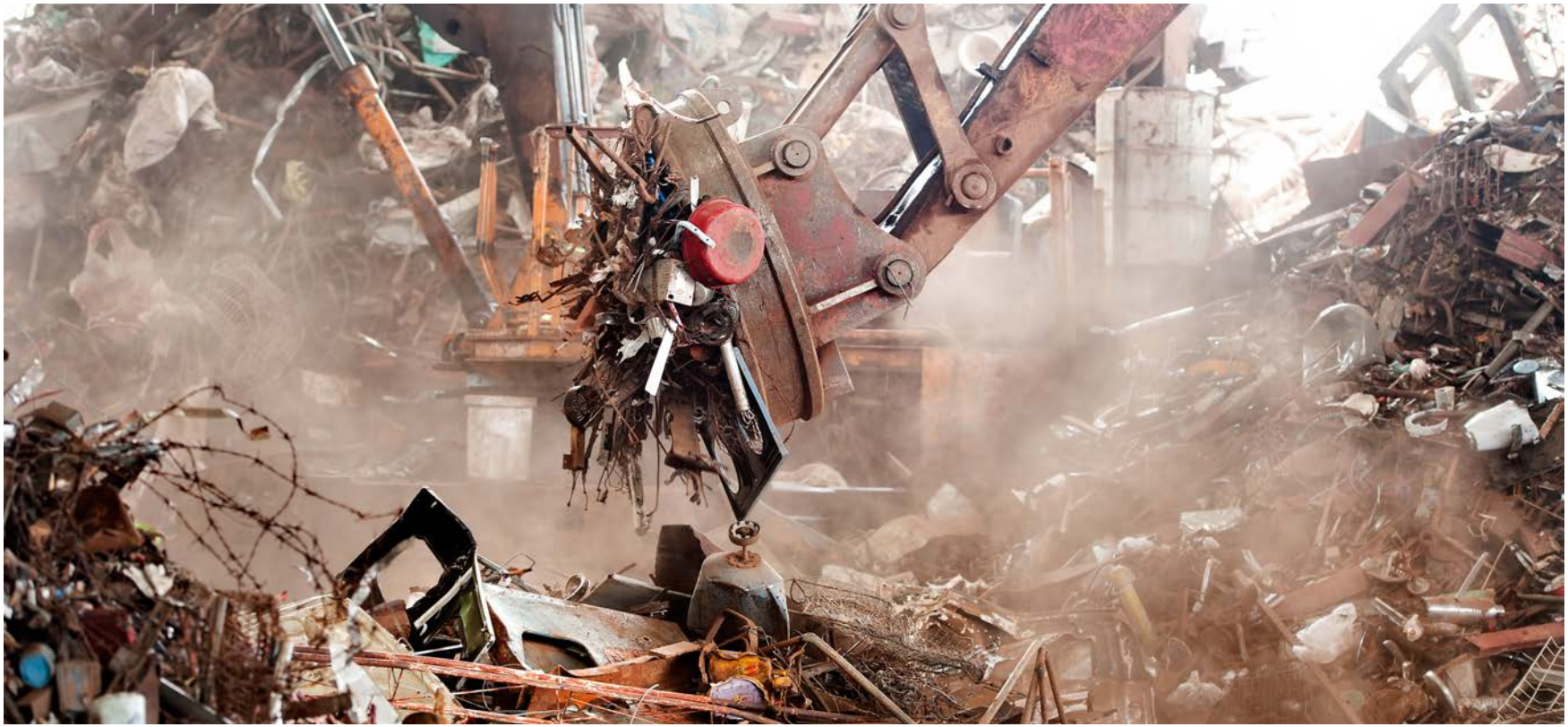


Photo: © Adobe

Section 2 Our decarbonisation strategy

2.3 Our plans: further projects under development

2.3.2 Further projects under development

Our 2030 target also includes projects that are currently under discussion and development but have not yet been announced.

These include but are not limited to the following:

Europe:

- Further investment in DRI and EAF installations linked to certain BF relines scheduled within the next decade
- Additional smart carbon projects if and when current pilot projects prove successful

ROW:

- Implementation of upstream optimisation, specifically in the CIS region
- Increased use of scrap and natural gas within the current footprint
- Implementation of pelletising projects which will over time replace Group sintering processes
- Project in NAFTA to be announced

2.3.3 Mining and shipping

ArcelorMittal is developing different solutions to reduce its greenhouse gas emissions from its mining and processing operations.

ArcelorMittal Mining Canada (AMMC) continues to study and trial zero carbon emissions iron ore pellet production. AMMC has undertaken trials to reduce its CO_2e emissions associated with bunker fuel and solid fuels at the pellet plant through liquid fuel substitutions. It is working with the Global R&D team and ArcelorMittal's experts to develop pellets with the objective of becoming the first zero carbon-emissions pellets supplier for the ArcelorMittal Group. These potential pathways include carbon capture, among other technologies. ArcelorMittal Liberia is exploring opportunities to reduce its GHG emissions by switching from largely diesel to the new West African 'green power grid'.

