DEVELOPING OUR NET ZERO PATHWAY

Ferrexpo plc
Climate Change Report
2022

FERREXPO

Introduction

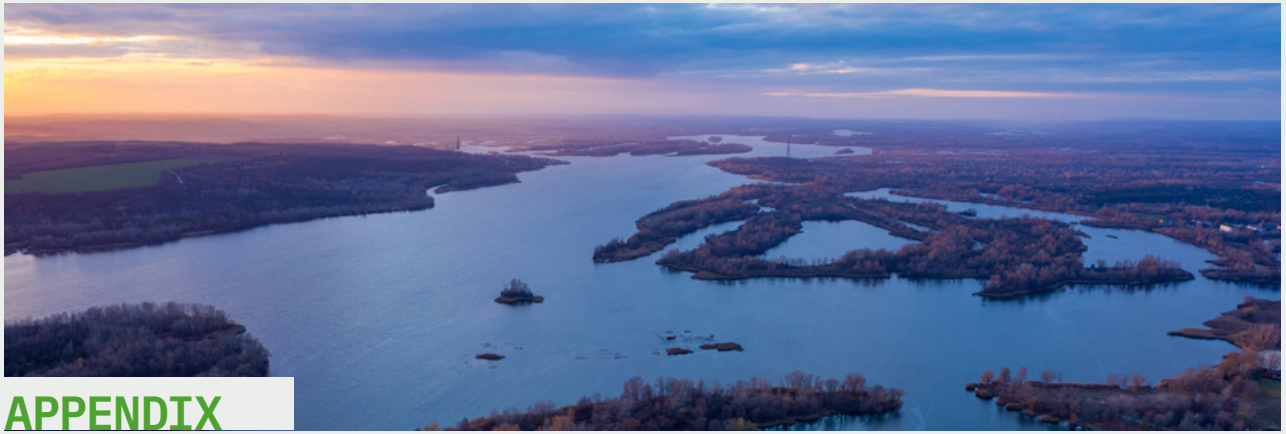
This report represents the culmination of extensive work conducted to map out the carbon footprint of Ferrexpo plc and our exposure to climate change risks and opportunities, as we strive to deliver net-zero emissions production by 2050.

Contents

www.ferrexpo.com

References to Ferrexpo plc

References in this report to “Ferrexpo”, the “Company”, the “Group”, “we”, “us”, and “our” are all references to Ferrexpo, Ferrexpo subsidiaries and those that work for Ferrexpo, albeit not a singular entity or person. Such terms are provided as a writing style in this report, and are not indicative of how Ferrexpo or its subsidiaries are structured, managed or controlled.



Introduction continued

Image: CAT793D trucks at Ferrexpo's Yeristovo Mine, with this image produced to mark Ukraine's 30th anniversary of independence in August 2021.

Forward-looking statements

This Climate Change Report contains forward-looking statements, including statements regarding plans, strategies and objectives of management; closure or divestment of certain assets, operations or facilities; and regulatory developments.

Forward-looking statements may be identified by the use of terminology, including, but not limited to, "intend", "aim", "project", "anticipate", "estimate", "plan", "believe", "expect", "may", "should", "will", "continue", or similar words. These statements discuss future expectations or provide other forward-looking information. These forward-looking statements are not guarantees or predictions of future performance and involve known and unknown risks, uncertainties and other factors, many of which are beyond our control, and which may cause actual results to differ materially from those expressed in the statements contained in this Climate Change Report. Readers are cautioned not to put undue reliance on forward-looking statements.

Actual results may differ materially from those expressed in such statements as a result of a variety of factors, including the Russia's invasion of Ukraine; the Company's ability to profitably produce and transport iron ore to applicable markets; the impact of foreign currency exchange rates on the market prices of iron ore that the Company produces; activities of government authorities in the countries where Ferrexpo operates, including increases in taxes, changes in environmental and other regulations, and political uncertainty; labour unrest; and other factors identified in the risk factors set out in our 2021 Annual Report and Accounts, available online at www.ferrexpo.com.

Except as required by applicable regulations or by law, Ferrexpo does not undertake to publicly update or review any forward-looking statements, whether as a result of new information or future events. Past performance cannot be relied on as a guide to future performance.

Who we are

We are a major producer of the highest grade forms of iron ore for the global steel industry, which help steelmakers to reduce their carbon emissions.

Ferrexpo was the third largest exporter of high grade iron ore pellets in 2021, which are a premium form of iron ore that has a significantly lower total emissions footprint when compared to the more commonly traded forms of iron ore (sinter fines). Our assets are located in central Ukraine, and have supplied the global steel industry with iron ore for more than 50 years,

Ferrexpo is listed on the London Stock Exchange and is a constituent of both the FTSE 250 and FTSE4Good Indices.

What we do

1 Extraction:

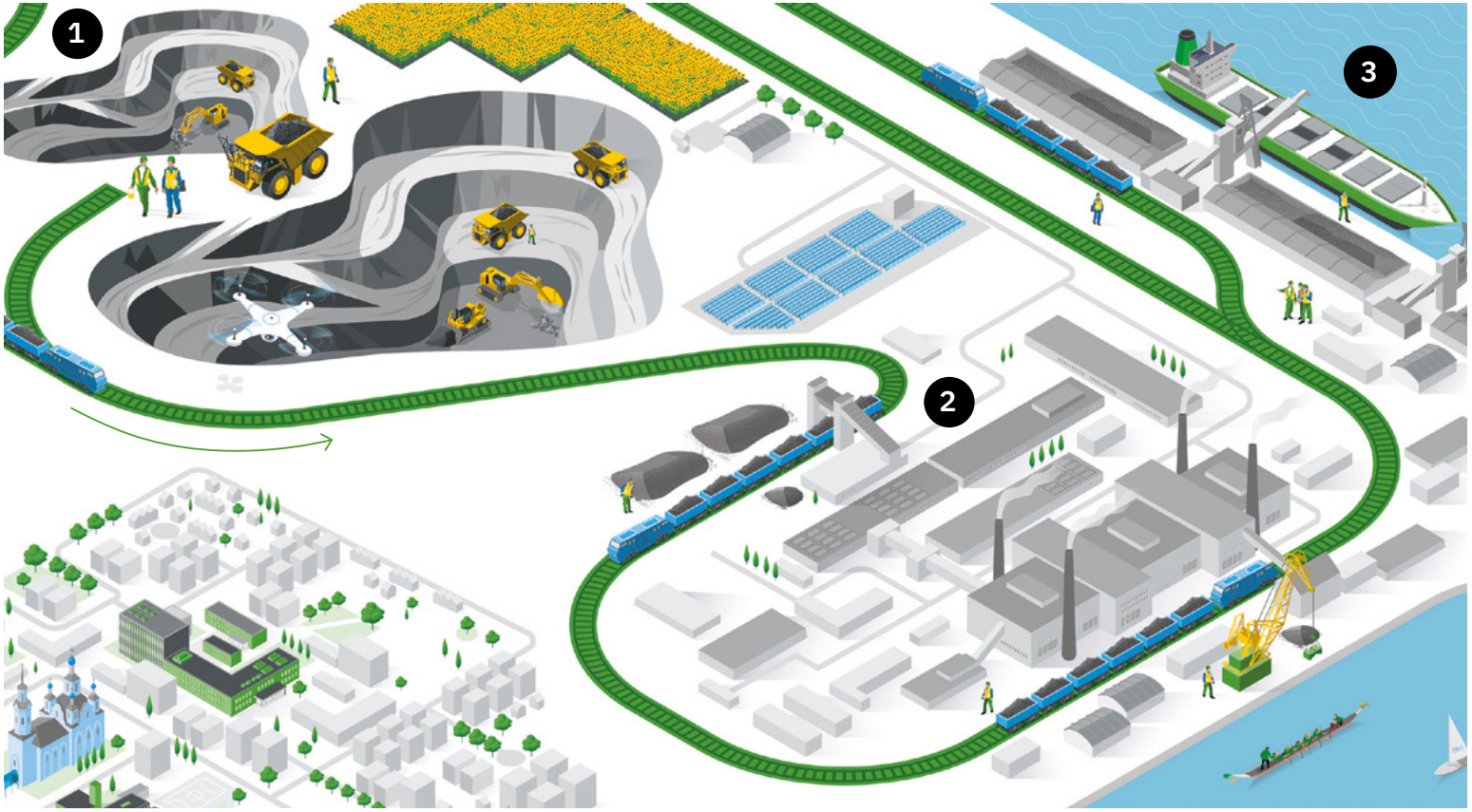
Our iron ore mines in central Ukraine have over 50 years of mine life remaining at present mining rates.

2 Processing:

Through significant investment, we are able to produce some of the highest quality forms of iron ore products that are commercially available.

3 Export:

As a result of our investments in quality, we are able to sell our products to a network of premium steel mills around the world.



MINES

Three

Our three iron ore mines in central Ukraine enable us to supply steel mills around the world. Ferrexpo has been a long-term investor in Ukraine since our IPO in 2007.

PRODUCTION

11.2MT

Total production of 11.2 million tonnes in 2021, enabling us to be the third largest pellet exporter globally, and the largest publicly listed company that is primarily focused on iron ore pellets.

HIGH GRADE PRODUCTS

100%

100% of our production comprises high grade forms of iron ore. For more on how high grades help steelmakers reduce their emissions, see page 14 of the 2021 Annual Report and Accounts.

EMISSIONS REDUCTION

30%

Combined emissions reduction of 30% recorded in two years since the Group's baseline year of 2019[1].

1 Scope 1 and 2 emissions combined, presented on a per tonne basis.

About this report

CLIMATE CHANGE REPORTING COVERED BY THIS REPORT

This report represents Ferrexpo's inaugural standalone report dedicated to climate change risks and opportunities, our greenhouse gas emissions ("GHG") footprint, and our decarbonisation pathway.

The information in this report represents the conclusions drawn on our business following the work completed in conjunction with environmental consultants Ricardo Plc ("Ricardo"), which was a phase of work announced alongside our inaugural carbon emissions targets in October 2021.

The work completed to date as part of this project represents a desktop study of the Ferrexpo business and its products, ahead of further, more detailed studies into climate change related topics. This report represents the latest stage in Ferrexpo providing an increased level of reporting around climate change topics for the benefit of all our stakeholders.

Ferrexpo has been publishing information on its environmental footprint of our operations since listing on the London Stock Exchange in 2007. Initially this information was provided in the Group's Annual Reports, and since 2016, the Group has presented more detailed information on sustainability topics through the publication of standalone Responsible Business Reports, which are published in accordance with the Global Reporting Initiative for sustainability reporting.

The work presented here is a continuation of this process, which serves to provide more detail on material topics for the Group's stakeholders. This report is designed to be read in conjunction with the Group's Responsible Business Reports, which are available here.

Work carried out to date has centred on the following key topics relating to our reporting of climate change:

1. Regulatory risk and opportunity analysis, with an external focus on the markets into which we sell our products;
2. Climate scenarios, with a specific focus on the Ferrexpo business; and
3. Net zero target setting and road mapping, representing a bespoke review of the Ferrexpo business.

The Group is also in the process of undertaking a life cycle analysis of our higher grade direct reduction ("DR") iron ore pellets, to benchmark their environmental footprint against the most commonly exported form of iron ore (sinter fines). The outcome of this work will be published separately in due course.

Report boundaries

This report covers the Group's operating entities in Ukraine and logistics business in central Europe (First-DDSG), which collectively form the basis of the Group's existing reporting of its carbon emissions footprint in previous public reports. For a description of the subsidiaries of Ferrexpo, please see page 206 of our 2021 Annual Report and Accounts. The Group reports on the basis of 100% ownership of its operating subsidiaries (where a majority stake is held) and does not employ equity accounting of its sustainability data.

Image: Winter landscape at Ferrexpo's operations in Ukraine, where temperatures can range from minus 20°C in winter to more than 40°C in summer. Any new technologies implemented must therefore be amenable to operating across this wide range of temperatures.

What is net zero?

Ferrexpo's goal in achieving net zero iron ore pellet production is to operate with minimal avoidable emissions, as far as possible, and offsetting any unavoidable emissions through initiatives that have a negative impact on emissions, such as carbon capture and storage. This topic is covered in further detail on page 40 of this report.

Considerations relating to Russia's war in Ukraine (2022)

The work completed here represents a desktop study of our approach to climate change, risks and opportunities on a range of scales, pathway to net zero production, and environmental footprint. These are assessed on the basis of Ferrexpo's normal course of business and our long-term business model, and do not account for the change in operating environment seen during Russia's invasion of Ukraine in 2022. The research presented in this report is a study into the strategic position of the Group and is not focused on factors currently being encountered as a result of Russia's invasion of Ukraine.

Task Force on Climate-Related Financial Disclosures ("TCFD")

This report aims to present new information to stakeholders, rather than reproduce previously reported information. Our disclosures under TCFD are provided in our 2021 Annual Report and Accounts, available on our website (link here).

About this report continued

BUILDING TRUST AND UNDERSTANDING

Through collaboration with independent experts, we aim to develop our own position and understanding on climate change, whilst providing assurance to our stakeholders.

Environmental specialists

Ricardo PLC (Ricardo) is a global strategic environmental and engineering consulting company that dates back to 1915 and the firm's founder Sir Harry Ricardo. Work completed by Ricardo extends across a wide range of activities and market sectors, including studies into passenger cars, commercial vehicles, rail, defence, motor sport, energy and the environment. As a result, Ricardo has a client list that includes transport operators, manufacturers, energy companies, financial institutions and government agencies.

Ricardo's stated aim is to use its experience to help organisations achieve ambitious sustainability pathways, with an approach based on industry-leading expertise and robust, science-based methodologies. Ricardo's team comprises experts in sustainability strategy, global environmental policies and regulations, and life-cycle assessments. It was their strong reputation and deep experience which helped us choose to partner with Ricardo, to broaden our own understanding of climate change reporting.

In partnering with Ricardo, we aim to build a long-term relationship with independent experts in the field of climate change, to help Ferrexpo to broaden and develop its understanding of how we will affect climate change, as well as how climate change will (in turn) affect our business. This engagement is envisaged to be a multi-phased project, with each new phase building on the work completed in the previous phase. For more information on the envisaged next steps in developing our understanding and public reporting of climate change, please see page 47 of this report.

SUSTAINALYTICS | MSCI ESG RATINGS BBB | FTSE4Good

TCFD | GRI | SASB | Responsible Steel

For further information on MSCI ESG Ratings please see www.ferrexpo.com/disclaimer.

Independent assurance

At Ferrexpo, we understand the importance of trust in our reporting, with stakeholders around the world increasingly relying on data that is linked to sustainability topics in decision-making, it is increasingly important that such data is independently assured by a third party, providing trust and confidence.

In 2021, the Group initiated a limited assurance process on selected sustainability data with the Group's independent auditor, MHA MacIntyre Hudson ("MHA"), which was completed in line with the requirements of the International Standard on Assurance Engagements ISAE (UK) 3000 (Revised) Assurance Engagements ("ISAE 3000"), as issued by the International Auditing and Assurance Standards Board. This ISAE 3000 process reviewed reporting of our safety and greenhouse gas ("GHG") emissions in 2021, and this process was completed in July 2022. The conclusion of this review has served to confirm the relevant information for these topics as presented in our 2021 Annual Report and Accounts.

We understand the need for consistency and continual progress in sustainability topics, and we have therefore commenced a similar process on the same topics within sustainability for our 2022 data. Over time, we intend to broaden the scope of this particular work stream, but in light of the war in Ukraine and the additional pressure that this has placed on our internal resources within Ukraine, the decision has been made to continue with assurance of the same topics as completed for 2021.

Further details of the Group's external assurance process on its 2021 data is provided on the Group's website alongside the 2021 Annual Report and Accounts (link).

Greenhouse Gas Protocol

Ferrexpo's methodology for calculating its GHG emissions footprint utilises, where possible, emissions factors provided by the Greenhouse Gas Protocol, which is in line with reporting requirements under the Global Reporting Initiative's ("GRI") framework for reporting sustainability topics. Through using carbon factors provided by the Greenhouse Gas Protocol, the Group is able to provide carbon dioxide-equivalent emissions figures ("CO_2e") that also account for emissions of both methane (CH_4) and nitrogen oxide (N_2O).

Full details of the Group's methodology are provided in the "Reporting Criteria" document provided as part of the limited assurance process described above, which is available on the Group's website alongside the 2021 Annual Report and Accounts and Limited Assurance Report (link).

CEO statement

Jim North, Ferrexpo's Chief Executive Officer and Executive Director.

CARBON TARGETS FOR ALL CATEGORIES

1+2+3

Upgrading targets to include Scope 3 categories.

RAISING THE BAR FOR OUR EXISTING 2030 TARGET

50%

Raising our medium-term decarbonisation target to be 50% by 2030 (from 30%)[1].

INTRODUCING A NEW SCOPE 3 TARGET FOR 2030

10%

Setting a 10% target for cutting Scope 3 emissions per tonne of production by 2030.

1 Scope 1 and Scope 2 combined, presented on a per tonne of production basis.
2 Source: United Nations (link). Accessed 16 November 2022.

POSITIONING OURSELVES FOR A LOW CARBON FUTURE

As a part of the global steel value chain, we are seeing significant change underway in our industry, as companies around the world seek to provide greater clarity around reporting of climate change, and establishing clear pathways for operating in a low-carbon future. Here, at Ferrexpo, we are no different. We understand the need to establish a bespoke, considered approach to decarbonisation, so that our stakeholders can understand the likely path that lies ahead.

This report represents the culmination of our initial phase of work with environmental consultancy Ricardo Plc ("Ricardo"), with work to date completed on our carbon footprint, and determining key climate change risks and opportunities. Through this work, we are able to report one potential future pathway to deploy technologies and improvements over time that will help us to achieve net zero iron ore pellet production by 2050. As a result, we are able to present our first standalone report on climate change to our stakeholders – which we feel demonstrates clear progress in our corporate reporting and future ambitions.

Today, following the work provided in this report, and the progress we have made on reducing emissions to date, we are upgrading our 2030 goals to a 50% reduction in Scope 1 and 2 emissions per tonne combined[1], and introducing a new medium-term target of reducing Scope 3 emissions by 10% in the same time frame. Finally, we have introduced a long-term Scope 3 target, aiming for a 50% reduction in this category by 2050, and this target predominantly reflects a switch towards production of higher grade direct reduction pellets over time. This follows us achieving a 30% reduction in our Scope 1 and 2 emissions since 2019, which is an excellent start in our decarbonisation journey, and I would like to thank all those that have helped us to deliver this result. In upgrading and broadening our emissions targets, we recognise the need to align ourselves with targets that are compatible with the Paris Agreement, which has a central objective to hold global average temperature change increase to "*well below 2°C above pre-industrial levels and pursuing efforts to limit the temperature increase to 1.5°C above pre-industrial levels*"[2].

Given the war in Ukraine at the present time, it is difficult for us to commit to adopting science-based targets today, but this is an ambition that we hold for the future. In the near term, our efforts will now pivot towards developing a clear strategy on our climate change activities, and more detailed financial modelling of our net zero pathway.

In the meantime, we remain committed to Ukraine as it defends itself from Russia's invasion. We are long-term investors in Ukraine, and the investments outlined in this report represent the future for Ferrexpo. We are focused on the future, whereby we are able to deliver high quality, low-emissions iron ore to the global steel industry, therefore placing Ukraine at the forefront of the shift to Green Steel.

Slava Ukraini.

Jim North

CEO and Executive Director, Ferrexpo plc

Our strategy on climate change

AIMING TO BUILD ON PROGRESS MADE TO DATE

Through continually broadening our reporting, we aim to develop our understanding of climate change over time.

Image: Aerial view across our trial five megawatt solar power plant, built in 2021. If successful, the Group intends to significantly expand this project.

Ferrexpo recognises the importance of addressing climate change, and the need to present a clear and well-thought out approach towards reducing our emissions footprint. The realities of climate change mean that change is not only required at Ferrexpo's directly controlled operations, with reductions in our Scope 1 and Scope 2 emissions, but the Group also needs to engage with a number of its stakeholder groups, such as employees, contractors, suppliers and customers to help reduce our Scope 3 emissions.

Stakeholder awareness is rising

Global events such as the recent United Nations' Climate Change Conferences in Glasgow in 2021 ("COP 26") and Sharm El-Sheikh in 2022 ("COP 27"), bring nations together with an aim of accelerating action towards the goals of the Paris Agreement and the UN Framework Convention on Climate Change[1], and in doing so, generated significant attention with a global audience. Communities around the world are rightly demanding action on climate change, and we understand the need to implement clear strategies for delivering net zero production.

Developing our strategy

Ferrexpo's strategy with regards to climate change is to produce its products in an environmentally responsible manner; avoiding greenhouse gas ("GHG") emissions where possible today, and reducing emissions over time, in order to remain relevant in a low-emissions future. Climate change is a topic that transcends all stakeholder groups, and we appreciate the benefits to stakeholders of both clear reporting on activities, and tangible progress in delivering decarbonisation tomorrow. To generate our strategy on climate change, we have sought to assess the risks and opportunities relating to this issue, to understand how Ferrexpo's business model may evolve over time as the effects of climate change become more evident and having a greater impact. Following this work, a pathway towards net zero production has been identified, whereby the Group is conceivably able to produce iron ore pellets with 92% lower GHG emissions by 2050 (for Scope 1, 2 and 3 emissions as covered in this report[2]).

