Financial Reporting Council

FRC Lab Report:

Net zero disclosures

Example bank

October 2022

Contents

Examples used

This example deck, and the report to which it relates, highlights examples of current practice that were identified by the Financial Reporting Council Lab (the Lab) team and investors. Not all of the examples are relevant for all companies, and all circumstances, but each provides an example of a company that demonstrates an approach to useful disclosures. Highlighting aspects of reporting by a particular company should not be considered an evaluation of that company's annual report as a whole. Investors have contributed to this project at a conceptual level. The examples used are selected to illustrate the principles that investors have highlighted and, in many cases, have been tested with investors.

However, they are not necessarily examples chosen by investors, and should not be taken as confirmation of acceptance of the company's reporting more generally. If you have any feedback, or would like to get in touch with the Lab, please email us at: frclab@frc.org.uk.

Introduction

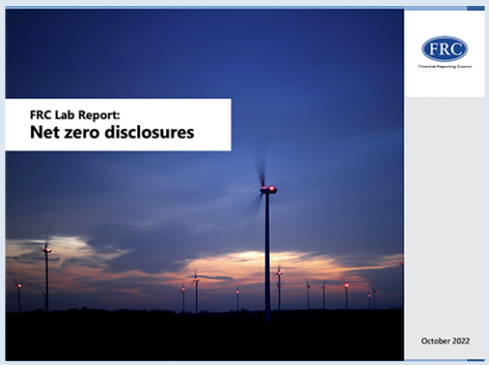
Net zero disclosures

Companies are increasingly making commitments to reach net zero emissions. Reporting on these commitments should provide relevant information to investors and other stakeholders to assist them in understanding these commitments, and the company's ability to deliver against targets.

Context

As part of the project, the Lab reviewed current disclosure practices (up to August 2022) to identify examples of better practice. This included looking at wider reporting than just the annual report, such as sustainability reports and climate transition plans.

This example bank supplements the project report which provides insight into investors' needs, challenges for companies and questions to consider when preparing disclosures.



This example bank is designed to be read alongside the main report but can be used separately as a guide relating to current better practice disclosure.

The key findings from the project have been included in the following pages to provide further context for this example bank.

Disclosure and materiality

The examples in this bank link to key aspects of disclosure identified as useful in the project. When determining which disclosures to provide, consideration should be taken of materiality for the company, potential sensitivity of the information and whether they provide sufficient information to users.

These examples are based on our review of market practice up to the end of August 2022. As reporting and disclosure practice in this area develops we may consider updating these examples.

Elements to consider when preparing net zero disclosures

Commitments

Foundational:

- Clearly define the commitment for users:
  - the types of GHGs included
  - the scopes of emissions included
  - the type of reductions committed to (absolute and/or intensity)
  - what the boundaries of the commitment are and if these differ from the financial statements
  - the timelines for the commitment
  - any plans to use offsets, including the extent and nature of the offsets
- Provide information on any exclusions or limitations to the commitment

Advanced:

- Consider whether the commitment will be updated, for example, a new approach or a more ambitious target

Impacts

Foundational:

- Set out the strategy to achieving net zero, including how it may impact on the business model and start to consider transition planning
- Frame the risks and opportunities of the commitment to the business in a balanced way
- Provide estimates of potential future costs, where relevant on capital expenditure (capex), research and development (R&D), and other green operating expenditure
- Explain uncertainties and assumptions to reaching the commitment, in a manner consistent with financial statements and that links to issues such as resilience and viability

Advanced:

- Provide updated views on impact and financing requirements
- Develop and disclose transition plans
- Consider what quantitative estimates or additional scenario analysis may be helpful for users

Performance

Foundational:

- Set out the frameworks and methodologies used for setting targets and measuring progress
- Detail the targets that have been set, including for the short, medium, and long term
- Set out progress to date, and if this is or is not in line with expectations
- Provide an understanding of the expected trajectory for the future
- Explain how management measures performance, including relevant metrics
- Provide details on governance and monitoring, including any links to remuneration

Advanced:

- Provide information on leading performance indicators
- Consider whether any external assurance would be appropriate, and where obtained, whether to disclose this