ArcelorMittal Mining will also act as an enabler for ArcelorMittal's current steelmaking transition from blast furnace processes to cleaner DRI-based EAF processes by increasing the ratio of DR pellet production capacity.

ArcelorMittal Termitau is developing a renewed strategy for its metallurgical coal mining operations, to ensure they meet the best safety standards possible whilst also significantly reducing the greenhouse gases that result from their methane-rich coal seams. Already at the Lenina mine, ArcelorMittal is developing a methane capture project, which converts the captured methane into electricity to power the underground mining equipment. When at full scale, such projects will enable the operations to be fully circular in terms of energy sourcing and use.

Through its joint venture Global Chartering with Drylog, ArcelorMittal also co-owns a small shipping business, enabling us to capture value in both upstream and downstream transportation aspects of our value chain. In line with the International Maritime Organisation (IMO)'s decarbonisation strategy, our existing ships comply with the latest Energy Efficiency Index benchmarks. Any new ships we purchase are designed to align with environmental expectations of the industry. With our technical partners, we are exploring the potential for the transition to alternative fuels such as hydrogen and ammonia; and given the capital-intensive nature of this transition, the policy conditions that will make this possible.

Section 2 Our decarbonisation strategy

2.3 Our plans: beyond 2030

2.3.4 Beyond 2030 – achieving net zero by 2050

We recognise the importance of defining the constituent elements of net-zero to ensure we make necessary progress towards the challenge. The fundamental aspects of our net-zero outlook include:

- Steelmaking: this means that all emissions within the boundary of core steelmaking emissions sources are incorporated into a net-zero target, incorporating the core carbon emissions of steelmaking, regardless of the level of vertical integration, including emissions from waste gas used for power generation, and the processing of iron ore reductants and other semi-processed inputs that are integral to iron and steelmaking, such as lime, pellets and coke and, in future, hydrogen and biomass. This has been outlined in the recent report by the Net-Zero Steel Pathway Methodology Project.
- Co-products: It is important to recognise that different steelmaking technologies produce various other products that directly substitute production needs of other industries, such as cement. Thus, it is important that carbon emissions are allocated to all co-products we produce apart from steel, placing the right carbon burden on products and ensuring the optimal technological decisions are taken to become carbon neutral. These include cement, electricity and, shortly, the basic building blocks for plastics.
- Mining and shipping: Ultimately, we need to work towards net-zero across our entire value chain as part of our net-zero by 2050 goal, including our mining and shipping emissions. ArcelorMittal's significant iron ore mining activity provides an advantage. This vertical integration strengthens our ability to develop long term plans for the production and sourcing of DR pellets. In addition, we are working with our shipping partners to develop levers to decarbonise in line with the IMO strategy. See section 2.3.4, Shipping and Mining.

Key to ensuring ArcelorMittal becomes net-zero by 2050 across all these parameters will be the five levers outlined earlier – steelmaking transformation, energy transformation, increased use of scrap, clean electricity and offsetting.

For those residual emissions that would remain hard to abate, we may rely on high quality offsets, removing equivalent volumes of GHG emissions from other activities outside ArcelorMittal's control in order to ensure that our own operations do not, on balance, contribute to increased concentrations of greenhouse gases in the atmosphere.

Furthermore, we believe the steel industry is ideally positioned to become a key sector in carbon removals that will be increasingly necessary through 2050, and will dominate world's decarbonisation efforts in the second half of this century. As one of the most efficient energy users of various streams of limited bioenergy available, and ease of capture of CO_2 at the end of the process compared with other sectors such as power and cement, steel has potential for becoming the key industry to leverage bioenergy and carbon capture and storage (BECCS) to remove CO_2 from the atmosphere.