30% reduction recorded

As of the end of 2021, the Group has reduced its emissions by 30%[3] since its baseline year of 2019, and we have announced in this report an upgrade of our decarbonisation goal for 2030 to 50%. Through the work outlined in this report, Ferrexpo is able to demonstrate how we expect that this reduction will be achieved. We have long taken steps to report our carbon footprint in Annual Reports since our listing in 2007, and additionally in standalone Responsible Business Reports published for 2015 onwards. The Group has prioritised this reporting, with efforts made to provide enhanced disclosure, such as the publication of information under the Taskforce for Climate Change Financial Disclosures ("TCFD") in our 2020 Annual Report and Accounts, ahead of mandatory reporting in reports covering 2021.

Alignment to Paris Agreement

Ferrexpo supports the pledge made in Paris in 2015 at COP21 ("Paris Agreement") in which businesses, investors, cities, regions and other signatories recognised the threat of climate change to society today and future generations. As part of this report, the Group has evaluated its business model against a "well below" 2°C scenario that is aligned with the goals of the Paris Agreement. Where possible and applicable, the Group utilises a carbon price in the modelling of key investment decisions. Financial modelling exercises in 2021 utilised a carbon price of US$50 per tonne based on the prevailing price of carbon in the EU. Future internal modelling of carbon pricing is expected to mirror expected carbon pricing within the EU's Emissions Trading System.

1 Source: COP26 website (link). Accessed December 2022.
2 Scope 3 emissions covered in this report exclude emissions from steelmaking, since these are primarily related to the type of pellet produced, and have a disproportionally large impact on the Group's total emissions footprint. See page 40 for more information.
3 Scope 1 and Scope 2 combined and on a per tonne of production basis.

Performance and goals

GOALS TO TRACK PERFORMANCE

We are proud to present our updated carbon emissions reduction targets here, which envisage further progress beyond the 30% reduction in our Scope 1 and 2 emissions achieved since 2019.

In publishing this report, we have announced a further update to Ferrexpo's emissions reduction goals, with the Group having already realised a 30% reduction in the two years following our baseline year (2019)[1]. We have upgraded our goals, as announced here in this report, in recognition of the need for companies worldwide to align their goals with the requirements of the Paris Agreement, paving the way for Ferrexpo to develop its own science-based targets in the future. For more information on the Paris Agreement, which was an agreement struck by more than 190 countries at the UN Climate Change Conference in Paris ("COP 21") in December 2015, please see the United Nations' website (link here).

Our Scope 1 (direct) and Scope 2 (indirect) emissions predominantly relate to the consumption of diesel, electricity and natural gas in Ukraine, which collectively accounted for approximately 90% of these categories of emissions in 2021. Consumption of these materials directly relates to the volume of iron ore products created by the Group, and as such, we primarily measure progress against our emissions goals on a per tonne of production basis. Furthermore, as a business that has significant growth plans in the medium-term, and in the short term, we are a company experiencing significant disruption to production volumes as a result of Russia's invasion of Ukraine in 2022. Given this short term volatility and long term growth in production volumes, we believe that our reporting of greenhouse gas ("GHG") emissions is best suited to be reported per unit of production.

However, in order to provide full clarity on our progress with regards to GHG emissions, Charts 11 and 12 (both shown on page 39) show the decarbonisation pathway in terms of both absolute emissions and on a unit basis (emissions per tonne of commercial production). This is in order to provide clarity on our absolute emissions in the short, medium and long term as we grow our business and gradually lower emissions over time.

The Scope 3 emissions targets announced in this report reflect the Group's total Scope 3 emissions, including emissions from steelmaking, and therefore these goals primarily relate to our pivot over time to direct reduction pellets. For more information on the importance of emissions from steelmaking, please see pages 9 and 40 of this report. Definitions of each scope of emissions are provided on page 40 and a full breakdown of our Scope 1, 2 and 3 emissions is provided in our Responsible Business Reports. Our breakdown of emissions for 2021 is provided on pages 92 and 93 of the 2021 Responsible Business Report (link here).

	SCOPE 1 ("S1")[2] EMISSIONS	SCOPE 2 ("S2")[2] EMISSIONS	SUBTOTAL (S1+S2)[2]	SCOPE 3 ("S3")[2] EMISSIONS
Our performance in 2021	+11%	-40%	-16%	+1%
Our performance since benchmark year (2019)	-1%	-54%	-30%	-2%
Our medium term goals (2030)			-50%	-10%
Long term goals (2050)			Net Zero	-50%

1 Scope 1 and 2 emissions combined, presented on a per tonne of production basis.
2 Emissions on a per tonne of production basis. Target covers the categories of Scope 3 emissions as outlined in the Group's latest Responsible Business Report, and therefore includes emissions from steelmaking.

Key components of our pathway to net zero

CLEAR PATHWAY TO REDUCING EMISSIONS

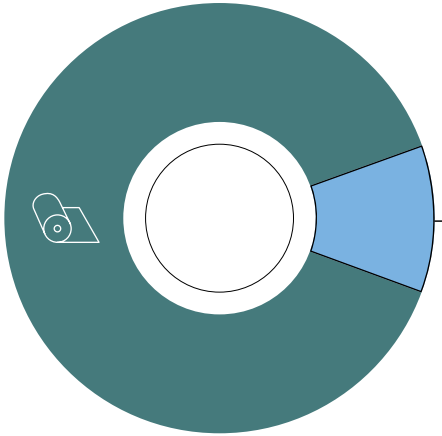
With Scope 3 (steelmaking) emissions representing 85% of our total CO_2 emissions in our baseline year, we are focused on this as a key area to reduce our carbon footprint. This is achieved through the production of direct reduction ("DR") pellets, which are a pathway to lower emissions steelmaking.

As a part of the global steel value chain, Ferrexpo's total emissions footprint is dominated by emissions from steelmaking, which represent 85% of the total emissions in our baseline year. In order to reduce these emissions, we are increasing the output of higher grade DR iron ore pellets, with independent modelling showing that this type of pellet has a 49% lower Scope 3 emissions footprint when converted to steel by customers that buy these pellets for their electric arc furnaces ("EAF")[1]. This emissions saving is thanks to the processes involved in the EAF method of steelmaking, which primarily uses electricity to create steel. By contrast, the blast furnace ("BF") method of steelmaking, which represented 73% of total steel production in 2021[2], primarily uses coal as the primary energy source for the conversion of iron ore to steel, with an inherently higher emissions footprint. Therefore, by producing more DR pellets for EAF steelmaking, Ferrexpo can actively reduce its emissions footprint by 49% for each tonne produced.

As shown in Chart 2 opposite, our Scope 1 and Scope 2 emissions are predominantly related to four activities across the Group: diesel (mining), electricity (processing), natural gas (pelletising) and gasoil (inland waterway logistics). The Scope 3 emissions covered in this report principally relate to ocean-going freight and rail logistics.

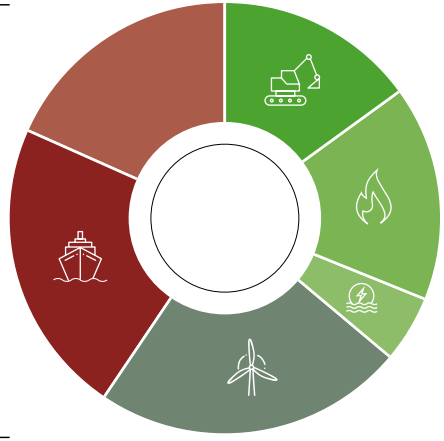
1. Source: CRU. Natural gas based direct reduction without carbon capture.
2. Source: CRU.

CHART 1: TOTAL EMISSIONS FOOTPRINT (SCOPE 1, 2 AND 3) IN FERREXPO'S BASELINE YEAR OF 2019



Steelmaking (Scope 3)	85%
Other (S1, 2 and 3 combined)	15%

CHART 2: EMISSIONS FOOTPRINT (EX. STEELMAKING) IN FERREXPO'S BASELINE YEAR OF 2019



Scope 1	
Mining (primarily: diesel consumption)	15%
Pelletising (primarily: natural gas and biofuel consumption)	23%
Inland waterway/barging (primarily: gasoil consumption)	5%
Scope 2	
Beneficiation (primarily: electricity consumption)	24%
Scope 3	
Third party freight (Ocean-going and rail logistics)	22%
Other	18%

Key projects to achieve 2030 goals

HOW WE WILL ACHIEVE OUR TARGETS

Implementing a range of new technologies across our business, helping us to achieve our net zero ambitions.

The net zero pathway described in this report comprises of the phased implementation of known technologies that will reduce our carbon emissions. Some technologies in this pathway are commercially available today, but others are either not widely available and/or commercially viable, such as green hydrogen, which has the potential to form a zero-carbon emissions fuel for our pelletiser (replacing natural gas). Another key technology for the future is the use of battery technology in haul trucks in our mines, which have the potential to greatly reduce our diesel consumption.

We understand the need to further develop our understanding of these technologies today, on the basis of their future use becoming widespread and economic throughout the mining industry, helping us to realise our longer dated projects and achieve our net zero ambitions.

BATTERY TECHNOLOGY

40%

Diesel represented 40% of Scope 1 emissions in 2021, which could be reduced through implementing battery electric haul trucks.

TROLLEY-ASSIST TECHNOLOGY

50%

Potential to lower each haul truck's diesel consumption by up to 50% through using trolley assist technology on haul ramps.

BIOFUELS (SUNFLOWER HUSKS)

18%

Substituting 18% of natural gas use in the pelletiser with sustainable biofuels (sunflower husks) in 2021.

CLEAN POWER PURCHASING

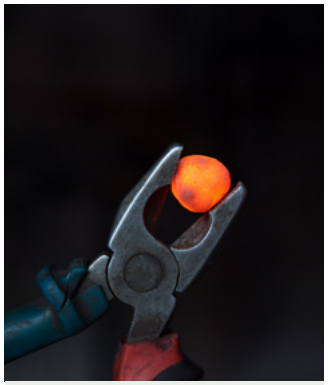
+50%

Reducing Scope 2 emissions by over 50% since 2019 through our strategy to selectively purchase clean forms of electricity.

GENERATING RENEWABLES

5MW

Trial 5 megawatt solar power plant built in 2021, to test the application of solar power generation in our geographic location.



DIRECT REDUCTION ("DR") PELLETS

49%

Steelmaking via electric arc furnace methods produces 49% lower Scope 3 emissions per tonne from DR pellets (see page 9 for more).

Governance

GOVERNANCE OF CLIMATE CHANGE RISK

Ensuring that climate change risks and opportunities are covered effectively within Ferrexpo's governance structure.

Ferrexpo's Board of Directors (the "Board") oversees the Group's strategy and future direction, which includes overall responsibility for sustainability and climate change topics. In addition to discussions at meetings of the Board, the Board also has a sub-committee of the Board – the Health, Safety, Environment and Climate Change ("HSEC") committee. The HSEC committee is chaired by Independent Non-executive Director Ann-Christin Andersen, and comprises of Independent Non-executive Directors and members of the executive management team. The HSEC Committee meets on a quarterly basis to discuss sustainability topics, meeting four times in 2021 (2020: four). Climate change is a standing agenda item for all HSEC committee meetings and all Board meetings.

Further to the HSEC Committee, our Executive Committee oversees implementation of the Group's strategy in relation to climate change. This committee is chaired by the Group's CEO, Jim North, and is assisted by the other committee members who span the key functions of our business.

Executive remuneration

Our remuneration policy includes consideration for sustainability-linked topics in the Short-Term Incentive Plan for executives, such as targets on an annual basis that are intended to help deliver our medium-term (2030) carbon reduction goals on Scope 1 and Scope 2 emissions, as well as elevating the production of higher grade direct reduction ("DR") iron ore pellets, which are key to lowering the Group's Scope 3 emissions.

Risk management

The table opposite depicts the Group's governance structures and risk management process, which includes risks associated with climate change. Further details of the Group's governance structures and the Board's role in overseeing its strategy on climate change are provided in the 2021 Annual Report and Accounts.

Board oversight

The HSEC Committee is a sub-committee of the Board of Directors and is Chaired by Independent Non-executive Director Ann-Christin Andersen. Other members include

- Natalie Polischuk (Independent Non-executive Director);
- Jim North (CEO and Executive Director);
- Yuriy Khimich (Head of the Ferrexpo Charity Fund); and
- Nataliya Storozh (Head of Safety, Ferrexpo Poltava Mining).

Further details of the HSEC Committee are available on the Group's website (link here).

RISK MANAGEMENT PROCESS

Ferrexpo Board
- Takes overall responsibility for maintaining sound risk management and internal control systems.
- Sets strategic objectives and defines risk appetite.
- Monitors the nature and extent of risk exposure, which includes principal and emerging risks.

Audit Committee
- Supports the Board in monitoring risk exposure and risk appetites.
- Reviews effectiveness of risk management and control systems.

Executive Committee
- Assesses and mitigates Group-wide risk.
- Monitors internal controls.

HSEC Committee
- Oversees corporate social responsibility-related matters and performance.
- Has specific focus on safety and climate change related risks.

Finance, Risk Management and Compliance Committee
- Monitors centralised financial risk management structures.
- Monitors Group compliance.

Internal audit function
- Supports the Audit Committee in reviewing the effectiveness of risk management.
- Maintains and develops internal control systems.

Operational level
- Risk management processes and internal controls embedded across all Ferrexpo operations.

Stakeholder engagement

SHAPING OUR CLIMATE CHANGE STRATEGY

Through engagement, we are tailoring our approach to climate change reporting, aiming to meet the needs of multiple stakeholder groups.

Ferrexpo has a wide range of stakeholders, ranging from our employees, contractors, and communities located close to our operations in Ukraine, to local governments and the natural environment where we operate, to beyond, where our customers, investors and suppliers are located. Our executive management team aims to regularly consult with all of Ferrexpo's stakeholders, to help shape, coordinate and communicate our approach to climate change. This strategy covers both the development and reporting of our activities and goals, and also influences our pipeline of investments, such as those to help reduce our emissions footprint.

Stakeholder engagement activities range from our biannual employee engagement survey, which includes questions on the Group's strategy and direction. Engagement with equipment suppliers and customers frequently results in discussions on our emissions footprint at our operations and our iron ore products, with companies worldwide expected to continually adapt their business practices to reduce emissions. Stakeholder engagement in London with shareholders and analysts shows perhaps the clearest focus on climate change reporting, with a number of investment funds now prioritising environment, social and governance ("ESG") factors on a par with the financial performance of companies that they invest in.

Sustainability-linked initiatives launched in 2021

Following stakeholder engagement, we launched two key projects in 2021 – the first being the announcement of inaugural carbon emissions reductions targets in October 2021 (link). Through announcing these targets, we had a simple aim of bringing our reporting into line with our peers.

The second key project announced in 2021 was our collaboration with Ricardo Plc, and this report includes conclusions drawn from this collaboration in reviewing our carbon emissions footprint, and establishing a potential pathway for net zero production.

Both of the above initiatives were borne out of direct engagement with a range of stakeholders in a number of locations, and we are grateful to our stakeholders for taking the time to engage and help shape our future direction.

Industry associations

Ferrexpo is not a member of an industry association or lobbying group, and does not pay fees to any group that is associated with the mining industry's position on climate change.

Image: Viktor Lotous, Head of Ferrexpo Poltava Mining, congratulates employees on their inclusion in the "Alley of Fame" initiative that recognises excellence in the workforce.

Image: Ferrexpo consistently sources goods and services from providers in Ukraine, with 96% of goods and services being with Ukrainian companies in 2021 (2020: 94%).

Image: Our workforce has a strong connection with local communities as a result our local hiring strategy, with 96% of recruitment being from such communities in 2021 (2020: 85%).

REGULATORY ANALYSIS: OPPORTUNITIES AND RISKS

Detailing the possible impacts of regulatory and policy actions in key markets, highlighting the macro-level developments and government-level decision-making intended to address decarbonisation.

Image: Ferrexpo's iron ore pellets, which are a premium form of iron ore that helps improve productivity and reduce emissions in steelmaking.

Regulatory opportunity and risk analysis

This section aims to summarise the market environment in which Ferrexpo operates and sells its products into, demonstrating how government regulation (both existing and proposed) may help shape our future strategy. Policy-making in the European Union is expected to take a leading role in global climate change regulation.

Businesses must operate within the legal and regulatory frameworks of the countries in which they operate, and given Ferrexpo's diverse global network of existing customers and potential future customers, it is important for us to understand the shifting landscape of climate change related policies in our consumer markets. In this section, work has been conducted to review the degree of existing climate change legislation, such as carbon costs and carbon reduction pledges, as well as each country's ambition for future climate change legislation.

As a business selling its products into a global market, it is likely that geographic shifts will emerge as individual countries and regions enact climate change legislation at differing rates and differing levels of ambition. This shifting business environment may result in emerging risks and opportunities to Ferrexpo, and therefore it is important for us to understand the key drivers behind this change.

As of the date of this report, legislative change is being led by the European Union. This is either through its own emissions trading scheme, which sets a price of carbon for EU emitters, to the Carbon Border Adjustment Mechanism ("CBAM"), which will gradually be implemented between 2026 and 2036. CBAM will apply a charge to those wishing to export into the EU, and will therefore have a far-reaching impact beyond the borders of the EU. For an overview of why CBAM legislation is important, and why it has the potential to create significant opportunities for producers of products that enable steelmakers to lower their emissions (and by extension - Ferrexpo's Scope 3 emissions), please see the Case Study provided on page 17 of this report.

Legislative pathways similar to that of the EU are underway elsewhere, with carbon emissions trading schemes being established, and baseline studies (a precursor to the aforementioned trading schemes) are being undertaken, but the impact of these programmes will likely be seen in the years after the EU has published and implemented its climate change policies.

Through a broad understanding of the likely shifts in policy in the countries and region that we serve, we intend to understand how this shift will shape our future marketing portfolio, in terms of locations that we serve and products that we produce.

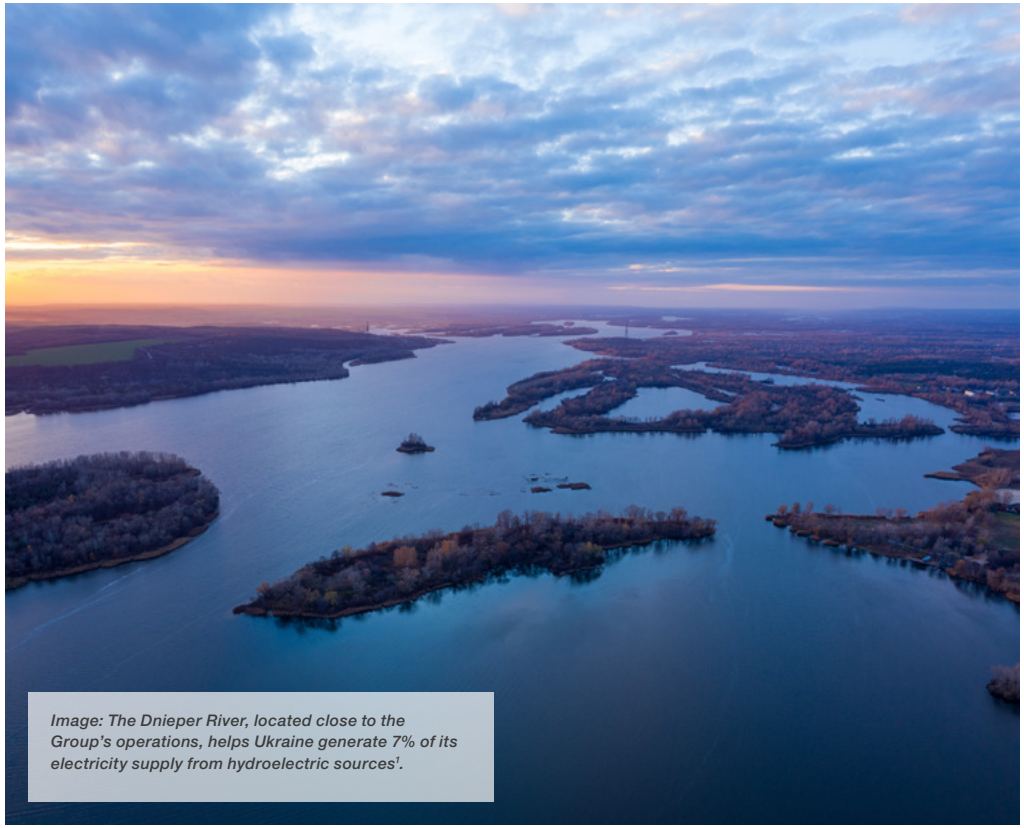


Image: The Dnieper River, located close to the Group's operations, helps Ukraine generate 7% of its electricity supply from hydroelectric sources[1].

SIGNIFICANCE OF THE EU

44%

The EU represented 44% of Ferrexpo's iron ore sales in 2021.

EU'S CBAM REGULATION

2026

Start of implementation period for the EU's Carbon Border Adjustment Mechanism ("CBAM").