Commitments

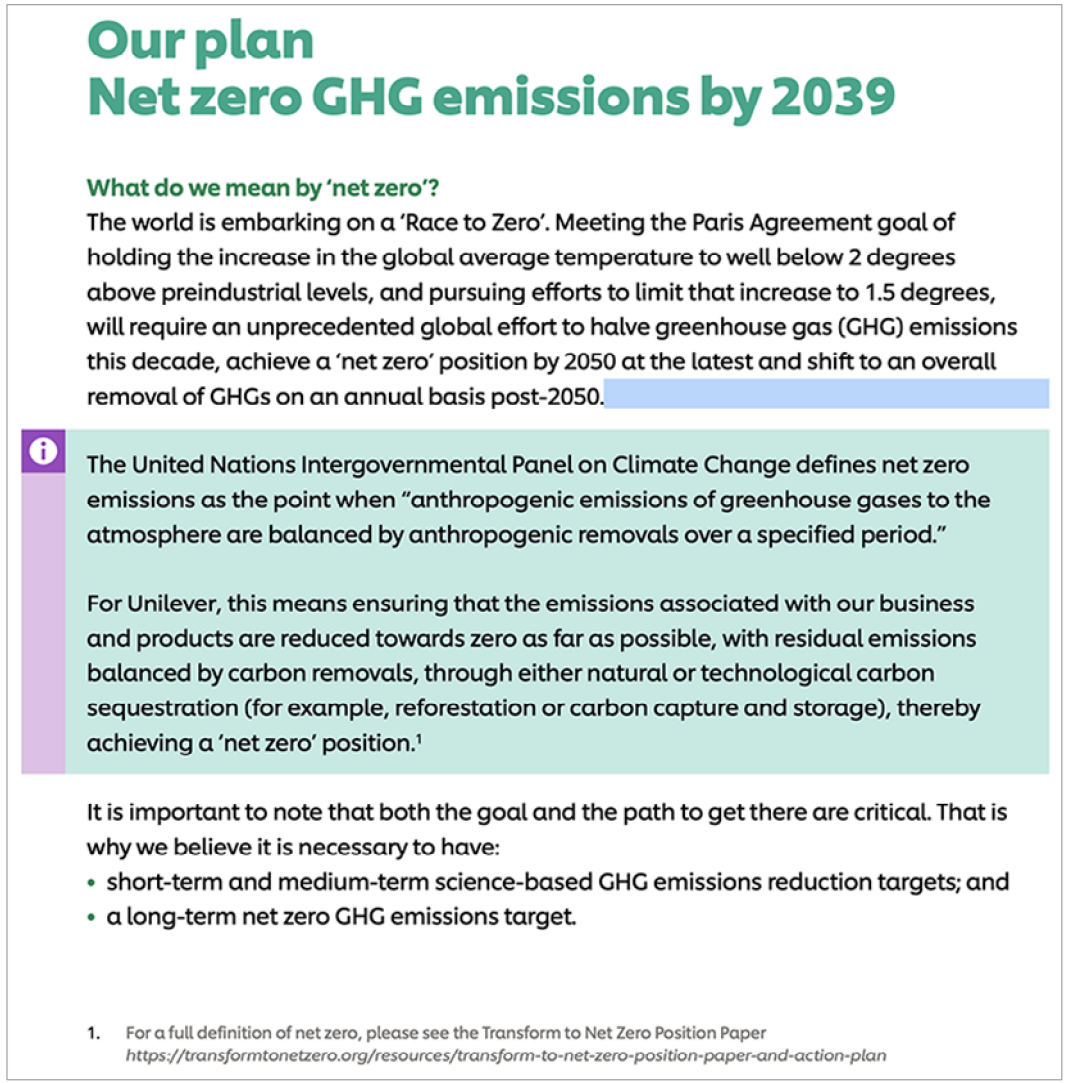
Helping investors understand	Extract
What the company is committing to reduce	Unilever, National Grid, Microsoft, Segro
Regional specific elements of the net zero commitment	Anglo American, Keller
The company's use of offsets	ArcelorMittal

Unilever plc
Climate Transition Action Plan ('CTAP'), p6-7

What is useful?

Unilever have taken a tiered approach to disclosure across the Annual Report and Accounts and the CTAP. Given the significant detail around the plans, this connected approach allows different users to find the information they need but also provides a shared high-level understanding of progress.

In the CTAP, Unilever clearly define what is meant by 'net zero' and set out what targets are included in the goal, including information on the scopes, timelines and baselines. For those wanting more detail, links to an external definition of net zero are also provided.



Our plan
Net zero GHG emissions by 2039

What do we mean by 'net zero'?

The world is embarking on a 'Race to Zero'. Meeting the Paris Agreement goal of holding the increase in the global average temperature to well below 2 degrees above preindustrial levels, and pursuing efforts to limit that increase to 1.5 degrees, will require an unprecedented global effort to halve greenhouse gas (GHG) emissions this decade, achieve a 'net zero' position by 2050 at the latest and shift to an overall removal of GHGs on an annual basis post-2050.

The United Nations Intergovernmental Panel on Climate Change defines net zero emissions as the point when "anthropogenic emissions of greenhouse gases to the atmosphere are balanced by anthropogenic removals over a specified period."

For Unilever, this means ensuring that the emissions associated with our business and products are reduced towards zero as far as possible, with residual emissions balanced by carbon removals, through either natural or technological carbon sequestration (for example, reforestation or carbon capture and storage), thereby achieving a 'net zero' position.[1]

It is important to note that both the goal and the path to get there are critical. That is why we believe it is necessary to have:

- short-term and medium-term science-based GHG emissions reduction targets; and
- a long-term net zero GHG emissions target.