Photo: © ArcelorMittal

Section 2 Our decarbonisation strategy

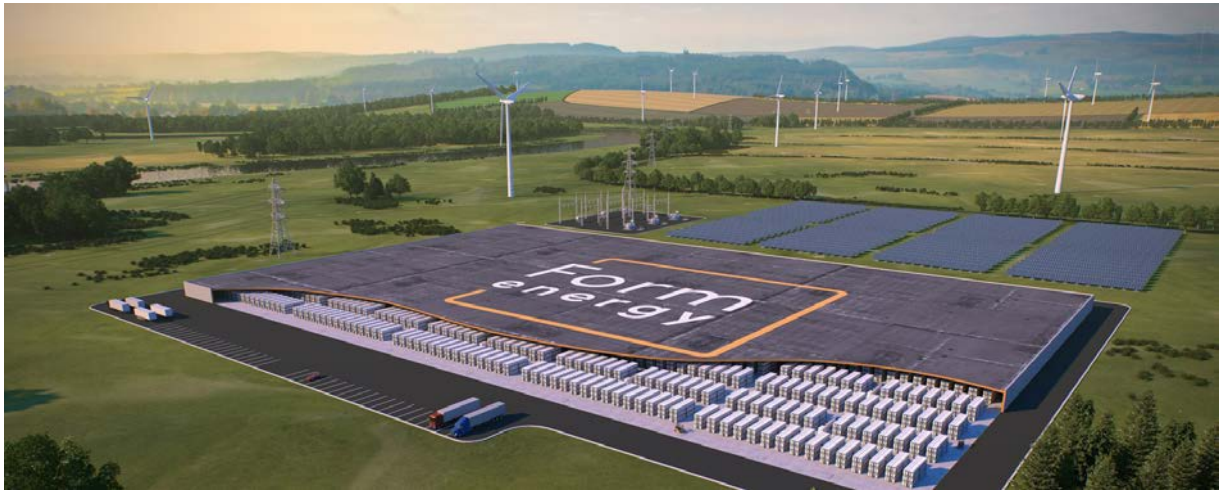
2.3 Our plans: beyond 2030

XCarb™ Innovation Fund

Given the breadth and scale of the challenge, we know innovation will play an accelerator role in achieving net-zero by 2050. In March 2021, ArcelorMittal launched its $500 million innovation fund with the intention of making awards of up to $100 million a year to innovative businesses and technologies.

The first award of $10 million was made in June 2021 to Heliogen, a technology company focused on developing heat, electricity and fuels from concentrated solar energy. The Heliogen technology will be capable of creating 100% green hydrogen, which Heliogen is working to develop as its first fuel. ArcelorMittal and Heliogen have signed a Memorandum of Understanding which aims to evaluate the potential of Heliogen's products in several of ArcelorMittal's steel plants.

In July, ArcelorMittal announced it has invested $25 million in Form Energy, developer of breakthrough low-cost energy storage technology to enable a reliable, secure, and fully-renewable electric grid year-round. Alongside the investment, the two companies have signed a joint development agreement to explore the potential for ArcelorMittal to provide direct reduced iron, tailored to specific requirements, to Form Energy as the iron input into their battery technology.



ArcelorMittal invests $25 million in Form Energy. Photo: © Form energy

Section 2 Our decarbonisation strategy

2.4 Costs, investments, and funding

The Energy Transitions Commission, of which we are an active member, estimates that the required additional investments to achieve a zero-carbon-emissions economy in 2050 – while significant in absolute dollar terms – will amount to no more than 1% to 1.5% of global GDP (~US$1 trillion to US$2 trillion per year).

The costs from the perspective of the steel industry however are significant, vastly exceeding the margins typically generated by the steel industry throughout the cycle. Even as costs decline as technologies mature and clean energy infrastructure is scaled up, the steel industry will not be able to absorb the extra costs under normalised market conditions. While the steel industry must take the lead on technology developments, a complementary and concerted effort will be needed from suppliers, customers, the energy industry and policy makers to create the right market conditions for the industry to transition to zero carbon-emissions steel. In section 2.5 we outline the policy conditions that are needed, and multiple stakeholder initiatives that are helping drive these changes. We will need to accelerate this collaboration to drive forward solutions in sufficient time to achieve our targets.

To achieve ArcelorMittal's 2030 global target of 25%, we estimate the gross capital cost required for the Group to be approximately US$10 billion. It is the expectation that 35% of this capex will be deployed up to 2025 with the remainder in the second part of the decade.

The intention is clearly that over time low carbon technologies will become more competitive as the carbon price increases and is applied globally and the decarbonisation technologies themselves become more mature and efficient.

Realistically however this will take at least ten years and therefore during that interim period policy support will be essential to both moderate capital spend and ensure operational competitiveness.

In terms of support with initial capital spend, as these investments will not generate returns in the transition period, these technologies will require further development and refinement. There will be front end loading of Capex required in the next five years which is beyond the industry's ability and further innovation will need to be supported and nurtured. Therefore, we believe that funding in the region of 50% would be appropriate.

Additionally, the costs associated with operating these technologies will likely be higher in the short-to-medium term than higher carbon technologies. It is critical therefore there are policies in place to support regional and global competitiveness of assets that are first movers in the transition to low carbon steel. Policy instruments like contracts for difference, which were used to positive effect in the development a competitive renewable energy sector, have an important role to play.

As a leader in developing technologies needed to transition steelmaking to net-zero, achieving our climate targets also requires us to play a leading and active role with policymakers in different geographies. This will allow us to promote policy ideas that will accelerate the development of these technologies and to create the necessary market conditions to ensure zero carbon-emissions steelmaking is commercially viable.

In terms of our investment decision-making, each major capex project proposal is required to demonstrate its CO_2e impact to the Investment Allocation Committee (IAC). The IAC considers both the potential future carbon cost as well as the capital cost of decarbonisation, to maximise our chances of achieving our targets while ensuring each project is economically justifiable and earns its cost of capital.