EXPECTED CBAM COSTS

20–25%

Estimated additional costs for non-EU steelmakers to import steel into the EU following full CBAM implementation.

1 Source: Ember's European Electricity Review (2022) (link).

Regulatory opportunity and risk analysis continued

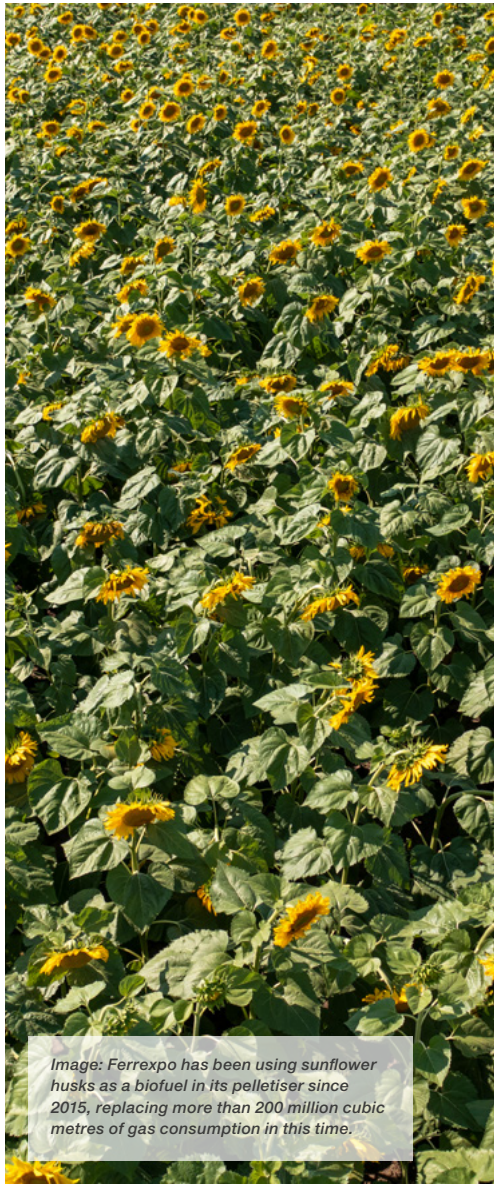


Image: Ferrexpo has been using sunflower husks as a biofuel in its pelletiser since 2015, replacing more than 200 million cubic metres of gas consumption in this time.

Summary

Within the EU, policy drivers will be critical for shaping its steel markets. The ambition of the EU Emissions Trading System is to create an environment that strongly favours lower emissions steelmaking, and this effect is amplified by domestic policies, which is particularly relevant for sales to markets such as Germany and Austria. Furthermore, the Carbon Border Adjustment Mechanism ("CBAM"), which is expected to begin its implementation in 2023, is intended to create a level playing field for supply into EU markets, and will therefore benefit EU producers. The EU's producers will, however, remain disadvantaged in export markets, further incentivising sales within the EU. Innovation support in the region is expected to be substantial in order to aid this transition.

Outside of the EU, the varying positions taken by governments on climate change will likely lead to more gradual change than that currently being seen in the EU. Adoption of carbon pricing systems are expected to shift the balance in favour of electric arc furnace technology ("EAF") for steelmaking (over blast furnace ("BF") technology), which will benefit markets for scrap steel and direct reduced iron. However, currently polices to help implement carbon pricing are relatively limited in the countries considered in this section outside of the EU, see page 19 for more details. Over the medium term, carbon prices could potentially grow to significant levels in China and Japan, both of which are significant markets for iron ore pellets.

For other countries considered as part of this section where carbon pricing is planned (e.g. Vietnam, Indonesia, Malaysia and Turkey, which are all customer markets for Ferrexpo), with these countries' policies expected to be unlikely to significantly affect the markets until the medium to longer term (i.e. post 2030) due to longer time-scales for policy development, as well as various phasing in timelines and the potential for political resistance. In addition, other countries could react to the EU's CBAM proposal and introduce their own measures, which would benefit producers in these regions, at the expense of importers into these markets. For example, the US and China have indicated disquiet at the EU's proposed CBAM legislation[1,2].

Country by country reviews have identified substantial policy measures that will likely shape future markets for low-emissions steel, especially in Europe. It is expected that steelmakers' heightened focus on emissions will present opportunities for Ferrexpo in light of the nature of our products.

Carbon pricing policy in Europe will have a large impact on the economics of steel production. This is particularly the case with carbon border adjustments favouring EU producers, but also high carbon prices and declining free allocation negatively impacting EU exporters.

The policy position in China, Japan and US should to be watched in response to EU border adjustments, as countermeasures will impact competitiveness of those countries' domestic producers. Planned carbon pricing in Japan and China presents a longer term cost risk to steelmakers in these countries.

Emerging and/or prospective carbon pricing systems in developing countries (e.g. Vietnam, Indonesia, Malaysia, Turkey) are unlikely to have a medium term impact as policy development time-scales are long and domestic resistance is likely to limit prices.

Countries covered

This section focuses on a range of geographic locations where Ferrexpo's customers are located, including countries that purchase BF pellets as well as those that focus primarily on direct reduction ("DR") pellets.

The regions and countries covered in detail in this section are the European Union (with a focus on both Austria and Germany), plus Turkey, Japan, South Korea and China, with these six countries listed here collectively representing 76% of total revenues in 2021 and 91% in 2020, and are therefore considered to be the main centres of buying activity for Ferrexpo's products. Additional studies were completed for other countries in the EU (e.g. Hungary and Slovakia), Serbia, the Middle East, and the USA, in addition to and a number of countries in Asia whereby general demand for pellets is either well established or increasing (e.g. Indonesia, Malaysia and Vietnam).

A review of key European policies is provided first in this section, given that this market is considered the most advanced in creating climate change legislation.

Sovereign targets

National targets for lowering greenhouse gas emissions vary significantly between countries, with no clear consensus on targets or baseline years. One trend is, however, apparent - that governments worldwide are legislating to reduce their emissions. Examples of different climate change goals are as follows[3]:

- The EU: 'at least' 55% reduction against 1990 levels of emissions.
- Germany: recently updated domestic target of a 65% reduction below 1990 levels of emissions.
- USA: targeting a 50% reduction below 2005 levels, but existing policies are estimated to facilitate only a 26-42% reduction in this timeframe. Further legislative action is therefore expected.
- Japan: 46% reduction against 2013 levels of emissions.

1 Source for EU: Euractiv (link).
2 Source for China: Reuters (link).
3 Data and commentary taken from Climate Action Tracker (link).
Links above all accessed 16 November 2022.

Policy review: European Union

The EU is Ukraine's closest major market for steel production that consumes material quantities of iron ore pellets, and Ferrexpo has long sold a significant amount of its production to customers in the EU (representing 44% of sales in 2021).

The EU's goal is to enact policy to limit the emission of greenhouse gases and tackle climate change, and this approach is considered to be one of the most ambitious approaches globally. The EU has set an emissions reduction target of a 55% reduction versus 1990 levels by 2030[1], and the level of the EU's carbon pricing is one of the highest in the world, with a phase out of free carbon allowances scheduled to occur between 2026 and 2035. Steel production in the EU is significant – the 159 million tonnes produced in 2019 represented 8.5% of the global market, and is the second largest global contributor after China.

Key policies and initiatives enacted by the EU include:

- European Green Deal (2019) and "Fit For 55" (2021).
- European Union's Emissions Trading System ("ETS") (Phase IV: 2021).
- Carbon Border Adjustment Mechanism ("CBAM", to be gradually applied from 2026).
- Innovation Fund (2020).
- Energy Efficiency Directive ("EED") (2018).
- Renewable Energy Directive II ("RED II") (2018).

CHART 3: EUROPEAN UNION CARBON PRICING (2016-2022)[2]

EU: KEY PELLET MARKET

44%

Proportion of the Group's sales into the EU in 2021.

PEAK EU CARBON PRICING

€96/tonne

Carbon prices rose to a peak of €96 in August 2022.

AMBITIOUS EU GOALS

55%

EU's emissions reduction target by 2030 (versus 1990).

1 Source: Reuters (link). Reduction figure excludes land use, land-use change and forestry.
2 Source: Bloomberg.

The above initiatives are expected to provide underlying support for low-emissions steel production in both the short and long term, and are also expected to drive up operating costs for steel producers in the medium to long term (relative to lower emissions steelmaking), with this particularly the case as allowances under the European Trading Scheme are phased out between 2026 and 2035.

Other policy measures being implemented in the EU include financial obligations under CBAM, whereby certificates will need to be purchased and declared against imports of steel from 2026. Support being provided by the EU in order to achieve its stated goals includes:

- The EU's **Innovation Fund**, which comprises of €10 billion for financing CO_2-reducing technologies between 2020 and 2030.
- The **Horizon Europe** programme, which is a €96 billion fund that runs until 2027, with a mandate to fund projects that tackle climate change, help to achieve the UN's Sustainable Development Goals, and boost the EU's competitiveness and growth.

Opportunities and risks for operators in the EU

At Ferrexpo, we expect to benefit from the EU's efforts towards decarbonisation of steelmaking, and its value chain, due to the high grade, high quality nature of our products and the environmental benefits associated with using iron ore pellets for steel production.

Revisions to the EU's ETS are designed to incrementally raise the price of allowances, meaning that EU steel producers will be subject to increasing costs, whilst gradually receiving less support (primarily in the form of allowances) over time. Producers of steel with higher associated emissions will therefore be subject to higher costs than those producing steel with lower emissions, therefore providing a competitive advantage for more modern, energy-efficient projects to increase their market share.

The concept of carbon leakage is important when considering the EU's ETS, with steel producers within the EU subject to costs that do not necessarily apply outside of the EU. The EU's CBAM legislation is expected to help address this issue, levelling the playing field by raising costs for steel producers looking to export into the EU. At present, legislative efforts are focused on emissions generated in steel production, since this activity represents approximately 7% of global emissions of greenhouse gases[3], rather than the entire steel value chain, and therefore does not focus on the supply of iron ore such as Ferrexpo's products. We, however, understand that this approach by the EU may evolve over time and broaden to include steel's value chain, which is another incentive for us to further reduce our Scope 1 and 2 emissions footprint in the short term[4]. For more information on our recent performance and carbon emissions reduction goals, please see page 6 of this report.

The EU's CBAM legislation is currently being revised, and due to the far-reaching and politicised nature of this particular regulation, it should be noted that the final scope and impact of CBAM may be diluted down from its currently anticipated form.

3 Source: IEA.
4 To date, a 30% reduction of Scope 1 and Scope 2 emissions combined has been recorded on a per tonne basis.

Policy review: European Union continued

Case study: What is the EU's Carbon Border Adjustment Mechanism ("CBAM")?

The EU's CBAM applies a carbon price at the EU's border to imports of certain products, which is designed to (a) set an equivalent carbon price on imports of non-EU products to that which is being paid by producers in the EU, and (b) encourage non-EU countries to adopt more ambitious climate-related regulation and encourage decarbonisation outside of the EU. The initial scope of CBAM is designed for it to cover the following energy-intensive industries: electricity, iron and steel, cement, aluminium and fertilisers.

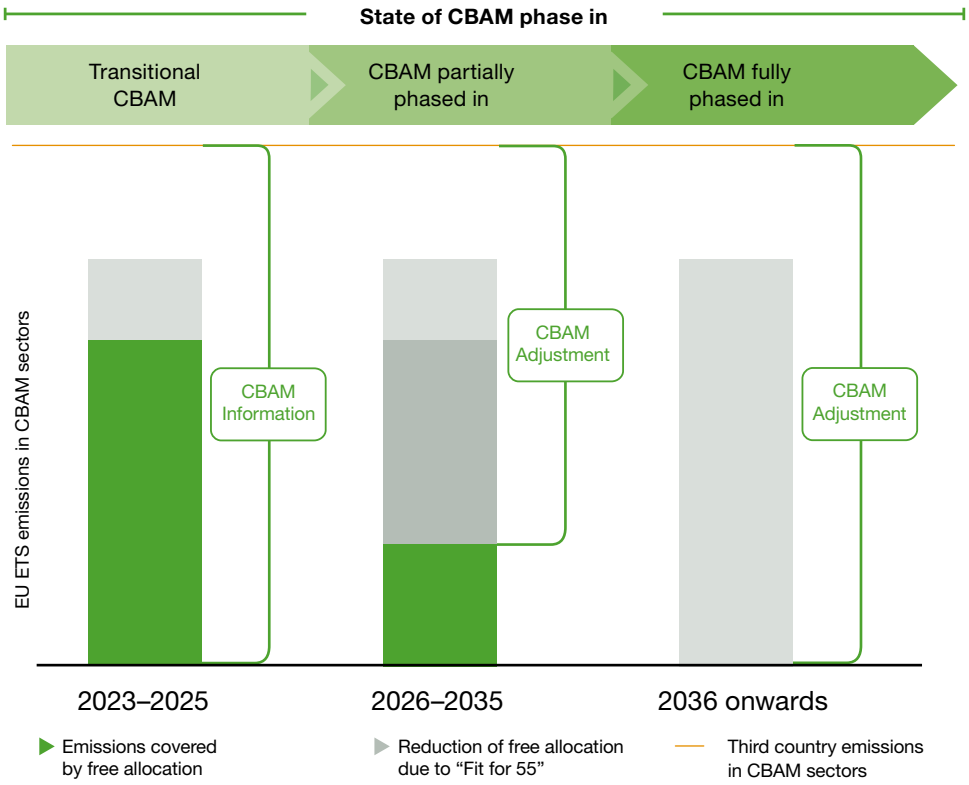
One of the main opportunities presented by CBAM to Ferrexpo is that this legislation reduces the cost advantage that non-EU steel producers have over Ferrexpo's EU-based customers for accessing EU end user markets, therefore strengthening the EU's steel sector. CBAM is therefore expected to improve the purchasing power of EU-based steelmakers. Furthermore, with CBAM and the ongoing revisions to the EU's Emissions Trading System ("ETS"), this legislation is intended to accelerate efforts to decarbonise steelmaking, and is expected benefit Ferrexpo (as a provider of technology that helps to facilitate lower-emissions steelmaking).

Risks relating to the CBAM centre on the potential risk of retaliation of the EU's trading partners, which could impact the competitiveness of the EU's steel industry, and longer term, carbon costs passing through to consumers and reducing end-user demand for steel-based products, and potentially promoting more efficient use of steel and increased substitution.

The mechanism by which iron ore imports into the EU would be subject to CBAM levies is not yet fully understood, since iron ore pellets have a materially lower carbon footprint when steelmakers convert iron ores into steel, and it is not established how this will be treated by legislators. This poses a risk should iron ore pellets be treated as a comparable product to iron ore fines.

CHART 4: ENVISAGED IMPLEMENTATION TIMELINE OF THE EU'S CBAM LEGISLATION

The CBAM is intended to operate in tandem with the EU's Emissions Trading System ("ETS") in the following manner:



Source: European Commission, courtesy of Ricardo Plc.

2023–2025

Transition: Early in implementation, EU-based operators will have a material proportion of existing emissions covered by a free allocation under the ETS. Non-EU operators will not be subject to an adjustment, but the difference in emissions, and therefore costs, will be recorded to develop a clear understanding of baseline emissions by each importing entity.

2026–2035

Phase in: As emissions allocations under the ETS decline over time (envisaged to be 2026–2035 under existing "Fit For 55" legislation), CBAM monetary adjustments will be phased in to increase the cost of importers into the EU.

2036 onwards

Fully adopted: From 2036, once free allocations under the ETS have lapsed, the adjustment applied under CBAM will mirror the price of carbon within Europe.

Policy review: European Union continued

Individual countries and their position under EU policies: Germany

Germany represents a major EU steel producer, with 26% of the EU's total produced crude steel in 2021[1].

Germany falls at the higher end of ambition to tackle climate change via its regulatory environment, offering support to mitigate the estimated €30 billion cost for significantly cutting greenhouse gas ("GHG") emissions from German steelmaking by 2050.

Specific policies that have been announced include the "Steel Action Concept – For a Strong Steel Industry in Germany and Europe", which was developed by the Federal Ministry for Economic Affairs and Energy. This policy aims to help support a *"long term strong, internationally competitive and climate neutral steel industry in Germany"*. The German government has also pledged to provide the maximum possible level of state aid to support its steelmakers under EU state aid rules, and one domestic producer has already received a pledge for German state funding for half of the €110 million required for a direct reduced iron plant that will utilise green hydrogen in the reduction of iron ore.

Individual countries and their position under EU policies: Austria

Austria represents a significant producer of high quality steel, and is responsible for 5% of the EU's total produced crude steel in 2021[1].

Austria aims to be carbon neutral by 2040 and to have the provision of 100% renewable energy by 2030. In order to facilitate these efforts, the Austrian Climate and Energy Fund has three flagship energy-related programmes: (1) WIVA P&G (link here), (2) NEFI (link here) and (3) Green Energy Lab (link here). Each of these is designed to support innovation that facilitates Austria's decarbonisation journey. Projects within Austria include the world's largest pilot plant for CO_2-neutral hydrogen production in Linz, which is funded by the EU's H2FUTURE project (link here) and is a collaboration between Voestalpine VERBUND, Siemens, Austrian Power Grid, K 1 MET and TNO.

Financing these initiatives is expected to come from a carbon tax, which was due to be implemented in July 2022. The carbon tax is expected to be €30 per tonne of carbon dioxide that will initially translate to the equivalent of €0.10 per litre at petrol stations, and an average of an additional €130 per year on domestic heating bills. However,amid the inflationary environment seen in 2022, and an associated rising cost of living, the implementation of this initiative has been delayed[2].

Individual countries and their position under EU policies: Slovakia

Slovakia represents a significant producer of steel, and is responsible for 3% of the EU's total produced crude steel in 2021[1].

Slovakia has been identified as one of six EU member states that should be prioritised for the Just Transition Fund ("JTF")[3]. This fund is intended to invest €17.5 billion in the territories most negatively affected by the green transition. The purpose of the EU's JTF is to invest in economic diversification and reconversion, deployment of new technologies as well as upskilling and reskilling of workers, to overall support the decarbonisation of industry. Slovakia is set to receive further funding of €6 billion from the EU Recovery Fund, with over US$1.0 billion of this funding to be used for decarbonisation efforts of Slovakia's largest steel mill[4].

KEY MARKETS:

AUSTRIA

21%

Of our revenues were generated from sales to Austria in 2021.

GERMANY

26%

Of EU steel output in 2021, with 40 million tonnes produced[1].

TURKEY

40MT

Of steel output in 2021, broadly in line with German output[1].

CHINA

53%

Of global steel production comes from China[1].

JAPAN

5%

Japan accounted for 5% of global steel production in 2021[1].

1 Source: CRU.
2 Source: Orbitax (link).
3 Source: European Commission (link). Six member states with assets targeted under this initiative: Belgium, France, Italy, Luxembourg, Slovakia and Sweden.
4 Source: European Commission (link).

Policy review: Beyond Europe

Existing climate change policies, and the level of ambition being shown to legislate towards a low-carbon future, varies greatly between major steel producing regions and jurisdictions, and does not necessarily correlate to the level of development of individual countries or regions. Important factors exist, such as existing industry in each country, and the split of electricity generation in each location (hydrocarbon versus renewables and/or nuclear).

There are examples of countries with more developed approaches to climate change policy outside of Europe, such as South Korea, which already has a carbon price in place that is in excess of US$20 per tonne. Others have carbon pricing in place at a lower level (e.g. Japan, US$2.5 per tonne), emissions trading schemes for specific industries (e.g. China) or have proposed voluntary carbon emissions trading systems (e.g. Saudi Arabia). The key here is that, currently, there is not a single unified approach being followed by governments in establishing climate change policies, and whilst a number of countries are following a similar pathway of developing climate change policies, each country is at a different stage along this pathway, and each is advancing at a different rate.

Image: Ferrexpo's port operations at Yuzhny, southwest Ukraine, from which we can reach customers around the world.

Key findings for global steel markets are as follows:

- The EU is deliberately taking a leading position on climate change policy. Whilst there are disadvantages to being the leader and first to adopt such a position, with new policies likely needing to be adapted over time, and additional protective measures (such as the EU's Carbon Border Adjustment Mechanism, "CBAM") required to ensure that domestic industries remain competitive, the EU will likely gain a first mover advantage once policies are successfully implemented. Steelmakers in locations outside of the EU will be disadvantaged in the short term whilst they adapt to EU steelmaker's products that have lower associated emissions.
- Countries located close to the EU, and in particular those seeking to trade in material quantities with the EU, will likely be forced into alignment with EU policies through EU legislation such as CBAM. This applies to Turkey, which is a significant exporter of steel into the EU, and policies announced in Turkey to date have suggested that a similar approach will be adopted in the future.
- Developed economies, such as Japan, have a supportive investment and technology environment for producing low-emissions steel, even if carbon pricing lags behind that seen in other countries. This will likely promote a fast rate of adoption once specific conditions (legislative, technological or otherwise) are met.
- High carbon pricing should be viewed in conjunction with domestic production costs. Whilst the cost of carbon in South Korea is relatively high, production costs are estimated to be relatively low and therefore steelmakers do not incur as great a penalty as EU producers with high operating costs, for example.
- China has an emissions trading scheme in place, but this is limited to specific industries (power generation) at present, with additional industries expected to be included in this scheme once the next Five Year Plan (2026–2030) is announced. The "30–60" Goals[1] and other environmental legislation are likely to increase carbon costs, with forecasts indicating a rise from 40 yuan per tonne (c.US$6/t[3]) today to more than 160 yuan by 2030[2] (c.US$23/t[3]).
- Policy in the United States of America has so far lagged on a national level, but commitments are being made at the local (state) level. An example of this would be legislation passed in Louisiana in 2021 that pledges to cut emissions by 40% to 50% by 2030[4]. The USA represents an example of a country to monitor for countermeasures in response to the EU's climate change related policies.
- Oil-based economies in the Middle East are in the process of establishing baselines and adopting policies to focus on carbon capture and storage. However, there are limited mandatory carbon emissions trading schemes in place in this particular region.