LIVING SUSTAINABILITY. TOGETHER.

SUSTAINABILITY REPORT 2020

INEOS STYROLUTION

Driving Success. Together.

Improving energy efficiency:
Styrenics products are lightweight, durable and weather-resistant, making them a longer-lasting and energy-efficient alternative to other materials. We are incrementally improving our operations by efficiently using raw materials and optimising of our production processes. In addition, we invest in technology upgrades at our manufacturing sites and implement energy reduction projects as part of our operational excellence programmes. We are also in discussions with a technology provider to reduce the footprint of our suppliers' steam crackers and further optimise our distillation plants by 2025.

Deploying GHG reduction technologies:
We now offer the integration of renewable feedstock as a replacement for fossil fuel that complies with the highest sustainability criteria. This bio-attributed approach uses fewer fossil resources and has 50% to 90% lower greenhouse gas footprint (depending on the feedstock and polymers) when compared to styrene produced by fossil fuel. This allows us to reduce fossil fuel consumption as well as save GHG emissions. In comparison with certain types of biopolymers (which although bio-based, are not always recyclable), this approach supports the use of bio-feedstock as a drop-in solution in highly optimised, large-scale petrochemical installations to produce circular solutions such as recycled polystyrene and ABS.

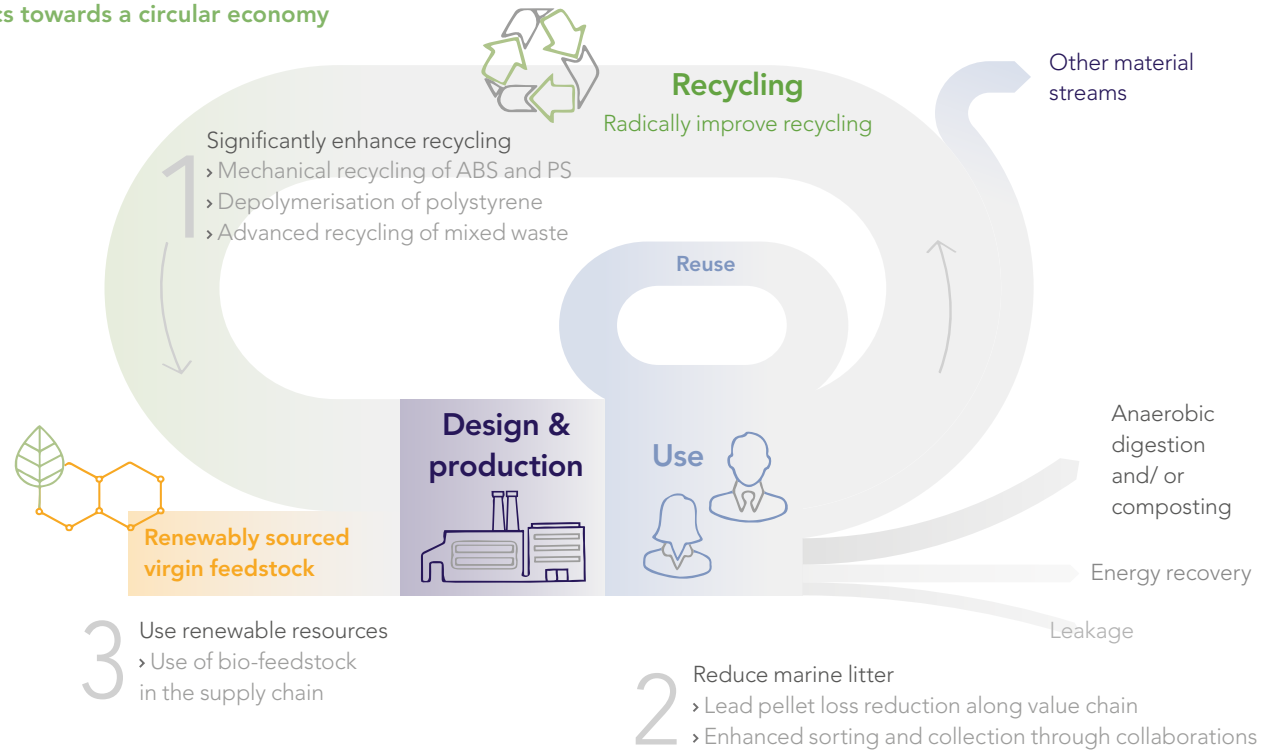
Today, part of our electricity consumption is already based on renewable energy. Antwerp, our largest manufacturing site, has switched its full power usage to renewable energy produced by an offshore wind park in the North Sea. This transition to renewable energy will reduce more than 60,000 tonnes of indirect carbon emissions a year, a reduction equivalent to the power used by about 17,000 average households.

Our parent company, INEOS, has launched a new clean hydrogen business to accelerate the drive to zero carbon emissions. Together with the INEOS Group, we are looking at new technologies such as carbon capture and utilisation as well as using increasing amounts of hydrogen in our furnaces to reduce carbon emissions. The use of carbon offsets for residual emissions is our last option.

As this is the beginning of our journey to a low-carbon economy, some technologies are still in the initial stages, while some technologies are more mature, yet requiring further development. However, we believe this is the only way forward.

While major steps are now being taken to close the loop and provide circular plastics, reducing our carbon footprint in the medium term is part of our sustainability agenda. We are therefore preparing a roadmap to significantly reduce our carbon footprint by 2030.

Contribution of styrenics towards a circular economy



REDUCING OUR ENVIRONMENTAL FOOTPRINT

Operating responsibly is embedded in our corporate values. We are committed to using resources efficiently and safeguarding the environment.

OUR APPROACH

As a leading manufacturer for polystyrene and styrenics specialities globally, we aim to use available resources efficiently and reduce our environmental footprint.

Complete compliance with local and national environmental legislation is mandatory for our operations. We strive to continually improve our operations as well as our sustainability performance by following the key drivers of our environmental policy:

- **Reduction in energy use and greenhouse gas emissions:** Striving to continually optimise the energy efficiency of our technology and operations
- **Resource efficiency, including scrap reduction and waste management:** Efficiently using raw materials, including reuse, recycling and recovery through optimisation of our processes
- **Efficient use of water:** Reducing the use of water where possible and optimising the water efficiency of our operations:
- **Reduction of air emissions and wastewater discharge:** prevention of accidental emissions through advanced process control
- **Prevention of pellet loss:** Avoid the spillage of pellets into the environment through preventative and mitigation measures as well as monitoring at our production sites and during transportation
- **Transparency and open communication on our environmental performance with stakeholders** (personnel, customers, authorities, communities)

To monitor the evolution of our environmental performance, we have integrated key performance indicators (KPIs) on energy and water use, material yield, waste management and air emissions into our business and site procedures.

The continuous tracking and improvement of our data accuracy and our improvement projects reflects the expertise of our manufacturing processes, and our target of operational excellence.

Complying with required regulations, especially for waste and air emissions, is part of our SHE Excellence programme and managed by our site, regional and global SHE representatives. This includes reporting of data, investigation of environmental incidents, risk assessments, defining and review of processes as well as internal and external ISO audits.

As part of the INEOS Group, we have completed the CDP climate change survey in order to gain external validation for our initiatives.

As noted last year, all sites are now ISO 14001 certified. To provide additional synergies, we will integrate ISO 14001 and ISO 9001 surveillance audits moving forward. ISO 14001 recertification audits will occur in 2022. Further implementation of an energy management system (EMS) is under consideration in line with other priorities of our recycling and low-carbon agenda.

Environmental topics are part of our Risk & Control audit programme and include testing on compliance evaluations, soil investigations or remediation, and environmental control measures. In addition, all our sites have programmes to ensure open communication with the local communities.

Our global sustainability data is collected on an annual basis, in accordance with the GRI Standards disclosures and in compliance with local and national legislation. The sustainability data from our manufacturing sites are consolidated by SHE, energy, technology, and sustainability managers and validated at site, regional and global levels.

As part of our goal to continually improve our operational and sustainability performance, we combine our site expertise with our global technology team, exchanging and developing the best available process and technology solutions.

Our two new Chinese sites have been integrated into the company and construction is ongoing in the ABS conversion project in Wingles, France, the new ABS site in Ningbo, China and the ASA plant in Texas, USA. In 2020, we have completed the construction of our EBSM expansion at our Antwerp facility. Through this project, we expect to see reduced specific electricity usage of 5% and high-pressure steam reduction of 3% in the coming year. Expanding our operations gives us the opportunity to debottleneck our capacities and be more resource-efficient in our production, while implementing the best available technology to supply markets locally and reduce the environmental footprint of our products.

while this plan is still in execution. For waste arising from necessary infrastructure or demolition works, we mainly focus on good handling practices and maximisation of recycling and reuse of the generated waste.

Over the last years, we have successfully shifted from landfill waste to recycling and recovery. Currently, 41% of our overall waste is sent to recycling and recovery and 32% to landfill. Over the period 2014 to 2020, landfill waste has been reduced by 5%, while waste that is recycled and recovered increased by 36%. We continue to evaluate further measures to reduce landfill waste over the next years.

Another key waste indicator is the distribution between hazardous and non-hazardous waste: in 2020, 26% of our waste was from hazardous waste and 74% from non-hazardous waste. Hazardous waste, which requires special handling, disposal, and storage measures, was reduced by 18% in 2020 versus the previous year. We aim to minimise and recover our hazardous waste and recycle non-hazardous waste as much as possible.