1 Targeting peak emissions by 2030 and carbon neutrality by 2060. (Source: IEA, link). Accessed November 2022.
2 Source: Refinitiv (link). Accessed November 2022.
3 Using USD-CNY exchange rate as of 16 November 2022.
4 Source: NOLA (link). Accessed November 2022.

Policy review: Quantifying impact

Introduction

Please note that the presented in this section are provided on a simplified basis and incorporates a range of assumptions – for a full list of the assumptions made, please see page 51 in the Appendix of this report.

Current legislative landscape

Global carbon pricing today fits into three broad categories:

(1) Jurisdictions with relatively high carbon pricing and high operating costs will see a loss of competitiveness, and domestic industries will need protective measures. Example: high cost producers within the EU.

(2) Jurisdictions with high carbon pricing and low operating costs will see carbon pricing eat into margins, but will remain cash flow positive and therefore require less protective measures. Example: South Korea.

(3) Jurisdictions with insufficient carbon pricing will see a slow rate of change and potential for being left behind as other nations achieve their decarbonisation goals. Example: developing economies in Asia.

Long-term carbon prices are unpredictable, but these are expected to increase over time such that they mirror the EU carbon cost and associated protective measures, such as the EU's Carbon Border Adjustment Mechanism ("CBAM"). The price of carbon within the EU is therefore likely to have a far-reaching impact on global carbon pricing.

As it stands, as seen in Chart 7 over the page, the full EU carbon price raises the cost of blast furnace-basic oxygen furnace ("BF-BOF") steelmaking above electric arc furnace ("EAF") steelmaking within the EU, and this trend is likely to continue whilst carbon pricing continues to rise. This trend is also likely to extend beyond the EU into other global markets, facilitating a global shift towards EAF steelmaking. The CBAM legislation also renders EAF imports into the EU as more expensive than EU produced EAF steels for the majority of importers (the exception being Turkey, which appears to remain competitive at current operating costs).

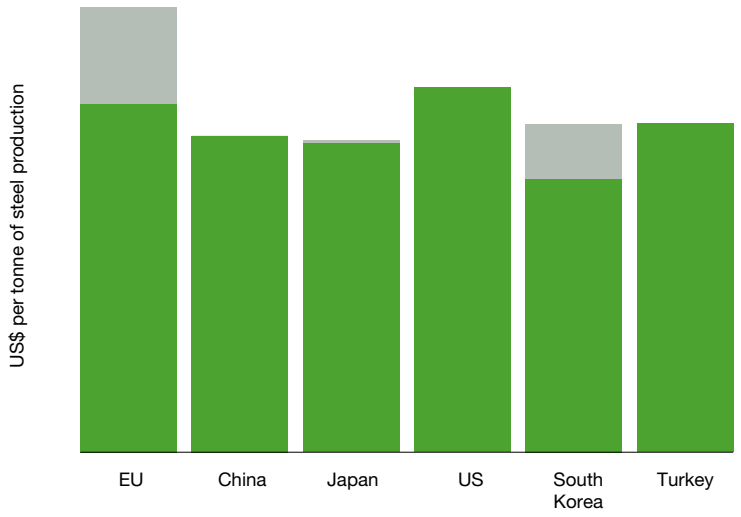
It should be noted that the analysis here is on the basis of the operating costs of EU-based steelmakers today, and the current cost of carbon within the EU. There is, however, a free allowance allocation under the EU's Emissions Trading System ("ETS"), which currently shields steel facilities from a proportion of their direct carbon costs. Allocations are made on a fixed ex-ante basis, compensating for lost profits rather than the marginal cost of steel production, therefore referencing forecasts rather than actual results. As the EU rolls out its legislation relating to CBAM, the intention is to reduce the degree of free allowances to domestic producers, therefore increasing CBAM related costs as a counter measure (see Chart 4 on page 17). An additional complexity is that EU producers exporting outside of the EU will not receive credits under the free allowance scheme, which will disincentivise exports and increasingly serve to protect supply in the EU market.

Impact of carbon costs (current)

Chart 5 below illustrates the impact of carbon pricing on current costs for BF-BOF steelmaking, incorporating the level of carbon emissions per country and applying the relevant carbon cost for each jurisdiction. Of the main centres of iron ore pellet consumption in steelmaking that are shown, currently only German steelmaking appears to have its cost base raised above global peers due to existing carbon pricing legislation (excluding free allowance allocations for emissions), which in turn is likely to affect competitiveness. The only other jurisdiction with material carbon costs is South Korea, with steel producers here benefiting from a lower cost base, and therefore not seeing as great an effect on global competitiveness as a result.

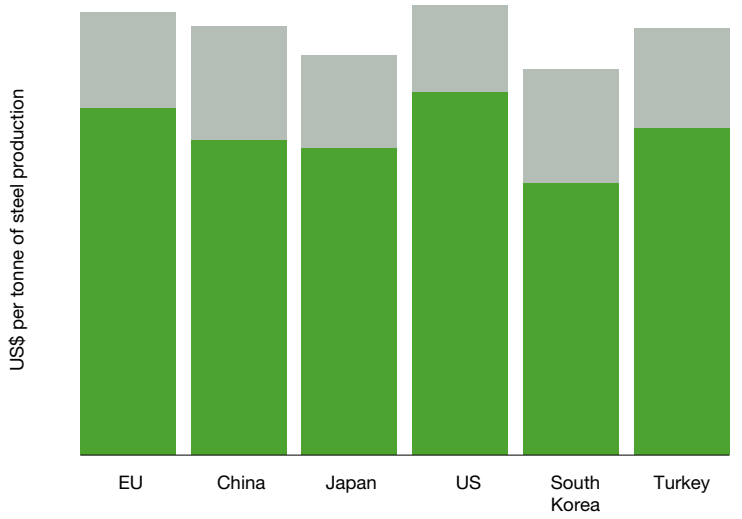
Note that the charts below use hot rolled coil as the steel product to benchmark, and do not account for any cost compensation such as free allowance allocations, which would reduce the net cost of production (please see Appendix for more on assumptions made). Further details of the assumptions made for Charts 5 to 8 are provided in the Appendix of this report.

CHART 5: ESTIMATED CARBON IMPACT ON OVERALL STEEL PRODUCTION COSTS (CURRENT COSTS, BF-BOF STEELMAKING)[1]



Source: Ricardo Plc.

CHART 6: ESTIMATED CARBON IMPACT ON OVERALL STEEL PRODUCTION COSTS (FUTURE COSTS, BF-BOF STEELMAKING)[1]



Source: Ricardo Plc.

1 Source: European Commission Joint Research Centre. (Link)

Policy review: Quantifying impact continued

Impact of carbon costs (2036 onwards)

For steelmakers in countries shown in Chart 6 on the previous page that are seeking to import into the EU, additional costs will be levied through CBAM legislation, with these likely to be similar in scale to the emissions costs applied today within the EU, creating parity with EU steelmakers.

These costs are significant, and represent up to 20% to 25% of the (current) cost of producing steel, and are therefore likely to disincentivise imports to the EU. This, in turn, will strengthen the position for steelmakers within the EU to increase their market share at the expense of importing parties. This window of adjusted trade flows and market protection is likely to remain in place until carbon pricing in ex-EU jurisdictions increases to the point whereby CBAM-related charges decrease, and imports become competitive once again. Given the existing rate of legislative change, it is believed that this realignment with EU markets is unlikely to occur before 2030, therefore granting EU producers a significant window of opportunity.

Beyond 2035, when free allocations under the EU Emissions Trading System are planned to be removed, the full costs associated with CBAM will apply to imports, equating to the EU's cost of carbon. Applying the EU's cost of carbon to the cost base of producers outside of the EU, as shown in Chart 6 on the previous page, it is shown that certain countries remain competitive (e.g. Japan) despite a significant cost of carbon being applied. In this scenario, the costs associated with CBAM will largely remove any cost disadvantage for German steelmakers compared to imports from countries such as China, US and Turkey.

Policy incentivising technological change

As shown below in Chart 7, production costs for BF-BOF steelmaking are, in general, currently below the cost of EAF-based steel production in the locations shown. This is true for the majority of jurisdictions that buy material volumes of iron ore pellets, and also remains the case when current carbon costs are included.

When layering in the EU cost of carbon into ex-EU countries' cost structures, as shown in Chart 8 below, the cost of BF-BOF steel production rises to a greater extent than EAF steel production due to the higher carbon footprint of this process. Higher global carbon costs, in line with current EU costs, are therefore considered to be a long-term driver for switching steel production from BF-BOF to EAF steel production both in the near term in the EU (as shown in Chart 7) as well as the longer term on a global basis (Chart 8).

Further consideration should also be given to decarbonisation of electricity generation in the countries shown, which will further reduce the carbon footprint of EAF steelmaking and therefore increase the difference in costs between the methods shown (and therefore further incentivise the shift towards EAF steelmaking).

The exception to the trend explained in Charts 7 and 8 is Japan, where EAF production is relatively limited (with lower productivity as a result), and the cost of scrap is relatively high, therefore driving EAF costs higher in this jurisdiction.

CHART 7: ESTIMATED COST OF STEEL PRODUCTION (CURRENT)

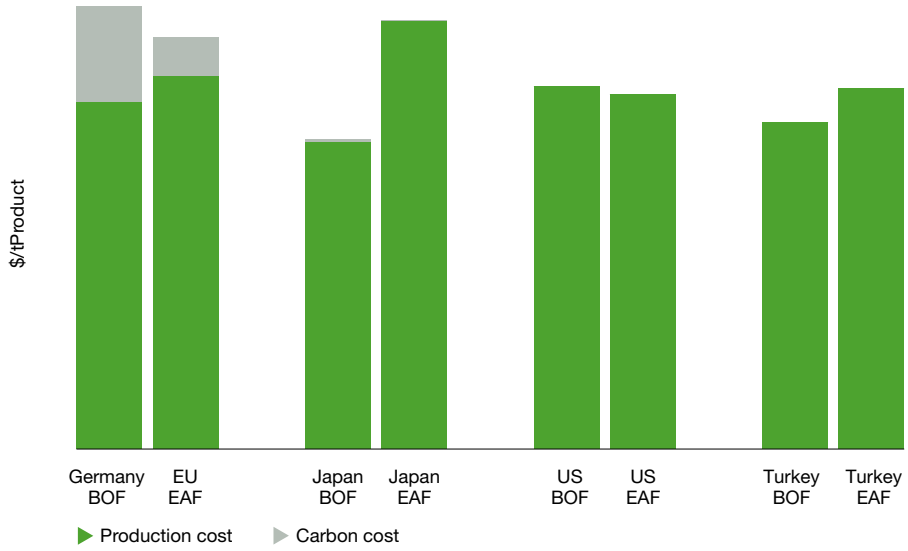
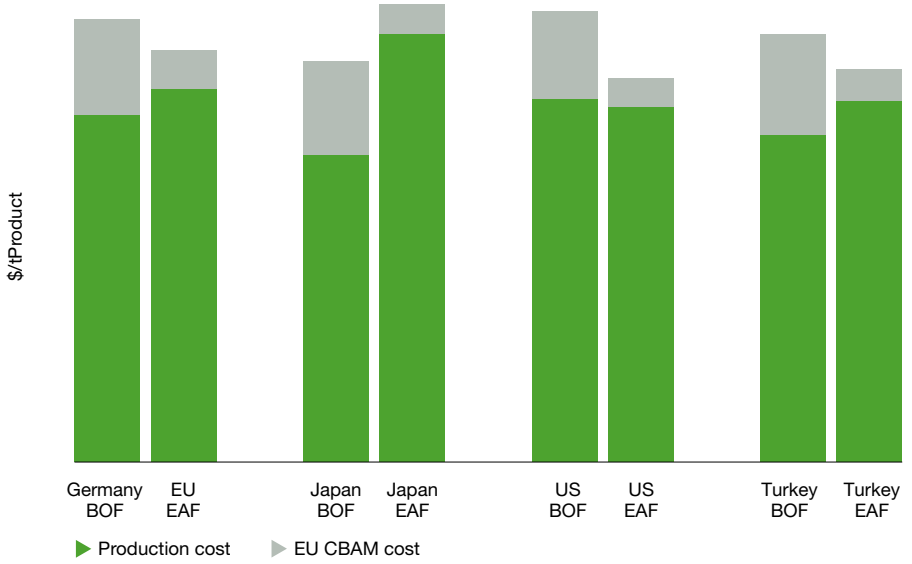


CHART 8: ESTIMATED COST OF STEEL PRODUCTION INCLUDING CBAM-RELATED COSTS FROM 2036 (FOR IMPORTERS INTO THE EU)



CLIMATE SCENARIOS

Building on recognised climate science, this section applies three independently produced climate change scenarios to our business, to identify and qualify transitional and physical risks and opportunities that lie ahead.

Image: Ferrexpo employees shown here are those that have helped to coordinate volunteer assistance for local families with disabled children in 2022, an example of how our workforce has close links to the communities in which we operate.

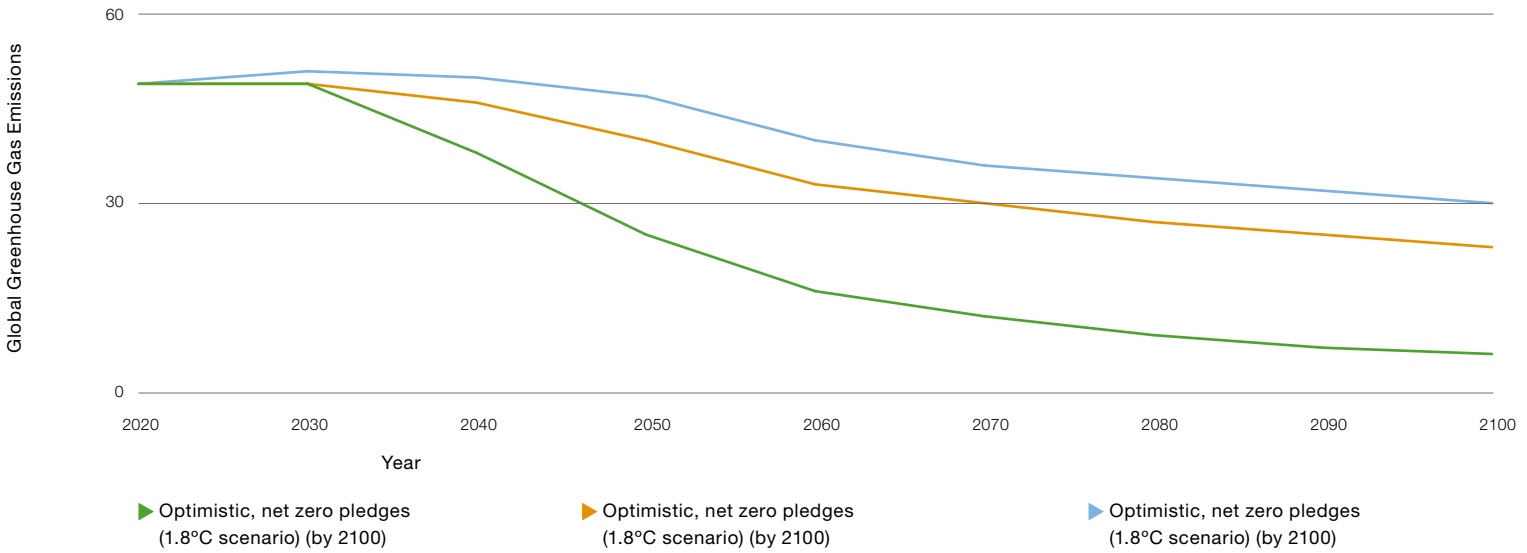
Scenario analysis: Introduction

Combining stakeholder interviews with a range of climate change scenarios, in order to understand the risks and opportunities facing our business.

Through modelling three different climate change scenarios – ranging from (1) a scenario whereby governments worldwide adhere to pledges made as part of the Paris Agreement, limiting temperature increases to below 2°C by 2100 ("IEA SDS"), to (2) a scenario whereby goals are not adhered to and temperatures rise by more than 3°C by 2100 ("IPCC SSP4"), we have sought to understand a wide range of risks and opportunities facing our business. In addition to the above scenarios, a third scenario has been assessed whereby global temperatures are modelled to rise by 2.6°C by 2100 ("IEA STEPS"), which offers us a range of 'business as usual' scenarios whereby global activities do not counter the effects of climate change.

These scenarios offer insights into the possible effects of climate change on our business, which are wide ranging and include physical, regulatory and financial impacts. Prior to modelling taking place, interviews were conducted to gather the views of a range of Ferrexpo stakeholders, including an independent shareholder, local management representatives, and an Independent Non-executive Director, which identified more than 50 different potential risks and opportunities.

CHART 9: GLOBAL EMISSIONS PROFILES FOR A RANGE OF CLIMATE SCENARIOS[1]



CLIMATE CHANGE SCENARIOS

Three

Selection of three internationally recognised climate change scenarios to provide a balanced range of potential impacts on the Ferrexpo business.

PARIS AGREEMENT ALIGNED

IEA SDS

Mapping Ferrexpo against IEA's Sustainable Development Scenario, which models climate change on the basis of the world meeting the long-term goals of the Paris Agreement.

RISKS AND OPPORTUNITIES

58

Through interviews with a range of our stakeholders in both Ukraine and the UK, we identified 58 potential climate change related risks and opportunities facing the Group.

1 Source: Climate Action Plan.

Scenario analysis: Introduction continued

Introduction

In reviewing the possible risks and opportunities facing Ferrexpo as a result of climate change, a series of interviews were held with a range of our stakeholders. This process was established to determine perceptions around climate change and Ferrexpo's business model. In turn, this information was subsequently mapped across three climate change scenarios, to produce the conclusions shown in this section.

Through a mix of desk-based research and key stakeholder interviews, a number of shortlists have been developed of key potential risks and opportunities for Ferrexpo within the category areas, as shown in the summary table below.

Category		Description
Market and technology	**Risks**	Key risk areas: (1) demand for low emissions steel, and (2) movement towards circular economy principles. Through the scenario analysis conducted, the key risk themes across the scenarios that have been identified include a slight decrease in profit due to a decrease in global iron ore price, and increased demand for steel produced with a lower carbon emissions footprint (trending towards lower emissions and ultimately zero emissions "Green Steel"). IEA SDS predicts a reduced carbon emissions footprint of steel from 1.4tCO_2/t steel in 2019 to 0.6tCO_2/t steel in 2050. IEA STEPS predicts a reduction in carbon emissions footprint of steel from 1.4tCO_2/t steel in 2019 to 1.1tCO_2/t steel in 2050, with both scenarios predicting an increase in EAF's share of global steel production to rise to c.50% by 2050.
	Opportunities	Potential material opportunities: (1) demand for low emissions steel, and (2) movement towards circular economy principles. Through the scenario analysis conducted, the key opportunity themes across the scenarios include the strong position Ferrexpo currently holds with regards to the movement towards "Green Steel" (via direct reduction ("DR") pellets and EAF steelmaking), with there being potential to increase pellet premiums and revenues.
Physical	**Risks**	Potential material opportunities: (1) Sea level rise (chronic), (2) Increase in storm intensity (acute), and (3) Climate induced conflict.. Through the scenario analysis conducted, the key risk themes across the scenarios include an increase in global sea level rise, an increase in global storm intensity and frequency, and a possibility for increased global conflict (more applicable for IEA STEPS and IPCC SSP4 scenarios). .
	Opportunities	Not applicable – through the scenario analysis, only risks have been identified.
Policy and legal	**Risks**	Key risk areas: (1) shipping targets and regulations on carbon emissions, (2) carbon pricing/tax targets and regulations on carbon emissions, and (3) a climate change related energy crisis in Ukraine. Through the scenario analysis, the key risk themes across the scenarios include the introduction of global carbon prices (set global prices for IEA STEPS and IEA SDS, and regional specific carbon prices for IPCC SSP4), a potential risk of insufficient energy access in Ukraine in IPCC SSP4, and a need for investment in decarbonising the shipping sector across all scenarios.
	Opportunities	Potential material opportunities: (1) shipping: targets and regulations on carbon emissions, (2) carbon pricing/tax: targets and regulations on carbon emissions, and (3) a climate change related energy crisis in Ukraine. Through the scenario analysis conducted, the key opportunity themes across the scenarios includes a competitive advantage in the market should Ferrexpo successfully decarbonise its shipping operations, a financial advantage should Ferrexpo decrease their emissions to below the market average (secured if 2050 net zero targets are achieved), and opportunity for Ferrexpo to diversify and become independent of Ukraine's national grid through the Group producing its own renewable energy.
Reputational	**Risks**	Key risk area: (1) increase in climate consciousness amongst customers, investors and other stakeholders. Through the scenario analysis, the key risk themes across the scenarios include an increase in positive sentiment towards green steel and/or iron ore from consumers and investors, resulting in potential for financial loss from not meeting customer and investor demands.
	Opportunities	Potential material opportunity: (1) increase in climate consciousness amongst customers and investors. Through the scenario analysis, the key opportunity themes across the scenarios include an opportunity for Ferrexpo to upscale production of iron ore pellet types that are compatible with "Green Steel" to appeal to the market before other market competitors.