Total specific waste linked to production from our polymer and monomer sites, excluding project waste, increased by 3% compared to 2014. The main sources of production waste for polymers are process waste from ABS rubber production and sludge from wastewater treatment plants. The main sources of waste in EBSM production are project waste, spent catalyst and exported wastewater.

This means that our ambitious target to reduce our waste from production by 10% for this period was not reached despite our efforts to improve our waste management. Here, a shift in our product portfolio towards specialities and high-quality polymer products that generate a higher quantity of intermediate waste has impacted our overall waste figures.

ENERGY EFFICIENCY

Energy usage is integral to our resource efficiency efforts and is a key driver for all capital expenditure projects. Since the establishment of our company in 2011, we have completed a number of energy reduction projects, and every year, our Capex programme includes numerous initiatives to improve energy efficiency. We have implemented energy management systems to measure, monitor, internally report, and evaluate the use of energy.

Energy reporting at our 20 sites involves fossil fuels, electricity, steam, and oil residues. The energy usage can vary annually depending on site-specific conditions such as turnarounds and the type of chemical process.

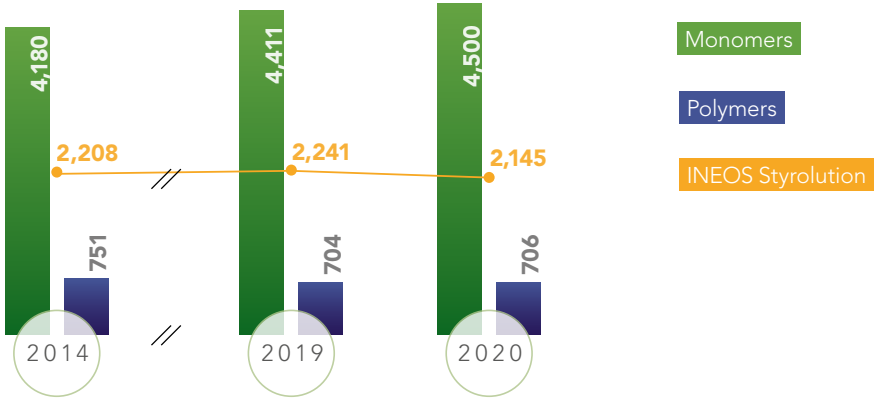
DISCUSSION OF DATA

As a result of modifications to reporting requirements, the energy usage of the monomer sites (and hence INEOS Styrolution as a whole) has been updated. In 2020, 55.1% of our energy use was from fossil fuels, 34.3% from steam and 9% from electricity. In general, steam and fossil fuels are mainly used by EBSM plants, whereas extruders at polymer production sites use a higher quantity of electricity.

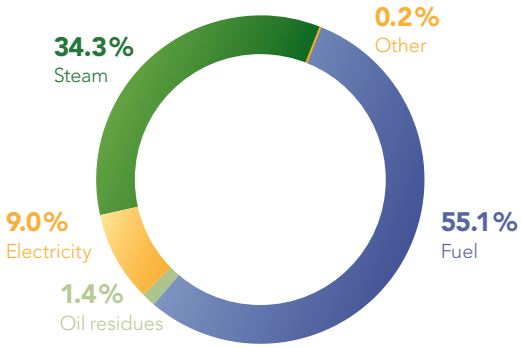
Compared to 2019, our polymers production sites showed a small increase in specific energy use in 2020. One of the key reasons for higher specific energy is the lower production rates at our sites in 2020 brought about by the general economic slowdown related to COVID-19.

Our four EBSM plants represent approximately 80% of our global energy usage. This is a direct result of the different thermodynamics of EBSM processes versus polymer processes. Compared to our baseline year of 2014, INEOS Styrolution's overall specific energy consumption has decreased by 3%.

Specific energy consumption [kWh/tonne produced]



2020 Share by energy source



GREENHOUSE GAS EMISSIONS

We are committed to reduce our greenhouse gas (GHG) emissions and take actions to mitigate the negative effects of climate change to keep temperature increase well below 2°C (above pre-industrial levels). Our efforts and interests to comply with the globally established carbon emission targets, is of high interest to our customers, stakeholders, and investors.

We report and review our specific GHG emissions on an annual basis. Based on GHG emissions assessment, global leadership, with input from local business units, set emissions conservation objectives & action points. Energy and GHG reduction projects are identified and tracked in our Capex system and exchanged within the INEOS Carbon & Energy network. Within this network, joint cooperation within INEOS businesses for energy efficiency projects as well as innovations are shared and discussed on a regular basis. At present, we are using all these information to develop a meaningful GHG emission reduction roadmap – our path forward towards mitigating the negative effects of climate change.