An overview of scenario analysis

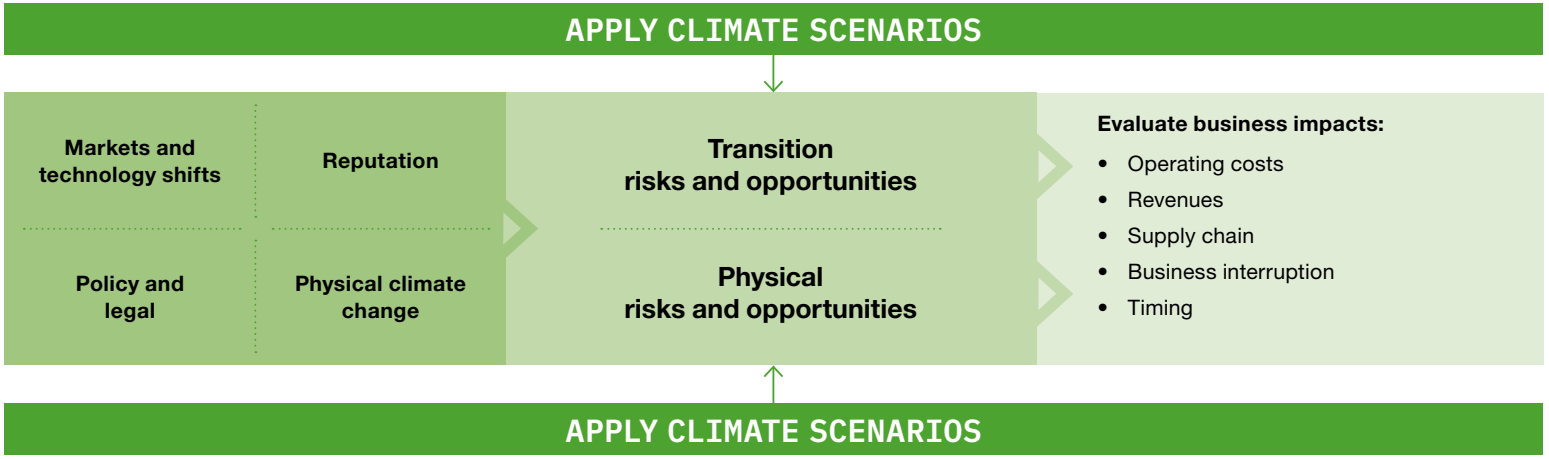
Scenario analysis aims to look at the resilience of a business against different climate change scenarios, varying in the speed and severity of climate change over time, and the associated response by governments worldwide in terms of policy change.

As depicted in the figure opposite, climate change driven impacts on the operating environment may take the form of market and technology shifts, reputational factors, the impact of changes (or insufficient change) to government policy and legal frameworks, and physical impacts.

Risks and opportunities may take the form of a transition risk, whereby companies do not respond quickly enough to a changing operating environment and/or shifting stakeholder expectations. Physical risks include the more obvious, direct impacts on a business, such as flooding and increasing storm events near a business's operations, or more indirect impacts such as rising sea levels, and the impact that this could have on global trade routes and access to customers.

In evaluating the impact on a business, climate change risks and opportunities may affect a wide range of factors, such as a company's operating costs, ability to generate revenues, supply chains, ability to operate continuously, and the timing of key company events and/or milestones.

Businesses will need to have an answer to the key question:
"What strategy is in place to transition business models to ones that remain valuable once ambitious climate policies are in place?"



Source: Ricardo Plc.

CLIMATE RISKS AND OPPORTUNITIES: SPECIFIC TO SECTOR, GEOGRAPHY AND TIME

Market and technology shifts

- Reduced market demand for emissions intensive products.
- Increased demand for low carbon products and services.
- Disruptive business models.

Policy and legal

- Ambitious targets to decarbonise sectors, such as the energy and transport sectors.
- Increased cost of production and taxes.
- Liability risks.

Reputation

- Loss of trust and brand value if not risks and impacts are not addressed.
- Opportunity to enhance reputation through responsible purpose.
- Access to finance.

Physical risks

- Chronic changes to weather resulting in fundamental shifts.
- More frequent acute weather events, such as fires, storms, and flooding.
- Supply chain disruption.

Source: Ricardo Plc.

Scenario analysis selection

In undertaking this model, climate scenarios were selected on the basis of giving a range of outcomes (rate of environmental change and severity of change) as a result of different levels of legislative ambition taken by governments in the coming years. Scenarios were also selected on the basis of being produced by a range of reputable independent authorities on climate change.

1. International Energy Agency ("IEA") Sustainable Development Scenario ("SDS")	2. IEA Stated Policies Scenario ("STEPS")	3. IPCC Shared Socioeconomic Pathway 4 ("SSP4")
Description: a "well below" 2°C scenario, achieved through policies that adhere to the Paris Agreement.	*Description: a worst case, "business as usual scenario" (one of two modelled here). A more conservative benchmark whereby governments are assumed to not reach all announced goals.*	*Description: a worst case, "business as usual scenario" (one of two modelled here). Divided approach to climate change continues to widen through unequal investments in human capital.*
Summary: This path sets out a plausible path to concurrently achieve universal access to energy, the objectives of the Paris Agreement, and a reduction in air pollution.	**Summary:** The STEPS scenario provides a more conservative benchmark for the future, because it does not take it for granted that governments will reach all announced goals. Instead, it takes a more granular, sector-by-sector look at what has actually been put in place to reach these and other energy-related objectives, taking account not just of existing policies and measures, but also a look at those that are under development.	**Summary:** Inequality (A Road Divided). Highly unequal investments in human capital, combined with increasing disparities in economic opportunity and political power, lead to increasing inequalities and stratification both across and within countries.
Characteristics: – A well below 2°C pathway. – Surge in clean energy policies and green investment. – All existing net zero pledges achieved in full. – Extensive efforts to realise near-term emission reductions. – Number of Western economies to reach net zero emissions by 2050, China by 2060, and a number of other countries by 2070 latest. – In alignment to the United Nations Sustainable Development Goals.	**Characteristics:** – Sector-by-sector look at what has actually been put in place to reach goals and other energy-related objectives. – Takes into account not just existing policies and measures but also those under development. – Includes "Fit for 55" measures announced by European Commission in July 2021 (55% reduction in emissions by 2030 compared with 1990 baseline).	**Characteristics:** – A gap widens between an internationally connected society that contributes to knowledge and capital intensive sectors of the global economy, and a fragmented collection of lower income, poorly educated societies that work in a labour intensive, low-tech economy. – Social cohesion degrades, and conflict and unrest become increasingly common. – Technology development is high in the high-tech economy and sectors. – Globally connected energy sector diversifies, with investments in both intensive fuels like coal and unconventional oil, but also low carbon sources.

Source: Ricardo Plc.

Scenario metric	IEA SDS (Sustainable Development Scenario)	IEA STEPS (Stated Policies Scenario)	IPCC SSP4 (Shared Socioeconomic Pathway 4)
Average global temperature increase (°C) by 2050	1.7°C	2.0°C	2.2°C
Average global temperature increase (°C) by 2100	1.6°C	2.6°C	3.7°C
Policy intervention	Increased policy beyond what has already been committed to, from 2021	Only policies that are active in 2021, including what has been committed to and what has been proposed	Increased policy after 2030, demonstrating a rapid transition to decarbonisation
Time horizon	Present day to 2100	Present day to 2100	Present day to 2100
Transition risks (as a function of carbon price, with pricing correct as of studies completed in June 2022)	**HIGH** ($95 USD/t) in 2050 Global carbon price	**MEDIUM** ($90 USD/t) in 2050 Global carbon price	**MEDIUM** Regional carbon price in the short term, global carbon price in the long term
Transition risks (as a function of carbon intensity of steel production)	**HIGH** (0.6tCO_2/t) by 2050	**MEDIUM** (1.1tCO_2/t) by 2050	N/A
Orderly or disorderly transition	Orderly	Potential for orderly or disorderly	Disorderly
Potential overall impact on Ferrexpo:	"Well below" 2.0°C scenario (Paris Agreement aligned)	Worst case, "business as usual" scenarios	

Low Medium High

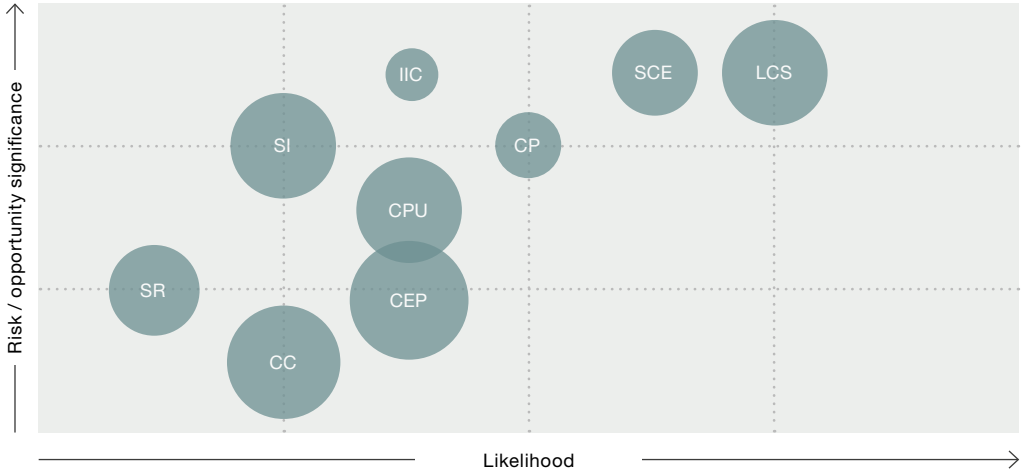
Materiality assessment

MATERIAL TOPICS

(Symbol ✓ denotes key focus area for Ferrexpo.)

External factor	Key focus area?
Market and technology shift	
Increasing demand for low carbon emissions steelmaking	✓
Movement towards circular economy principles	✓
Mineral commodity shift: from iron ore to other minerals	
Policy and legal	
Shipping: Targets and regulations on carbon emissions	✓
Carbon pricing/tax: Targets and regulations on carbon emissions	✓
Energy crisis in Ukraine	✓
Reporting: Targets and regulations on carbon emissions	
Increase in insurance costs	
Reputation	
Increased consumer and investor climate consciousness	✓
Climate action transparency: increased demand from consumer and investors	
Physical risks	
Water stress (chronic)	
Sea level rise (chronic)	✓
Increase in storm intensity (acute)	✓
Climate-induced conflict	✓
Surface temperature rise	
Opportunity for increased community and host country engagement over climate change related issues	

CHART 10: RISK MATRIX



(Note: bubble size denotes the scale of the potential impact on the Ferrexpo business.)

Code	Issue area	Matrix score	Top risk areas identified
CC	Climate-induced conflict		
CEP	Movement towards circular economy principles		
CP	Carbon pricing/tax: Targets and regulations on carbon emissions		#3
CPU	Energy crisis in Ukraine		
IIC	Increase in consumer and investor climate consciousness		
LCS	Demand for low carbon emissions steelmaking		#1
SCE	Shipping: Targets and regulations on carbon emissions		#2
SI	Increase in storm intensity (acute)		
SR	Sea level rise (chronic)		

Low Medium High

As shown in the table and chart above, the top three risk areas identified are (1) low carbon steel (risk relating to market and technology shift), (2) shipping targets and regulations (policy and legal risk), and (3) carbon pricing and tax (also a policy and legal risk).

Materiality assessment continued

Key topic:
Low carbon emissions steelmaking.

Summary:
Increasing market demand for low carbon emissions steelmaking, which in turn will affect demand for the various raw materials required for the production of steel. In the short term, this shift presents an opportunity to Ferrexpo as the drive towards Green Steel will increase demand for direct reduction ("DR") pellets, which are a form of iron ore that can be used in direct reduced iron-electric arc furnace ("DRI-EAF") steelmaking. Through this opportunity, Ferrexpo can increase the premium paid for its products by customers, potentially increasing revenues as a result.

In the long term (2050 to 2100), the movement towards green steel presents a risk to the Group as other market competitors will begin to supply green steel producers, resulting in an increase in competitor products, such as DR pellets for use in DRI-EAF steelmaking. In this scenario, Ferrexpo would lose its competitive advantage to be a market leader that it currently has.

This topic is assessed to be a medium to high risk across all three climate change scenarios for 2050-2100.

Key topic:
Shipping targets and regulations on carbon emissions.

Summary:
Increasing regulations on the shipping industry as carbon emissions targets are introduced, with measures similar to the EU's Carbon Border Adjustment Mechanism ("CBAM"), will likely increase costs.

Given the current regulatory landscape, this factor is unlikely to impact the Group in the short term (0 to 5 years), but over the medium to long term will likely pose a risk, as it will increase the Group's cost base as technology to aid decarbonisation is implemented. However, this topic may present an opportunity to the Group if Ferrexpo is successful in decarbonising its shipping operations, potentially providing a competitive advantage.

This topic is assessed to be a medium to high risk across all three climate change scenarios for 2050 to 2100.

Key topic:
Carbon pricing and taxes.

Summary:
Mandatory pricing and taxes of carbon emissions, increasing the operating costs for those consuming fossil fuels and/or generating industrial emissions.

In the medium to long term, carbon pricing will negatively impact profitability through increasing operating costs. This risk will be exacerbated if the Group fails to adequately reduce emissions over time. If the Group does, however, reduce its emissions, then this will present the Group with an opportunity as it will have a competitive advantage over its peer group. Significant opportunity lies in achieving net zero targets, ahead of others.

This topic is assessed to be a medium to high risk across all three climate change scenarios for 2050 to 2100.

Scenario analysis: In detail

DEMAND FOR LOW CARBON EMISSIONS STEELMAKING | MARKET AND TECHNOLOGY SHIFTS

01. DESCRIPTION

Outline

To meet national, international and industrial climate targets, the general market is required to shift towards lower carbon emissions steelmaking.

✓ Opportunity for Ferrexpo: short term

Ferrexpo is in a strong position to support this shift through producing more green steel, increasing the premium and revenue as a result.

? Risk to Ferrexpo: long term

Other competitors in the market may start to produce green steel too, including direct reduction ("DR") pellets for use in electric arc furnaces. Potential for Ferrexpo no longer to be seen as "market leaders" in the transition.

02. SUGGESTED KPIS TO MONITOR THE RISK

The carbon intensity of steel:

- **IEA SDS:** assumes a decrease in steel carbon intensity from 1.4tCO_2/t in 2019 to 0.6 tCO_2/t by 2050.
- **IEA STEPS:** assumes a decrease in steel carbon intensity from 1.4tCO_2/t in 2019 to 1.1 tCO_2/t by 2050.

Electric arc furnace (EAF) uptake:

- **IEA SDS:** assumes an increase in EAF share of steel production from 29% in 2019 to 57.5% by 2050.
- **IEA STEPS:** assumes an increase in EAF share of steel production from 29% in 2019 to 47.4% by 2050.

POTENTIAL IMPACTS ON THE FOLLOWING AREAS

Revenues	Expenditures	Assets and liabilities	Capital and financing
✓	✓		✓

03. DATA REQUIRED TO ANALYSE IMPACTS

Financial impacts

- Any correlation between changes in revenue/market price and any change in global steel carbon intensity due to carbon policy impacts.

Performance against competitors

- The carbon intensity of Ferrexpo products compared to competitors.

Geographical spread of market changes

- Any change in global steel production methods due to technology development and consumer preference.
- Any trends in these KPIs geographically, compared to the location of Ferrexpo market base.

04. SCENARIO RISK/ OPPORTUNITY RATING

	Date	
	2050	2100
IEA SDS	High	High
IEA STEPS	Medium	High
IPCC SSP4	Medium	High

Overall impact on the business:

Low Medium High

05. POTENTIAL STRATEGIC ACTIONS TO MANAGE RISK AND TIMEFRAME

Establish manufacturing capability for technology and equipment required to integrate into market shift to green steel. The sooner Ferrexpo can integrate technologies that aid the reduction of carbon emissions, such as use of green hydrogen in the pelletising process, the further Ferrexpo will be ahead of other market competitors.	Short–medium term
Monitor Ferrexpo product carbon emissions intensity compared to other market competitors to ensure Ferrexpo can stay ahead as market leaders in this transition, ensuring increased premium and revenue.	Medium–long term
Incorporate continuous monitoring of global steel carbon emissions intensity requirements and incorporate into the Ferrexpo business strategy. Decisions on diversification and development of low energy intensive steel can thereby be influenced.	Continuous

Source: Ricardo Plc.

Scenario analysis: In detail continued

MOVEMENT TOWARDS CIRCULAR ECONOMY PRINCIPLES | MARKET AND TECHNOLOGY SHIFT

01. DESCRIPTION

Outline

Global movement towards circular economy principles, driving an increase in scrap steel recycling and repurposing rates.

? Risk to Ferrexpo: medium–long term

Reduced demand for virgin iron ore, resulting in a decrease in Ferrexpo sales and growth.

02. SUGGESTED KPIS TO MONITOR THE RISK

The repurposing rates, recycling rates and volume of scrap steel output:

- **IEA SDS:** assumes an increase in metallic scrap input from 32.1% in 2019 to 45.3% by 2050.
- **IEA STEPS:** assumes an increase in metallic scrap input from 32.1% in 2019 to 44.7% by 2050.

POTENTIAL IMPACTS ON THE FOLLOWING AREAS

Revenues	Expenditures	Assets and liabilities	Capital and financing
✓	✓	✓	

03. DATA REQUIRED TO ANALYSE IMPACTS

Financial impacts

- Any correlation between changes in revenue/market price and global scrap steel recycling rates.

Geographical spread of market/technology changes

- Identify potential methods / technologies / equipment which can be utilised to repurpose / recycle scrap steel.
- Identify main countries where circular economy shift is increasing, and companies that are adopting the scrap steel recycling method.
- Identify markets for repurposed and recycled steel to establish client base for products.

04. SCENARIO RISK/ OPPORTUNITY RATING

	Date	
	2050	2100
IEA SDS	Medium	High
IEA STEPS	Medium	High
IPCC SSP4	Medium	Medium

Overall impact on the business:

Low Medium High

05. POTENTIAL STRATEGIC ACTIONS TO MANAGE RISK AND TIMEFRAME

Map out the existing and potential client base to develop an understanding of key markets and clients.	Short–medium term
Incorporate into Ferrexpo business strategy: continuous monitoring of global scrap steel recycling rates, including identification of main countries where a shift to a circular economy is increasing. Decisions on investment, diversification, and development of new products can therefore be influenced.	Continuous

Source: Ricardo Plc.

Scenario analysis: In detail continued

SHIPPING: TARGETS AND REGULATIONS ON CARBON EMISSIONS | POLICY AND LEGAL

01. DESCRIPTION

Outline

Carbon emission targets and regulation on the shipping sector are introduced. This may include the EU's Carbon Border Adjustment Mechanism ("CBAM"), making more energy intensive shipping methods more expensive.

Opportunity for Ferrexpo: medium-long term

If Ferrexpo is successful at decarbonising its shipping operations, it may provide a competitive advantage, should regulations and additional CBAM legislation be introduced.

Risk to Ferrexpo: medium-long term

Increased costs on Ferrexpo from shipping decarbonisation technology requirements.

02. SUGGESTED KPIS TO MONITOR THE RISK

The intensity of shipping sector targets introduced:

- **IEA SDS:** assumes international shipping emission trajectory consistent with a 50% reduction by 2050 from a 2008 baseline. Ban of trucks with internal combustion engines by 2035.
- **IEA STEPS:** 30% improvement in energy efficiency per tonne-kilometre in new ships and policies to aid the decarbonisation of shipping.

POTENTIAL IMPACTS ON THE FOLLOWING AREAS

Revenues	Expenditures	Assets and liabilities	Capital and financing
✓	✓	✓	✓

03. DATA REQUIRED TO ANALYSE IMPACTS

Financial impacts

- Any revenue and/or market price changes influenced by the need for investment in decarbonisation technologies to achieve any shipping targets implemented.

Performance against competitors

- The cost of CBAM for Ferrexpo, compared to competitors. There could also be positive reputational impacts if Ferrexpo is seen as a market leader in the area and vice versa.

Distribution of policy changes

- The financial impact on Ferrexpo is dependent on the nature of shipping policy implemented. If financial policies to support any technology transition are available, the impact on industry is reduced.

04. SCENARIO RISK/ OPPORTUNITY RATING

	Date	
	2050	2100
IEA SDS	High	High
IEA STEPS	Medium	High
IPCC SSP4	Medium	Medium

Overall impact on the business:

Low Medium High

05. POTENTIAL STRATEGIC ACTIONS TO MANAGE RISK AND TIMEFRAME

Assess technologies that are available to decarbonise Ferrexpo shipping operations, and if these are plausible solutions that could support Ferrexpo in aligning with potential future shipping regulations and targets.	Short–medium term
Invest in the technology required to meet any shipping targets and regulations. This is dependent on the scale and boundary of policies introduced, when and where they are introduced, and the technology that is available at the time.	Medium–long term
Monitor the targets and regulations that are introduced to the shipping sector in different regions whereby Ferrexpo operates. Assess the quantitative financial risks of these scenarios and incorporate this risk into all business plans and decision-making.	Continuous

Source: Ricardo Plc.

Scenario analysis: In detail continued

CARBON PRICING/TAX: TARGETS AND REGULATIONS ON CARBON EMISSIONS | POLICY AND LEGAL

01. DESCRIPTION

Outline

A mandatory (increasing) global carbon price for fossil fuel and industrial emissions.

✓ Opportunity for Ferrexpo: short–medium term

Financial advantage compared to market competitors if emissions are reduced to levels below the market average. If 2050 net zero target is achieved, then this may present and opportunity for Ferrexpo.

? Risk to Ferrexpo: medium–long term

Decrease in profits due to increase in carbon tax, if Ferrexpo does not sufficiently reduce it's carbon emissions.

02. SUGGESTED KPIS TO MONITOR THE RISK

Global mandatory carbon price (USD/tCO_2):

- **IEA SDS:** assumes 35 by 2040, 95 by 2050[1].
- **IEA STEPS:** assumes 65 by 2030, 75 by 2040, 90 by 2050[1].
- **IPCC SSP4:** assumes regional carbon price in the short term, global carbon price in the long term.

Increases beyond this expected to 2100. IEA scenario carbon price assumes that Ferrexpo operates in emerging and developing economies. Carbon price for operating in advanced economies is larger.

POTENTIAL IMPACTS ON THE FOLLOWING AREAS

Revenues	Expenditures	Assets and liabilities	Capital and financing
✓	✓	✓	✓

03. DATA REQUIRED TO ANALYSE IMPACTS

Financial impacts

- Any correlation between changes in revenue/market price and any change in mandatory carbon price.

Performance against competitors

- Progress in emission reductions achieved compared to targets.
- Ferrexpo emissions and carbon tax compared to competitors.

Distribution of policy changes

- Any difference in carbon price geographically and the relevance to Ferrexpo operations.
- Any difference in carbon price, boundary and scope based on markets/industries and the relevance to Ferrexpo operations.

04. SCENARIO RISK/ OPPORTUNITY RATING

	Date	
	2050	2100
IEA SDS	High	High
IEA STEPS	High	High
IPCC SSP4	Medium	High

Overall impact on the business:

Low Medium High

05. POTENTIAL STRATEGIC ACTIONS TO MANAGE RISK AND TIMEFRAME

Understand the capacity for technology, equipment and offsetting required to transition Ferrexpo to a net zero business by 2050.	Short–medium term
Monitor Ferrexpo product carbon intensity and carbon footprint compared to other market competitors to ensure Ferrexpo can stay ahead of market leaders, ensuring increased revenue in comparison. Carbon tax boundaries and scope should be monitored as this will determine if Ferrexpo products can support the market in reducing the carbon tax burden.	Medium–long term
Incorporate net zero roadmap and continuous monitoring of global carbon prices into Ferrexpo business strategy. Decisions on diversification and development of carbon reduction technology/processes can thereby be directly influenced. Emission reduction performance against targets should be regularly monitored to asses exposure and vulnerability to risk.	Continuous

Source: Ricardo Plc.
1 Carbon pricing correct as of timing of studies completed (June 2022).

Scenario analysis: In detail continued

ENERGY CRISIS IN UKRAINE | POLICY AND LEGAL

01. DESCRIPTION

Outline

Climate change related natural, economic or political events, which could leave Ukraine's energy system vulnerable to crises.

✓ Opportunity for Ferrexpo: continuous

Ferrexpo's mining operations are located in Ukraine and are highly energy intensive, with Ferrexpo very sensitive to changes in energy provision.

? Risk to Ferrexpo: short–medium term

Opportunity for Ferrexpo to diversify and become independent of the Ukraine energy grid through producing their own renewable energy.

02. SUGGESTED KPIS TO MONITOR THE RISK

Energy policy: access and renewable make-up:

- **IEA SDS:** assumes fair access to clean energy for all, globally, meaning impact of risk is minimal.
- **IEA STEPS:** assumes not all governments will reach announced goals*.
- **IPCC SSP4:** assumes uncertainty in the fossil fuel market*.

* Ukraine's climate and energy policy has been rated as highly insufficient by the Climate Action Tracker, suggesting a vulnerability of Ferrexpo to this risk.

POTENTIAL IMPACTS ON THE FOLLOWING AREAS

Revenues	Expenditures	Assets and liabilities	Capital and financing
✓	✓	✓	✓

03. DATA REQUIRED TO ANALYSE IMPACTS

Financial impacts

- Increased energy costs due to instability in Ukraine's energy market and the impact of this on revenue.

Performance against competitors

- Monitoring of competitor risk to similar constraints.
- Access to clean and sufficient energy in Ukraine, compared to other countries.

Composition of Ukraine energy

- Renewable composition of the grid, compared to Ferrexpo renewable and emission targets.
- The cost/benefits of private renewable generation compared to grid supply.

04. SCENARIO RISK/ OPPORTUNITY RATING

	Date	
	2050	2100
IEA SDS	Low	Low
IEA STEPS	Medium	High
IPCC SSP4	Medium	High

Overall impact on the business:

Low Medium High

05. POTENTIAL STRATEGIC ACTIONS TO MANAGE RISK AND TIMEFRAME

Assess the cost/benefit of investing in a private renewable energy supply, independent of the Ukrainian grid.	Short–medium term
Monitor the political instability of Ukraine, mitigation options/influence to overcome this, and integrate the impacts of this risk on Ferrexpo operations and reputation into business decisions and long-term plans.	Continuous

Source: Ricardo Plc.

Scenario analysis: In detail continued

CONSUMER AND INVESTOR CONSCIOUSNESS | REPUTATION

01. DESCRIPTION

Outline

An increase in positive sentiment towards Green Steel (and associated sources of iron ore) from both consumers and investors. Assumes an associated increase in demand for climate action transparency.

✓ **Opportunity for Ferrexpo: short-medium term**

Ferrexpo are moving towards the scaled production of iron ore for the Green Steel market. There is an opportunity to upscale this production and become a key player in the market.

? **Risk to Ferrexpo: medium–long term**

Risk of reputational loss if net zero targets are not met, and/or competitors perform better in the sector than Ferrexpo, potentially leading to financial losses.

02. SUGGESTED KPIS TO MONITOR THE RISK

Consumer and investor demand for climate action:

- **IEA SDS:** Not specified. This scenario models a world that achieves sustainable development, and in such a scenario, Ferrexpo would have to outperform current targets to compete with its competitors. This is more likely a risk than an opportunity.
- **IEA STEPS:** Not specified. Assumes extensive change but not all government and industry targets are met, suggesting Ferrexpo has an opportunity to become a market leader.
- **IPCC SSP4:** Not specified. In a disorderly transition, it is likely this is more an opportunity than a risk to Ferrexpo.

POTENTIAL IMPACTS ON THE FOLLOWING AREAS

Revenues	Expenditures	Assets and liabilities	Capital and financing
✓	✓		✓

03. DATA REQUIRED TO ANALYSE IMPACTS

Financial impacts

- Any changes in revenue/market price, correlated to Ferrexpo's reputation on climate action and sustainability.
- Understanding consumer and investor opinions on Ferrexpo and climate action would be beneficial for this risk/opportunity.

Performance against competitors

- Benchmarking sustainability performance, communication and reputation against competitors.

04. SCENARIO RISK/ OPPORTUNITY RATING

	Date	
	2050	2100
IEA SDS	High	High
IEA STEPS	Medium	Medium
IPCC SSP4	Medium	High

Overall impact on the business:

Low Medium High

05. POTENTIAL STRATEGIC ACTIONS TO MANAGE RISK AND TIMEFRAME

Benchmarking exercise of Ferrexpo sustainability and climate action achievements, and communication and reputation performance against competitors. A particularly beneficial aspect of this will be understanding both consumer and investor opinions of Ferrexpo, including in its recent roadmap to net zero.	Short–medium term
Consideration should be given to the communication of any climate and sustainability action. As we move closer towards carbon budgets and net zero targets, focus will be on those who can not only achieve sustainability, but demonstrate and communicate it effectively. Consumers and investors are likely to become more scrutinous of greenwashing.	Medium–long term
Climate and sustainability action should be taken, taking into account the benchmarking previously completed. Foresight will be needed to stay ahead of competitors.	Continuous

Source: Ricardo Plc.

Scenario analysis: In detail continued

CLIMATE-INDUCED CONFLICT | ⚠ PHYSICAL RISKS

01. DESCRIPTION

Outline

Climate change related natural, economic or political events create political instability and/or conflict that impacts on Ferrexpo operations and trade.

? Risk to Ferrexpo: continuous

In a world of climate induced political instability, there is an increased potential that Ferrexpo operations, employees or supply chain will be negatively impacted, potentially leading to deceased profits, sales, funding and reputation.

02. SUGGESTED KPIS TO MONITOR THE RISK

The frequency of climate-induced political instability:

- **IEA SDS:** assumes sustainable development is achieved, reducing the likelihood of climate-induced conflict.
- **IEA STEPS:** assume sustainable development is **not** achieved, and covers the possibility of policies, commitments and targets not being reached. Climate-induced conflict is therefore plausible in this scenario.
- **IPCC SSP4:** physical impacts most extreme in a 3.7°C scenario, and transition is more disorderly, therefore climate-induced conflict is likely.

POTENTIAL IMPACTS ON THE FOLLOWING AREAS

Revenues	Expenditures	Assets and liabilities	Capital and financing
✓	✓	✓	✓

03. DATA REQUIRED TO ANALYSE IMPACTS

Revenue changes

- Any correlation between climate-induced conflict or instability and revenue.

Performance against competitors

- Benchmarking against competitors on climate conflict mitigation, and support provided for employees impacted. Potential reputational impacts from this.

Distribution of instability

- The impact of this risk is heavily determined by the location of any climate-induced political instability compared to Ferrexpo operations.
- Indirect impacts may encompass Ferrexpo trade routes (e.g. shipping of products) and so these should be closely monitored.

04. SCENARIO RISK/ OPPORTUNITY RATING

	Date	
	2050	2100
IEA SDS	Low	Low
IEA STEPS	Medium	High
IPCC SSP4	Medium	High

Overall impact on the business:

Low Medium High

05. POTENTIAL STRATEGIC ACTIONS TO MANAGE RISK AND TIMEFRAME

Assess climate-induced conflict and political instability by likelihood, Ferrexpo operating and trading locations and Ferrexpo business plan timeframes.	Short–medium term
Incorporate the risks identified in the short–medium term into decision making. The likelihood of climate-induced political instability and/or conflict is increased by the physical impacts of climate change, the climate change policy implemented and where these both occur. This risk is difficult to distinguish from non climate-induced instabilities but should still be recognised where possible.	Continuous

Source: Ricardo Plc.

Scenario analysis: In detail continued

SEA LEVEL RISE (CHRONIC) | ⚠ PHYSICAL RISKS

01. DESCRIPTION

Outline

Global sea level rise increase, leading to direct or indirect impacts on Ferrexpo operations, employees or supply chain.

? Risk to Ferrexpo: continuous

Disruption to ports and navigation routes, particularly from the port of Pivdennyi in Southern Ukraine and in receiving ports. Disruption also to employees and the Ferrexpo general supply chain.

02. SUGGESTED KPIS TO MONITOR THE RISK

Sea level rise along distribution routes and ports:

- **IEA SDS:** Not specified. Under a 1.5°C scenario, the IPCC SSP2 suggests an average global sea level rise of 0.2m by 2050 and 0.4m by 2100, exposing 128–139 million people.
- **IEA STEPS and IPCC SSP4:** Not specified. Under a >2°C scenario, sea level rise is modelled between 0.32–0.63m by 2100*.

* Comparable scenario: IPCC's Relative Concentration Pathway ("RCP") 4.6-6.

03. DATA REQUIRED TO ANALYSE IMPACTS

Financial impact

- Any revenue/market price changes correlated to an increase in sea level rise. This could be indirect e.g. port/distribution disruption from sea level rise.
- Impacts of sea level rise on assets, and insurance for assets.

Employees and reputation

- There is also a reputation risk here, dependent on how Ferrexpo responds to employees, operational facilities and supply chains facing disruption due to sea level rise.

POTENTIAL IMPACTS ON THE FOLLOWING AREAS

Revenues	Expenditures	Assets and liabilities	Capital and financing
✓	✓	✓	✓

04. SCENARIO RISK/ OPPORTUNITY RATING

	Date	
	2050	2100
IEA SDS		
IEA STEPS		
IPCC SSP4		

Overall impact on the business:

Low Medium High

05. POTENTIAL STRATEGIC ACTIONS TO MANAGE RISK AND TIMEFRAME

Assess the quantitative risk of sea level rise to Ferrexpo's supply chain and shipping operations, including the most vulnerable shipping routes, ports, customers and employees. Incorporate this risk into decision making.	Short–medium term
Research mitigation and adaptation options for those areas of Ferrexpo operations, supply chain and workforce identified as at risk from sea level rise. If those identified are outside of Ferrexpo's direct operations, consider engaging with those third parties to increase resilience to sea level rise.	Medium–long term

Source: Ricardo Plc.

Scenario analysis: In detail continued

INCREASE IN STORM FREQUENCY AND INTENSITY (ACUTE) | ⚠ PHYSICAL RISKS

01. DESCRIPTION

Outline

Increase in storm frequency and intensity, leading to direct or indirect impacts on Ferrexpo's operations, employees or supply chains.

? Risk to Ferrexpo: continuous

Disruption to ports and navigation routes, and in receiving ports. Disruption also to employees and Ferrexpo's general supply chain.

02. SUGGESTED KPIS TO MONITOR THE RISK

Sea level rise along distribution routes and ports:

- **IEA SDS:** Not specified. Under a 1.5°C scenario, storm intensity and frequency are likely to increase.
- **IEA STEPS:** Not specified. Under a >2°C scenario, storm intensity and frequency are likely to increase. The magnitude of this impact is likely to be larger than the IEA's SDS scenario.
- **IPCC SSP4:** Not specified. Under a >2°C scenario, storm intensity and frequency are likely to increase. The magnitude of this impact is likely to be larger than the IEA's SDS scenario.

POTENTIAL IMPACTS ON THE FOLLOWING AREAS

Revenues	Expenditures	Assets and liabilities	Capital and financing
✓	✓	✓	✓

03. DATA REQUIRED TO ANALYSE IMPACTS

Financial impact

- Any revenue/market price changes correlated to an increase in storm frequency and intensity. This could be direct (e.g. damage to Ferrexpo infrastructure, product and employees), or indirect (e.g. port/distribution disruption and widescale economic impacts).

Employees and reputation

- There is also a reputational risk here, dependent on how Ferrexpo responds to employees and facilities facing storm disruption.

04. SCENARIO RISK/ OPPORTUNITY RATING

	Date	
	2050	2100
IEA SDS	Medium	Medium
IEA STEPS	High	High
IPCC SSP4	High	High

Overall impact on the business:

Low Medium High

05. POTENTIAL STRATEGIC ACTIONS TO MANAGE RISK AND TIMEFRAME

Assess the quantitative risk of an increase in storm frequency and intensity to Ferrexpo's supply chain and shipping operations, including the most vulnerable shipping routes, ports, customers and employees. Incorporate this risk into decision making.	Short–medium term
Research mitigation and adaptation options for those areas of Ferrexpo's operations, supply chain and workforce that have been identified as being at risk from an increase in storm frequency and intensity. If those identified are outside of Ferrexpo's directly-owned operations, Ferrexpo should consider engaging with those third parties to increase resilience to these storms.	Medium–long term

Source: Ricardo Plc.

NET ZERO PATHWAY: OUR ROUTEMAP TO 2050

Mapping a potential pathway for Ferrexpo to transition to net zero production, through the identification of technological solutions for decarbonisation and the likely associated timescales for implementation.

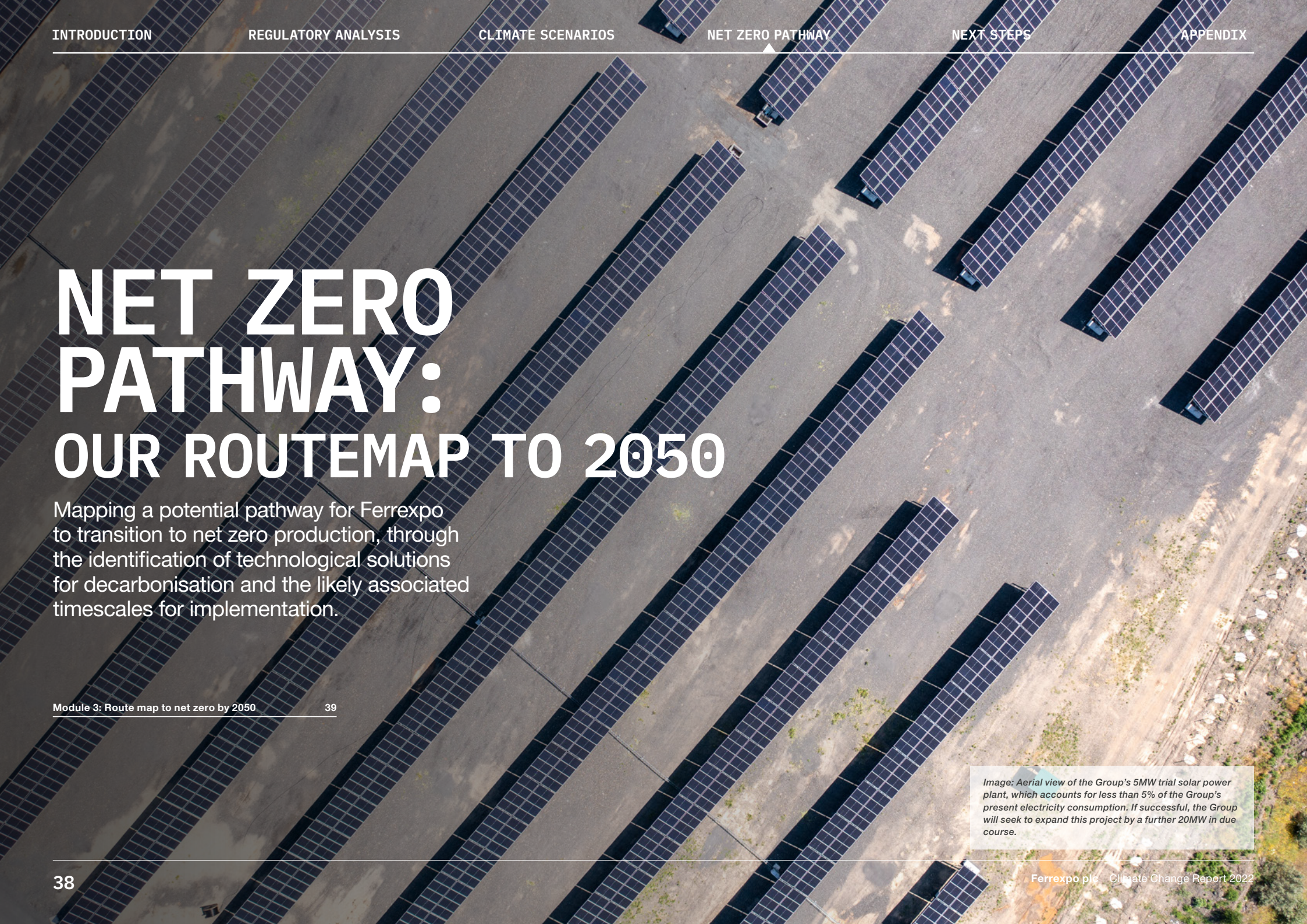


Image: Aerial view of the Group's 5MW trial solar power plant, which accounts for less than 5% of the Group's present electricity consumption. If successful, the Group will seek to expand this project by a further 20MW in due course.

Route map to net zero by 2050

A study of Ferrexpo's existing carbon emissions footprint and technologies for achieving net-zero production across the emissions covered in this report[1].

Ferrexpo's strategy around climate change has been developed to ensure we remain relevant as a business in a low carbon future. The development of this strategy has been made following stakeholder engagement, as governments and businesses around the world shift towards achieving their decarbonisation and net zero targets.

The aim of this section is to present a route map to support our ambition of achieving net zero emissions production no later than 2050, and in line with the goals set by the Paris Agreement. In light of the war in Ukraine in 2022, Ferrexpo is not ready to adopt science based targets (see more on page 44 and 46 of this report for more on our ambitions here), but we are setting our goals today on the basis of making a further commitment towards this level of reporting in the future.