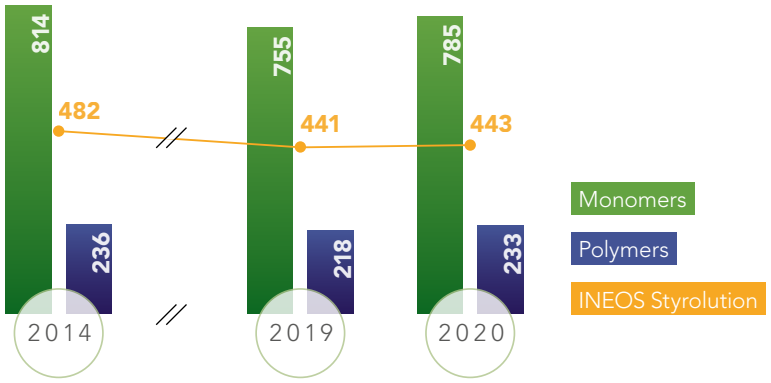
Our specific GHG emissions is based on our production volume. In addition, emissions used in the calculation of this intensity metric cover Scopes 1 and 2 CO_2 emissions as defined in the Greenhouse Gas Protocol. Included in our Scope 1 emissions are direct emissions from fossil fuel consumption at our sites, CO_2 equivalents from N_2O (nitrous oxide) and CH_4 (methane), and also process emissions from refrigerants such as HFC (hydrofluorocarbons), PFC (perfluorocarbons), CFC (chlorofluorocarbons) and HCFC (hydrochlorofluorocarbons). Scope 2 includes indirect CO_2 emissions related to sourced electricity and utilities such as steam. Emissions related to exported utilities are deducted from the gross emissions.

CO_2 emissions are evaluated either based on CO_2 conversion factors or calculated based on the carbon content in fuels. The used conversion factors are either given by energy suppliers, national/ regional authorities or taken from global warming potentials as stated in international standards such as the Intergovernmental Panel on Climate Change (IPCC) or the GHG protocol.

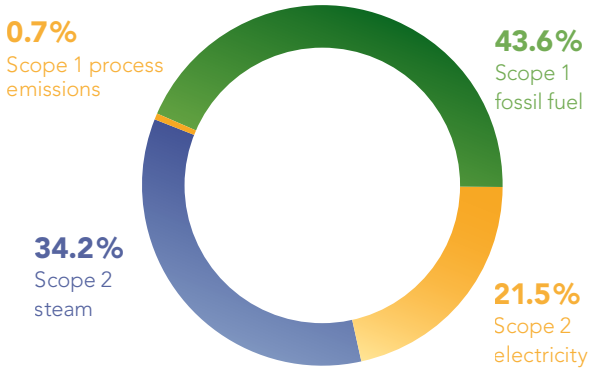
INEOS Styrolution's emissions inventories are audited and verified in different ways:

- As part of our global SHE Excellence programme, an independent contractor conducts routine environmental regulatory compliance audits which assesses accuracy of emissions reporting. Additionally, a certification body for ISO standards, including the ISO 14001 standard, and assessor of GHG emissions inventories, performs audits of our corporate sustainability and emissions reporting processes.
- In addition to third-party audits, our global Sustainability programme includes multiple levels (site, regional and global) of emissions review and validation to ensure accurate reporting.
- Regulatory compliance programmes including emission reporting are also audited and validated by local, state and federal regulatory agencies. Both on-site/ field and electronic regulatory compliance audits are conducted routinely by state and local governments.

Specific greenhouse gas emissions [kg/tonne produced]



2020 Greenhouse gas emissions by source



DISCUSSION OF DATA

In 2020, 44% of our total greenhouse gas emissions are attributable to scope 1 emissions and 56% to scope 2 emissions. It can be seen that 22% of our GHG emissions were related to electricity production, although only 9% of our energy consumption was electricity-based. The key factors here are CO_2 conversion factors for electricity that can strongly vary depending on the local supplier.

ENBRIDGE GAS INC.

Answer to Interrogatory from
Ontario Energy Board (STAFF)

Interrogatory

Issue 10e

Reference:

Exhibit E, Tab 4, Schedule 6, pp. 7-9

Question(s):

As part of its discussion on stakeholder efforts in advance of filing its application, Enbridge Gas notes that feedback from large volume customers was “decidedly mixed”.

a) Please discuss if Enbridge Gas considered revising this program and allowing those customers that do not see the need or value in the program as they are already focused on energy costs and efficiency to opt-out, subject to confirmation and assurances that they have or will completed a certain threshold of efficiency improvements.

b) If Enbridge Gas has not considered an opt-out program design (e.g., customers can opt-out as long as they provide an energy plan and maintain the improvement schedule included within; participating customers pay for the level of programming they undertake and do not cross-subsidize other customers), please comment on the impact such a model may have on overall success of the program.

Response

a- b)

Enbridge Gas had some consideration of opt-out for the Large Volume program, but during that consideration found a number of difficulties.

Opt-out billing management would be extremely resource intensive. The existing billing system is not designed for opt-out. The current rate design and recovery for DSM costs make system design changes likely to be expensive, depending on the details of the opt-out rules, and frequency of customer opt-out opt-in. Any reconciliation on volumetric charges would have increased complexity with a non-homogeneous

customer set, as would all regulatory proceedings involving the rate classes involved. The mentioned additional requirements of, "*subject to confirmation and assurances that they have or will completed a certain threshold of efficiency improvements*" imply new processes and requirements on customers for compliance, and additional resources from the Company to track and report on compliance. The conclusion the Company reached was that any opt-out was impractical relative to the savings afforded to the participants wishing to opt-out. Enbridge Gas believes that an opt-out provision would increase program management and overhead costs to an extent that would outweigh any benefits to participants that wish to opt-out. The Company proposed to lower the LV Program budget materially in the DSM Plan and believes given the modest level of budget proposed that an opt-out provision should not be implemented.

ENBRIDGE GAS INC.

Answer to Interrogatory from
Association of Power Producers of Ontario (APPrO)

Interrogatory

Issue 10e

Reference:

Exhibit C, Tab 1, Schedule 1, p. 5
Exhibit E, Tab 1, Schedule 1, pp.1 and 4
Exhibit E, Tab 1, Schedule 4, p. 15
Exhibit E, Tab 1, Schedule 5
Exhibit E, Tab 3, Schedule 1

Preamble:

EGI notes that one of the primary objectives of its DSM plan includes playing "a role in meeting Ontario's greenhouse gas reductions goals". EGI also notes that "all levels of government have made known the desire to reduce [GHG] emissions and have articulated target reductions for both 2030 and 2050."

EGI's Industrial Customer offering seeks to achieve sustained and progressive energy efficiency through a continuous energy improvement approach. EGI notes that one of the Industrial Custom offering's objectives is the reduction of GHG emissions to meet Ontario's reduction goals.

In EGI's 2021 DSM Plan Application proceeding, APPrO noted that GFGs are already incented to find efficiencies and reduce GHG emissions from numerous other regulatory requirements and that numerous climate change, GHG emission reduction and low-carbon fuels policies and programs at all levels of government continue to apply to GFGs. APPrO further noted "that the electricity sector, and clean, natural gas-fired electricity generators therein, appear to be subject to more, stacked, and multiple carbon-related costs than any other sector of the economy."

Question(s):

a) Please provide the rate impact of exempting GFGs from any obligation to contribute to the DSM costs allocated to the LVC rate classes.

b) Please explain and provide details regarding implementing the required changes to EGI's billing system to accommodate exempting GFGs from any obligation to contribute to DSM costs, as contemplated above and detailed in the written submissions of APPrO and the reply submissions on same of EGI in Board File No. EB-2019-0271.

Response

a) Please see Table 1 for the impacts to the Rate T2 and Rate 100 DSM unit rates for 2023 when the GFG billing units are excluded from the derivation of the unit rate.[1] For purposes of this response, 2023 DSM unit rates excluding GFG billing units do not include an allocation DSM low-income to GFG customers.

Table 1
2023 DSM Unit Rates (1)

Line No.	Particulars		2023 DSM Unit Rate Including GFG Billing Units (cents / m³)	2023 DSM Unit Rate Excluding GFG Billing Units (cents / m³)	Increase/ (Decrease) (%)
			(a)	(b)	(c)
	Rate T2 Contract Carriage Service				
1	Monthly Demand Charge				
2	First	140,870 m³	2.6129	3.3888	30%
3	All Over	140,870 m³	1.3821	2.6588	92%
4	Interruptible Commodity Charge		0.0998	0.0998	0%
	Rate 100 Large Volume Firm Service				
5	Delivery Demand Charge		2.0243	2.3382	16%
6	Delivery Commodity Charge		0.0272	0.0309	14%

Notes:
(1) Prepared using 2021 billing units consistent with Exhibit F, Tab 1, Schedule 3.
(2) Prepared based on the approved methodology for determining DSM unit rates for the Union rate zones as prepared in Enbridge Gas's annual rates application.

[1] Derived from allocated 2023 DSM budget costs of $4.783 million for Rate T2 and $1.184 million for Rate 100.

b) Should the OEB consider exempting GFG's from any obligation to contribute to the DSM costs allocated to the T2 and T100 large volume rate classes in the Union rate zone, the Company maintains that it would be necessary for Enbridge Gas to implement changes to its billing system and potentially downstream system and process changes. Some items that would need to be considered are:

- How to separate DSM charges from distribution rates as currently DSM charges are embedded in distribution rates (i.e. they are not specific unit rates billed independently)?
- How to uniquely identify GFG customers in the billing system, and once identified how to exclude GFG customers from DSM charges?
- How to charge DSM charges to all non-GFG customers?
- How to present DSM charges on customer bills?
- Do DSM charges need to be mapped to a separate GL account in EFS (Enterprise Financial Systems)?
- Do rates schedules need to be adjusted to include two sets of unit rates for customers in the same rate class?