Charts 11 and 12 presented below represent one identified pathway towards carbon neutral production, which enables Ferrexpo to achieve net zero emissions production by 2050, both in terms of absolute emissions and emissions per tonne of production, despite a significant increase in the Group's pellet production during this time. It should, however, not be viewed as the only potential pathway, and we intend to adapt our thinking over time.

Presented in this section is a net zero pathway, rather than a pathway to absolute zero production. In doing so, we understand that there will be a degree of residual emissions related to specific aspects of our operations, such as our biofuel usage in the pelletiser, and residual emissions from ocean-going freight (Scope 3), where sufficient means of decarbonisation may not be available by 2050. Net zero emissions are likely to be achieved towards 2050 through either the offsetting of residual emissions, or via natural or engineered carbon sinks that capture carbon emissions.

CHART 11: NET ZERO PATHWAY, ABSOLUTE EMISSIONS BASIS (SCOPE 1, 2 AND 3[1] EMISSIONS)

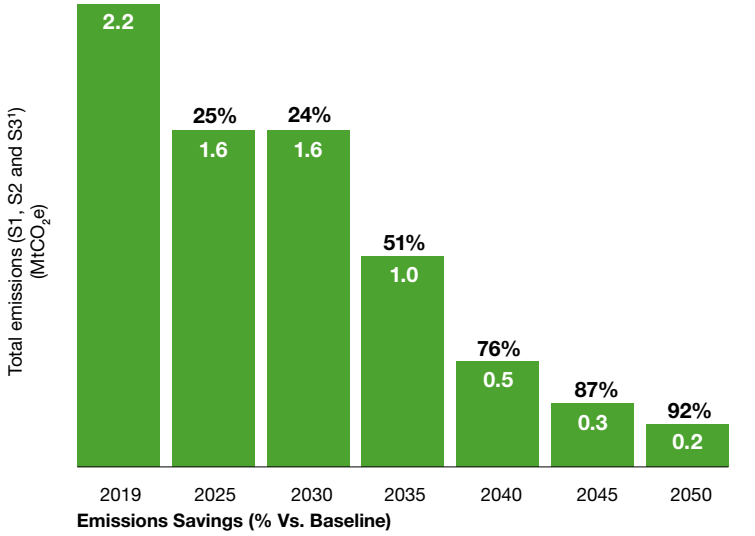
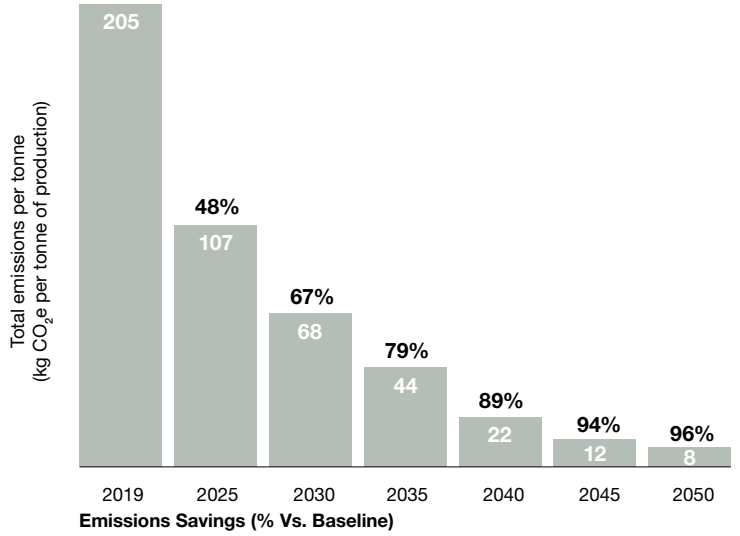


CHART 12: NET ZERO PATHWAY, PER TONNE BASIS (SCOPE 1, 2 AND 3[1] EMISSIONS)



DECARBONISATION PATH (ABSOLUTE TONNES BASIS)

92%

Absolute emissions reduction by 2050 (Scopes 1, 2 and 3)[1].

DECARBONISATION PATH (PER TONNE OF PRODUCTION BASIS)

96%

Emissions reduction by 2050 on a per tonne of production basis (Scopes 1, 2 and 3)[1].

DECARBONISATION DESPITE GROWTH PLANS

+100%

Net zero production despite a planned +100% increase in our pellet output.

1 Emissions covered in this report, which excludes the Group's Scope 3 emissions from steelmaking – see page 40 for details.

Route map to net zero by 2050 continued

What is net zero?

At Ferrexpo, we consider that achieving net zero is about reducing avoidable emissions as far as possible, and subsequently achieving net zero emissions by balancing the unavoidable use of fuels, energy, transport and other processes that generate greenhouse gases with projects that "offset" the equivalent amount.

To achieve net zero production, it is intended that our emissions reduction profile over time will be aligned with the goals of the Paris Agreement. Whilst there is no universally agreed, official definition of net zero, it is understood that key focus areas are: (a) to balance greenhouse gas emissions through mitigation measures, and (b) the removal of carbon emissions from the atmosphere, within clear boundaries, over time.

Understanding Scope 1, 2 and 3 emissions

The definitions of Scopes 1, 2 and 3 emissions (as used by Ferrexpo in this study) are as follows:

- Scope 1: from the activities of an organisation or under an organisation's control. This category includes on site fuel combustion, such as oil boilers, fleet vehicles and air-conditioning leaks.
- Scope 2: from electricity, steam and heat purchased and used by the organisation. This category covers emissions that are created during the production of energy by third parties that is eventually used by the organisation.
- Scope 3: from activities of the organisation occurring from sources that they do not own or control, such as emissions associated with downstream use of products (for example steelmaking), business travel, waste and water consumption.

Currently there is no clear alignment on whether net zero targets should cover Scope 3 emissions, in addition to Scope 1 and 2 emissions. Through setting a Scope 3 target here in this report, we have taken the position that a consensus on the need for Scope 3 targets will be made at a point in the future, and therefore it is important to begin reporting progress now, to build up our understanding over time.

Background

Climate change is a significant challenge facing the world today. The Intergovernmental Panel on Climate Change's ("IPCC") report on maintaining global temperatures rise to be a maximum of 1.5°C above pre-industrial levels, showed that the clock is ticking, and that the goal of the global economy achieving net zero by 2050 is critical for future generations and the planet[1]. In response to this, the Paris Agreement was signed in 2015 by more than 190 countries. This legislation is intended to be a global framework that seeks to avoid dangerous and irreversible climate change. It set targets to achieve this by limiting global temperature rise to "well below 2°C", and aiming for 1.5°C above pre-industrial levels.

Following this, in 2018, the IPCC published further reports concluding that to avoid the impacts of warming above 1.5°C, governments globally would have to cut emission of greenhouse gases by 45% by 2030.

The role of science based targets

Science based targets are viewed as robust framework for companies wishing to actively reduce their emissions, and have the potential to significantly boost stakeholder confidence in a company's ambition to realise its decarbonisation pathway.

In response to the above developments with regards to the IPCC and the Paris Agreement, the Science Based Targets initiative ("SBTi") was developed as a joint initiative by the Carbon Disclosure Project ("CDP"), the UN Global Compact, the World Resources Institute and the World Wide Fund for Nature. This initiative aims to increase the level of ambition on climate action, by encouraging companies to set GHG emission reduction targets. These targets are expected to be consistent with the scientific recommendation to limit emissions, to prevent temperatures from rising 1.5°C – 2°C above pre-industrial levels. Once companies have set a target in line with SBTi criteria, the target must be validated, communicated to stakeholders, and reported and tracked against company-wide emissions each year. Companies that have successfully adopted SBTi targets are referenced on the SBTi website[2], which includes the sign-up date, and sector that the company sits within.

Process undertaken to date

The year 2019 has been taken as Ferrexpo's baseline year on the basis that it represents the final year before actively reducing our emissions footprint. Our efforts to reduce emissions have principally focused to date on our clean power purchasing strategy, which commenced in 2020, and has been a major driver behind our achievement in reducing Scope 1 and 2 emissions by 30%[2]. The work presented here represents a desktop study of information provided by Ferrexpo, combined with the level of understanding of climate change at Ricardo Plc ("Ricardo"), and Ricardo's experience in reporting on such topics. It is intended that future phases of work will include a full technical and feasibility assessment of the identified measures, which is a piece of work expected to determine the viability of each proposed project, as part of the overall decarbonisation pathway identified.

Emissions excluded from this study

As a constituent of the global steel value chain, Ferrexpo's total emissions are heavily weighted towards the downstream use of the Group's products in steelmaking (Scope 3), with 85% of our total emissions in our baseline year (2019) relating to this category (see Charts 1 and 2 on page 9 for more information on this breakdown). Given the scale of the emissions related to steelmaking, and the known pathway for the Group to reduce these emissions being through the increased production of direct reduction ("DR") pellets, this category of emissions sits outside of the scope of this work in this report.

We are currently building our understanding of producing DR pellets, as well as increasing our presence in markets that purchase these products, and therefore it is currently not possible to commit to a timeframe for pivoting our production towards this particular product.

Any pivot in our product mix would also require a shift in demand from our existing customers, moving away from blast furnace ("BF") pellets and towards DR pellets. We are therefore currently engaging with our customers to understand their decarbonisation plans, and how demand for DR pellets will increase over time in key markets such as Europe and Asia. For more information on the Scope 3 emissions savings for Ferrexpo that are associated with DR pellets, see page 10 of the 2021 Annual Report and Accounts.

Emissions associated with land use and land use change has not been included at this stage as best practice guidance for measuring emissions from land use has only recently been developed by the GHG Protocol. Ferrexpo intend to establish a baseline and target for land use emissions as part of its future reporting.

A table depicting the categories of emissions included in our Scope 3 calculation is provided on page 93 of the latest Responsible Business Report, which is available on our website (www.ferrexpo.com).

1 Source: IPCC (link). Accessed November 2022.
2 https://sciencebasedtargets.org/companies-taking-action#table
3 Scope 1 and 2 emissions combined on a per tonne of production basis. Reduction recorded across 2020 and 2021.

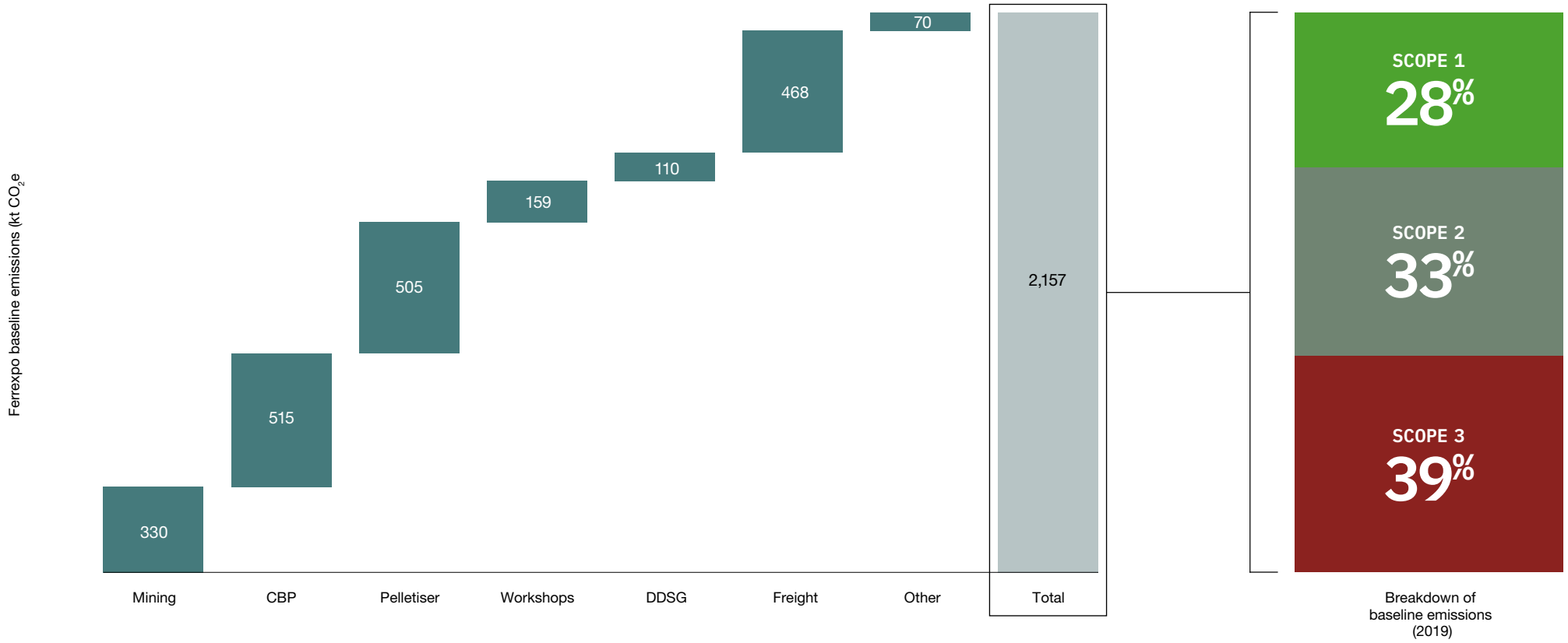
Route map to net zero by 2050 continued

Baseline emissions (2019)

Chart 13 below shows the composition of the Group's baseline emissions as of 2019, showing that four key areas contribute the majority of the emissions reviewed as part of this report – (1) mining, (2) beneficiation (concentrator, "CBP"), (3) the Group's pelletiser and (4) freight (principally ocean-going freight and rail).

As shown in the final bar below, the breakdown of Ferrexpo's baseline emissions by scope as of 2019 is broadly evenly split in its distribution by emissions scope, with no single scope accounting for more than 40% of overall emissions. Scope 3 (value chain) emissions account for the largest category of emissions on 39% of the total, followed by Scope 2 (indirect) emissions on 33% of the total, then Scope 1 (direct) emissions on 28%. With a relatively even split in emissions sources, the Group is able to advance a number of decarbonisation projects in parallel to each other, and therefore is able to target emissions reduction across its operations in simultaneous areas.

CHART 13: COMPOSITION OF THE GROUP'S BASELINE EMISSIONS



Source: Ricardo Plc.

Route map to net zero by 2050 continued

Modelling growth

Given Ferrexpo's future growth plans and associated investment programme, it is important to consider this in any planned decarbonisation pathway, measuring progress on a per tonne (unit) basis as the Group's output of iron ore pellets grows over time.

A demonstration of how it is important to model emissions on a unit basis is in the Group's electricity consumption, which increased by 13% between 2019 and 2021, reflecting our continuing efforts to modernise and grow our operations. In isolation, this would appear to represent a headwind in terms of decarbonisation, since this electricity consumption carries associated Scope 2 emissions. However, it is important to note that overall production volumes increased by 9% over this same timeframe, indicating that this increase in electricity consumption is partially correlated to production volumes. Looking ahead, growth will continue to drive up consumption of key consumables as we target the eventual doubling of our production, but this trend will also see us increase our output of our iron ore products, ensuring that emissions per tonne of production are a key metric for us to monitor.

Given the timescale of the decarbonisation pathway being contemplated here (net zero emissions by 2050), it is important to model our growth plans over this timeframe. In conducting the review completed here, we have deliberately modelled an accelerated growth pathway, to ensure that the decarbonisation pathway that is envisaged is achievable in an accelerated growth environment. Any extension in the growth timeline at our operations will therefore introduce additional time to modernise and implement new technology throughout our business. The modelling conducted to create the decarbonisation pathway presented here has assumed growth in our operations from approximately 12 million tonnes in 2021 to 24 million tonnes in the early 2030s, which represents an accelerated development plan. Despite this rapid growth schedule, modelling has demonstrated that it is feasible to implement a pathway to decarbonisation within this growth scenario.

The modelling completed as part of this report envisages a linear relationship between volume growth and emissions generation, with notable exceptions being the delivery of known projects (for example, clean power purchasing) that are serving to reduce emissions today, and will continue to do so in the future. Other ongoing projects that feature in the modelling presented here include the planned installation of a pantograph network of overhead cabling in our mining operations to reduce diesel consumption for trucks ascending haul ramps, the acquisition of electric locomotives for transporting ore, increases in the size of our solar power plant, and the completion of a three megawatt electrolyser to begin trialling of hydrogen use in the Group's pelletiser.

Through the implementation of the existing projects, including those outlined above, the Group is modelled to experience a 1% increase in absolute emissions by 2050 (versus baseline emissions)[1], despite a 100% increase in the modelled production, with this difference principally achieved through our clean power purchasing strategy.

Through modelling, it is estimated that 91% of total residual emissions in 2050 will be from a combination of the Group's mining operations, pelletiser and freight activities, highlighting these as being key focus areas for future work beyond 2050.

Image: Construction work underway in the concentrator in 2021 as part of the Group's organic growth plans.

1 Total comprising Scope 1, 2 and 3 emissions as modelled in this report, and therefore excluding Scope 3 (steelmaking) emissions.

Route map to net zero by 2050 continued

Net zero pathway

Charts 14 and 15 opposite serve to demonstrate a potential pathway for us at Ferrexpo to deploy the new technology at our operations to achieve a 92% emissions reduction against our 2019 baseline year, with an aim of achieving net zero production by the year 2050. As stated previously in this section, this emissions reduction would be achieved despite a 100% increase in production volumes in the same time period.

Residual emissions after 2050

Residual emissions in 2050 are modelled to be 180,000 tonnes of CO_2e, compared to emissions of 2.2 million tonnes of CO_2e in 2019[1]. For the modelled emissions reduction by 2050, Scope 1 emissions are anticipated to decline by 96%, Scope 2 by 94% and Scope 3 by 86%.

It is envisaged that our residual emissions in 2050 will comprise of predominantly emissions associated with rail freight (24%) and our pelletiser (31%), with both areas capable of further decarbonisation as electricity generation across Europe continues to decarbonise and new technologies become more widely available beyond 2050. In respect of the emissions from our pelletiser after 2050, these relate to our use of sunflower husks as a sustainable biofuel, which will ultimately need to be fully transitioned to green hydrogen after 2050 (which would follow the transition from natural gas to green hydrogen in the period running up to 2050).

In respect of emissions associated with rail freight beyond 2050, we will continue our dialogue with various national rail operators that we work with to help understand how these railway operators intend to implement their decarbonisation plans.

1 Total of 2.2 million tonnes of CO_2e emissions in the categories of emissions (Scope 1, 2 and 3) covered by this report. See page 40 for more detail.

CHART 14: NET ZERO PATHWAY BY SCOPE (KG CO_2 PER TONNE PRODUCTION)

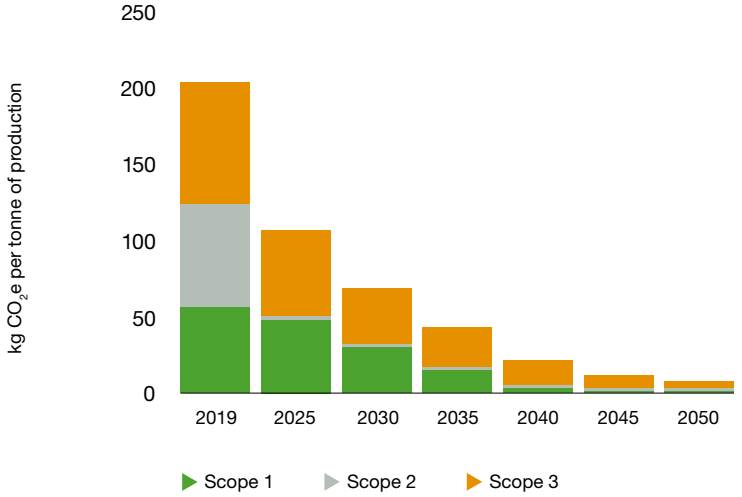
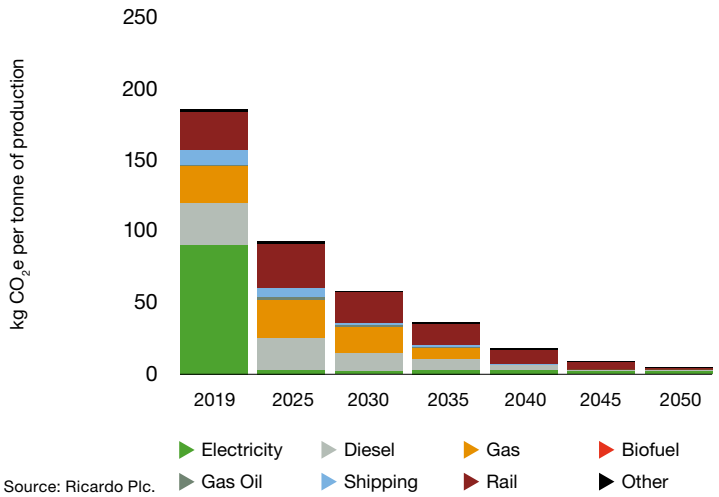


CHART 15: NET ZERO PATHWAY BY TYPE OF ACTIVITY (KG CO_2 PER TONNE PRODUCTION)



Source: Ricardo Plc.

APPLICABLE TECHNOLOGIES

Mining (Key consumable: diesel)	Beneficiation Plant ("CBP") (Key consumable: electricity)	Pelletisation (Key consumable: natural gas)	Logistics (Scope 1) (Key consumable: gasoil)	Other
2019 emissions				
330kt of CO_2e (15% of total).	515kt of CO_2e (24% of total).	505kt of CO_2e (23% of total).	110kt of CO_2e (5% of total).	697kt of CO_2e (32% of total).
2030 emissions				
331kt of CO_2e (20% of total).	20kt of CO_2e (1% of total).	474kt of CO_2e (29% of total).	56kt of CO_2e (3% of total).	758kt of CO_2e (46% of total).
Measures (implemented 2019-2050)				
• Electrification of haul trucks. • Electrification of other equipment. • In pit crushing and conveying.	• Clean power purchasing strategy. • Energy efficiency programme. • Installation of renewable power supply.	• Hydrogen usage (leading to green hydrogen). • Increased biofuel usage. • Energy efficiency and heat recovery programme.	• Decarbonisation of inland waterway fleet through low carbon fuels.	• Principally relate to emissions associated with freight logistics (ocean-going and rail).

Route map to net zero by 2050 continued

Emissions reduction targets

In October 2021, prior to undertaking our collaboration with Ricardo, we announced inaugural carbon emissions targets of a 30% reduction in emissions by 2030[1], and an ambition to achieve net-zero production by 2050, in line with many established targets set by a number of our peers in the mining and steel sectors, as well as governments around the world. The publication of our inaugural targets served to bring Ferrexpo into line with a number of its peers in the mining industry.

Following the completion of the work outlined in this report, the net zero pathway presented here depicts greater than 50% reduction in Scope 1 and Scope 2 emissions[1] by 2030, and therefore the Group's Board of Directors has elected to upgrade its climate change ambition to a 50% reduction by 2030. The work presented here in this report is bespoke to Ferrexpo and its operations, and therefore it is important that we build on the work completed here through setting goals for future performance in our efforts to decarbonise our business, and deliver low carbon emissions production.

Furthermore, at Ferrexpo we have an ambition to commit to science based targets in due course, with this initiative representing a high standard for emissions reductions targets. Given the current situation in Ukraine, the Group is not presently in the position to commit to commencing this process, but we are preparing for future adherence to this initiative. For more information, see page 46 ("Comparison with science aligned net zero targets").

1 Scope 1 and Scope 2 emissions combined, on per tonne of production basis.

SCOPE 1+2 EMISSIONS REDUCTION ACHIEVED

30%

Emissions reduction achieved across 2020 and 2021 combined[1].

SCOPE 1+2 MEDIUM TERM TARGET (UPGRADED)

50%

Emissions reduction by 2030[1].

SCOPE 3 MEDIUM TERM TARGET (NEW)

10%

Emissions reduction by 2030, on a per tonne of production basis.

SCOPE 1+2 NET ZERO TARGET (UNCHANGED)

2050

Emissions reduction by 2030[1].

Image: Plant operators inside the processing complex at FPM, where our iron ore pellets are made.

Route map to net zero by 2050 continued

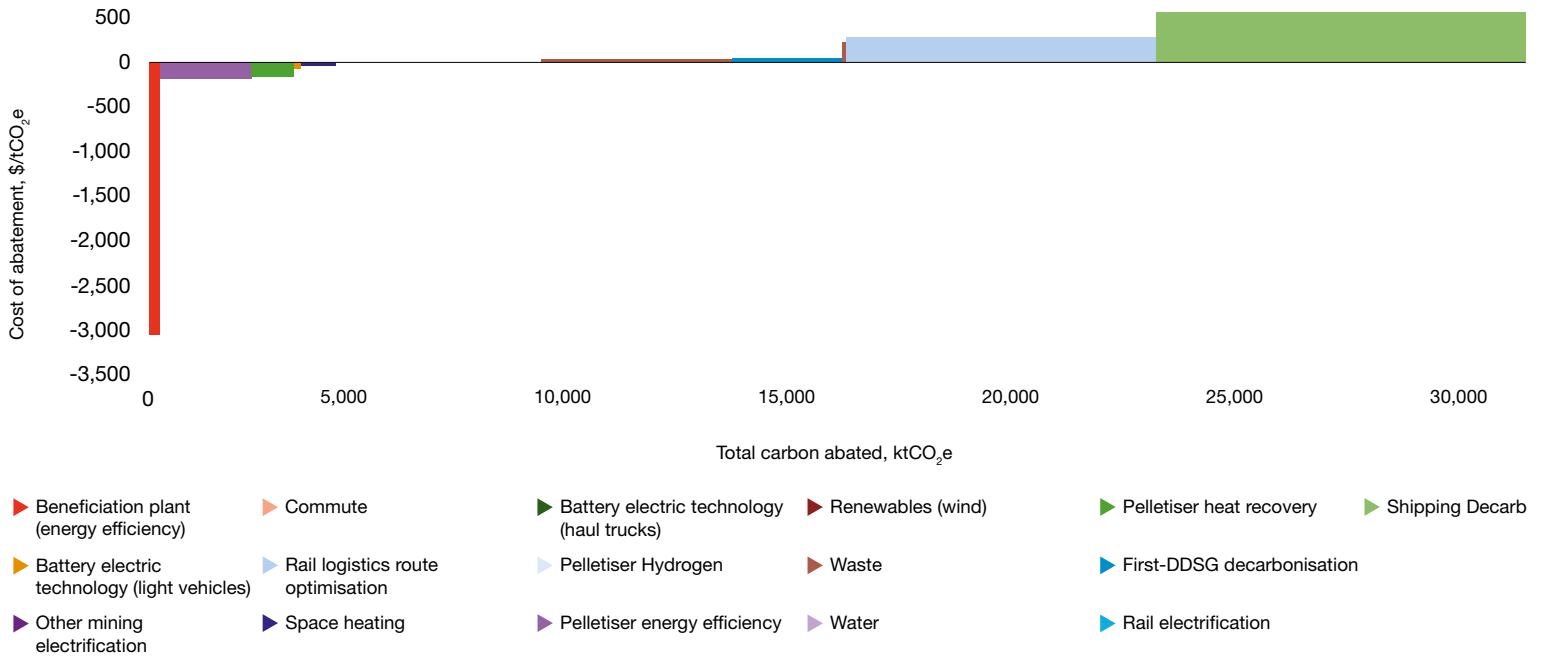
Indicative costs

The following section describes the indicative costs to Ferrexpo of implementing the net zero pathway described in the previous section, which comprise of a combination of capital investment costs for purchasing and installing the new technology required to reduce emissions, and the expected additional operating costs for operating using low-emissions technologies, such as green hydrogen. The costs outlined here are provided on a high level basis and are additional costs against the "business as usual" scenario whereby Ferrexpo implements growth but does not address its emissions footprint.

The total capital investment cost to deliver the net zero pathway outlined in this document is estimated to total US$3.3 billion in the 28 years between 2022 and 2050, with the estimate for our own generation of renewable power and storage representing more than 60% of this figure. Whilst this level of investment may appear high, it represents the total capital cost over a number of decades, for implementing significant change and modernisation at the Group's mining, processing and logistics operations, which will create a business that is capable of producing net zero emissions iron ore pellets for the future of the global steel industry.

The projects outlined in this report include a number of ancillary benefits beyond the carbon emissions reduction as detailed in this report. Examples of such benefits would be the additional volume increases and productivity gains that are made possible through modernisation of equipment and processes. Projects are therefore not assessed simply for their benefits in reducing emissions, but the total cost is presented here for our decarbonisation pathway.

CHART 16: MARGINAL ABATEMENT COST ("MAC") CURVE



The Group's decarbonisation pathway is estimated to deliver approximately 35 million tonnes of emissions reduction by 2050. In doing so, the Group's total carbon abatement cost is estimated to be US$145 per tonne of CO_2e. Abatement costs are estimated on the basis of a Net Present Value for each initiative included in the net zero pathway, comparing the initial capital investment cost, any cost savings through an assumed price of carbon, alongside any increase/decrease in the expected operating cost of each technology.

Chart 16 above depicts the marginal abatement cost ("MAC") curve for the decarbonisation pathway presented in this section, which depicts projects in order of the cost of abatement, with negative abatement costs associated with projects deemed to save the Group money (note that this calculation includes a cost of carbon for the additional emissions in the business as usual scenario). As shown in the MAC curve above, energy efficiency projects typically generate negative abatement costs, and are shown to the left of this chart. Projects with larger, additional capital and operating costs, such as decarbonisation of shipping (Scope 3) and projects with higher expected operating costs (for example, green hydrogen in the pelletiser), have above average abatement costs and are shown to the right of this chart. The higher abatement cost projects described here are, however, longer dated projects expected to be implemented in the latter stages of the timeframe between the present day and net zero production in 2050.

Route map to net zero by 2050 continued

CHART 17: COMPARISON OF EMISSIONS PROFILE FOR VARIOUS SCENARIOS AGAINST EMISSIONS UNDER SCIENCE BASED TARGETS (ABSOLUTE EMISSIONS BASIS)

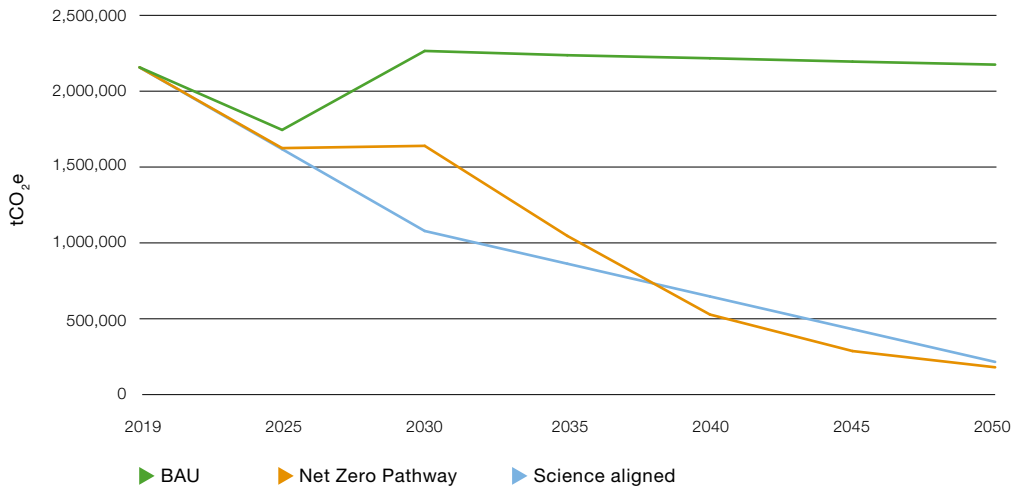


Image: Decarbonisation of our mining operations will build on our existing use of electric excavators, which have been in operation at our mines for the past ten years.

Comparison with science aligned net zero targets

As shown in Chart 17 above, the Group's net zero pathway achieves a result in 2050 that remains within the required pathway under science based targets. The window between 2025 and 2030 highlights a requirement for the Group to accelerate its decarbonisation efforts, most likely in mining electrification, in order to maintain a decarbonisation pathway that is in accordance with science based targets during this entire timeframe up to 2050.

The Group is currently reviewing the possibility of it being able to make a further commitment to adopting science based targets, which would require additional time and investment. Should the Group elect to commit to science based targets, this would likely require Ferrexpo's operational teams to adopt a climate change strategy and investment plan, which would be developed through more detailed modelling of the decarbonisation pathway shown here, and upgrading of the Group's medium-term decarbonisation target to being on the basis of absolute emissions, to mirror the level shown in the chart above. This is not a decision that is to be taken lightly by the Group, and it is difficult for the Group to make such commitments at the present time given Russia's invasion of Ukraine in 2022.

Net zero pathway: next steps

The pathway detailed in this report is indicative of how Ferrexpo might achieve net zero, though there are, in practice, many variations to this pathway that would allow Ferrexpo to achieve net zero production by 2050. Ferrexpo's net zero implementation plan, therefore, should be seen as an evolving document that identifies where the key decision points in time are, and which information will be required. As a result, further feasibility studies are needed beyond the work completed here, to enable informed decision-making.

There are a number of work streams to progress our understanding beyond this work, further developing our decarbonisation pathway, and creating a structure on which to plan and prioritise future investments.

Key to these efforts will be the governance structures that are put in place to ensure timely and effective deployment of funding towards emissions reduction initiatives. The Group will need to deploy dedicated resources and build new teams within its management structure to help guide and prioritise projects, all of which will take time to enact, and these efforts will be accelerated following a cessation of hostilities in Ukraine following Russia's invasion in 2022.

The next phase of planning for a future that involves net zero production is underway, and our management team is working with our partners to develop an implementation plan for this phase of work, which will aim to deliver a sustainability strategy document.

NEXT STEPS

Image: Night time scene in the local community of Horishni Plavni, located close to our operations.

Life cycle assessment

Anticipated to be a peer-reviewed study into the environmental benefits of iron ore pellets compared to the most commonly traded form of iron ore worldwide – sinter fines.

A life cycle assessment reviews the environmental impacts associated with all stages of a product, in this case iron ore pellets, from the generation of the raw materials used to create the product in question, to the distribution and use of that product, and even including the degree of recycling and disposal of materials following their use. In this study, the Group is looking into the environmental footprint of its direct reduction ("DR") iron ore pellets from their inception to conversion into steel via direct-reduced iron-electric arc furnace ("DRI-EAF") method of steelmaking, and in doing so, this study will benchmark DR pellets against the process to produce the same grade of steel via iron ore fines. By ensuring that all processes are covered for the life cycle of our iron ore pellets, from creation in Ukraine, to end use by steelmakers around the world, we intend for this study to capture the full environmental impact of steel production via the DRI-EAF method of steelmaking using DR iron ore pellets. This complete picture, however, is a particularly complex study, and therefore this workstream will be completed after the work presented in this report. It is expected that the conclusions of this work will be made available publicly in early 2023.

Image: Aerial view looking south across the Poltava Mine, where the Group typically mines 50% of its high grade ore.

THE ROLE OF HIGH GRADE IRON ORE

DRI-EAF

Benchmarking the environmental footprint of DR pellets supplied to DRI-EAF steelmaking.

LIFE CYCLE ASSESSMENT

SimaPro

Study to be developed within SimaPro LCA software.

ISO COMPLIANT STUDY

ISO 14040

Third party review to be completed to ensure work is completed in accordance with international standards.

Conclusions and next steps

ESTABLISHING A FRAMEWORK FOR FUTURE INVESTMENT

Our work to date, as presented here in this report, sets out a clear baseline understanding of Ferrexpo's greenhouse gas emissions footprint and a potential future pathway. The understanding gained in producing this report has highlighted a range of climate change related risks and opportunities for us to consider in the decarbonisation journey that lies ahead.

The pathway described in this report represents one potential route to net zero production and will require significant further investment, both in terms of time and funding, to create a clear understanding of the steps ahead and associated costs. Decarbonisation of any business is a concept that spans both the short term and the longer term, with individual initiatives within our pathway potentially not commencing for another 10–20 years.

Through further work, we aim to increase the level of understanding and accuracy of the studies completed to date. The next steps will centre on the Group developing a dedicated document detailing our climate change strategy, as well as the formation of dedicated human resources within Ferrexpo to direct and oversee the next phase of investment in our decarbonisation pathway. It is worth noting, however, that the timing of this phase of work may be impacted by ongoing the war in Ukraine and related constraints imposed as a result, since it is currently difficult for external parties to visit Ukraine and undertake work on behalf of Ferrexpo.

The Group remains committed to reducing its greenhouse gas emissions footprint and delivering net zero emissions production in the longer term. Whilst climate change presents a range of material risks to many businesses today, at Ferrexpo we also note the significant opportunity that lies ahead for companies that are able to deliver products that help lower emissions. Further opportunity exists for companies that are able to demonstrate faster progress in emissions reduction than their peers. It is our belief that Ferrexpo holds a natural advantage through the high quality nature of our iron ore products, and this is an opportunity that we intend to fully develop and understand.

Image: Mining operations at Ferrexpo's Yeristovo Mine, which produced its first ore in 2011 following significant investment in modern technology by the Company.

APPENDIX

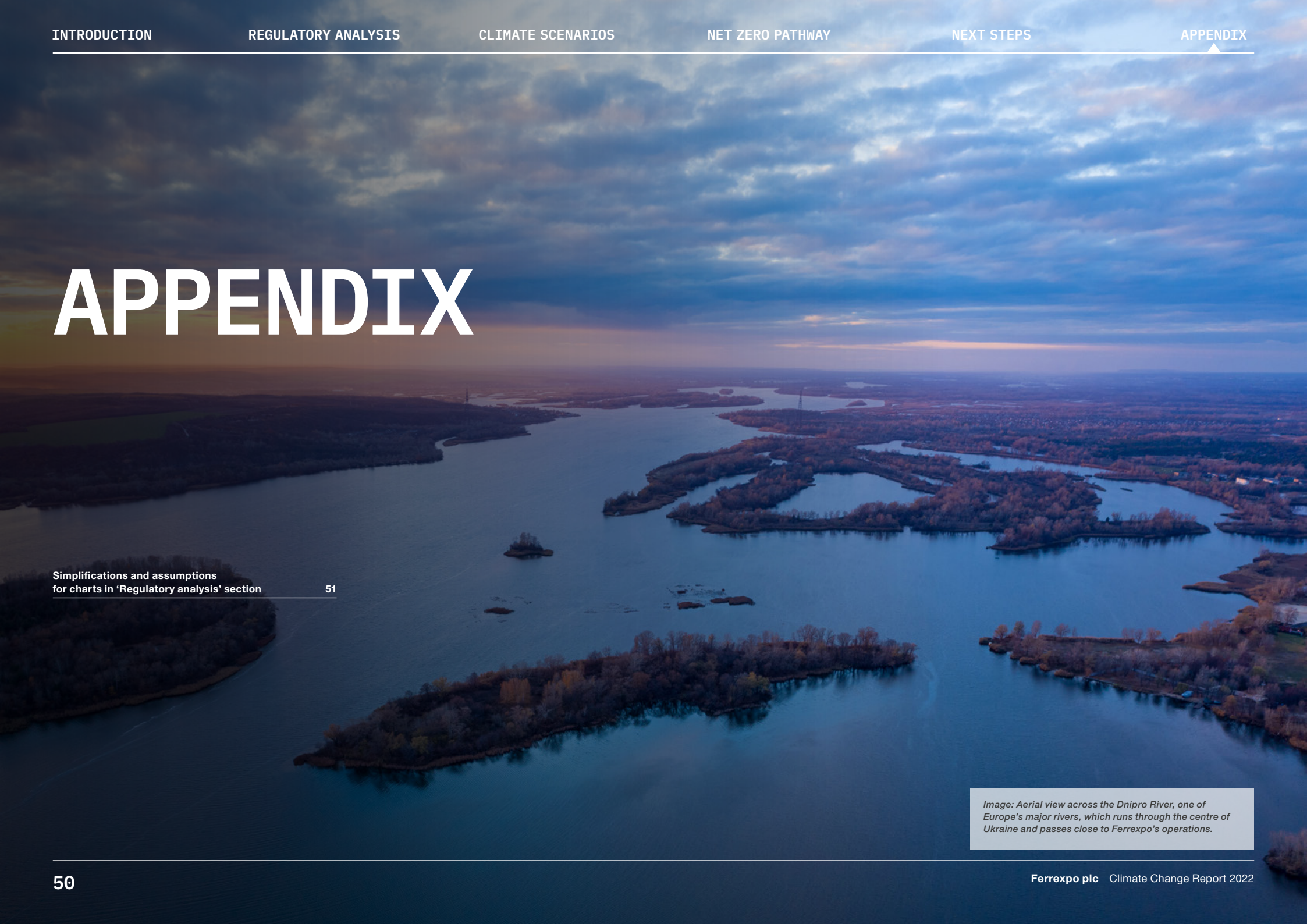


Image: Aerial view across the Dnipro River, one of Europe's major rivers, which runs through the centre of Ukraine and passes close to Ferrexpo's operations.

Simplifications and assumptions for charts in 'Regulatory analysis' section

Chart 5 ("Carbon impact on cost of steel production between countries – Competitiveness (currently)")

- Comparison uses steelmaking via the blast oxygen furnace ("BOF") as the dominant technology in countries of interest. Data presented is for the production of hot rolled coil.
- Costs are based on carbon price, not accounting for cost compensation such as free allowance allocation. In reality, it is expected that net costs to the producer will be lower.
- No account taken for transport costs.

Chart 6 ("Carbon impact on cost of steel production between countries – Competitiveness (2030–2035)")

- Comparison uses BOF as dominant technology in countries of interest.
- Data for hot rolled coil.
- No account taken for free allocation assumes full carbon border adjustment mechanism ("CBAM").
- No account taken for future plant efficiency improvements (uses current values).
- No account taken for transport costs.

Charts 7 and 8 ("Carbon impact on cost of BOF and electric arc furnace ("EAF") processes – Technology choices (2030–2035)") assumptions as follows:

- Carbon prices only cover explicit carbon policies, not implicit prices such as from energy taxes.
- No account taken for grid mix improvements of future plant efficiency improvements (uses current values).
- No account taken for free allocation assumes full price exposure.
- No account taken for transport costs.
- Cost of production data available for Germany for BOF steelmaking, but only EU average available for electric arc furnace ("EAF") steelmaking.

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