1. For a full definition of net zero, please see the Transform to Net Zero Position Paper *https://transformtonetzero.org/resources/transform-to-net-zero-position-paper-and-action-plan*

Our Climate Targets

Unilever has three principal targets that guide our actions:*

- a **Short-term Emissions Reduction Target:** to reduce in absolute terms our operational (Scope 1 & 2) emissions by 70% by 2025 against a 2015 baseline;
- a **Medium-term Emissions Reduction Target:** to reduce in absolute terms our operational emissions (Scope 1 & 2) by 100% by 2030 against a 2015 baseline; and
- a **Long-term Net Zero Value Chain Target:** to achieve net zero emissions covering Scope 1, 2 and 3 emissions by 2039.+

* GHG emissions reduction targets typically refer to the WRI/WBCSD GHG Protocol Scope 3 Standard (2011), which classifies emissions according to three scopes: Scope 1 includes direct on-site emissions. Scope 2 includes indirect on-site emissions (e.g. purchased electricity). Scope 3 includes upstream or downstream emissions in the value chain outside a company's own operations.

\+ We have defined our Net Zero target with reference to the GHG Protocol Corporate Value Chain (Scope 3) Accounting and Reporting Standard. Our target covers upstream Scope 3 emissions, Scope 1 & 2 emissions and mandatory downstream Scope 3 emissions.[2] Mandatory downstream emissions include direct emissions from aerosol propellants and the biodegradation of chemicals in the disposal phase but exclude indirect use-phase emissions, such as emissions associated with the hot water used with our products.

In addition, we have a **Medium-term Value Chain Emissions Reduction Target**: to halve the full value chain emissions of our products on a per consumer use basis by 2030 against a 2010 baseline.

This Medium-term Value Chain Emissions Reduction Target has its origins in the Unilever Sustainable Living Plan – our strategy from 2010–2020. Unlike our other three targets, it is an intensity target, not an absolute target, and helps us to guide innovation and monitor our annual performance.

Unilever plc Annual Report and Accounts 2021, p51

What is useful?
Unilever reference the CTAP within the accounts, cover the governance around it, summarise the targets and discuss progress. This provides accounts users with key information but also connects to more detailed disclosure for those who want it.

Our Climate Transition Action Plan: Annual Progress Report

Our Climate Transition Action Plan (CTAP) sets out our climate strategy, defines our net zero and emission reduction goals, and the actions we intend to take to meet them. Our goals are to:

- Reduce in absolute terms our operational (Scope 1 and 2) emissions by 100% by 2030 against a 2015 baseline;[(a)] with an interim goal to achieve a 70% reduction by 2025 against a 2015 baseline.
- Halve the full value chain emissions of our products on a per consumer use basis by 2030 against a 2010 baseline.[(b)]
- Achieve net zero emissions covering Scope 1, 2 and 3 emissions by 2039.[(c)]

In the 2020s and 2030s, our primary focus will be to eliminate emissions in our operations and reduce emissions across our value chain[(d)] rather than purchasing carbon credits. It is too early to estimate the amount of any residual value chain emissions but our plan is to balance these with carbon removals to achieve and maintain our net zero emissions goal.

We fully expect our approach to delivering our commitments to evolve as science progresses and the societal debate on net zero matures. For example, we're currently considering the recently issued guidance from the Science Based Targets initiative on net zero targets.

See our website for our Climate Transition Action Plan

Our progress

To deliver the ambitious goals set out in our CTAP, we're focusing our actions in four key areas, which form the basis of this Annual Progress Report: our operations, our brands and products, our value chain and our wider influence on society.

The environment

We are at the heart of the transition to net zero for our customers and the communities we serve, enabling the renewable and low-carbon energy supply and reducing emissions from our own emissions to net zero by 2050.

Our commitments	Progress in 2021/22	Status
We will reduce Scope 1 and 2 greenhouse gas (GHG) emissions 80% by 2030, 90% by 2040 and net zero by 2050 from a 1990 baseline	Connection of renewables and low-carbon supplies continues but for 2021/22 this reduction is outweighed by growth in LIPA emissions	ON TRACK – Our long-term plan to reduce emissions despite additional running of generation under contract with LIPA
We will reduce Scope 3 GHG emissions by 37.5% by 2034 from a 2019 baseline	Recovery of gas demand post-COVID-19 has led to a short-term return of emissions, rising back to historical pre-COVID-19 levels	ON TRACK – We are developing a long-term plan to drive down emissions in line with our 2034 targets and we have announced our vision in the US to fully eliminate fossil fuels from both our gas and electric systems by 2050, if not sooner
We will reduce SF_6 emissions from our operations by 50% by 2030, from a 2019 baseline	During 2021/22 we reduced emissions through leakage reduction and announced a further important partnership with Hitachi to deliver a retrofit gas replacement for SF_6	ON TRACK – Our work remains in line with our long-term plan to reduce emissions through leakage and then innovate with partners to find a lower emissions alternative
We will move to a 100% electric fleet by 2030 for our light-duty vehicles	We have joined EV100 to support the wider campaign to electrify, and launched a partnership with Ford for light trucks	ON TRACK – New programmes on light trucks and electric-only fleet choices to help achieve this commitment
We will reduce energy consumption in our offices by 20% by 2030	72% reduction in energy consumption against our 2020 baseline	ON TRACK – We have a number of schemes in the pipeline to make our buildings more efficient
We will improve the natural environment by 10% on the land we own by 2030	We have remediated 21.6 hectares of land in 2021/22	
We will achieve zero-carbon emissions from business air travel	We have delivered this commitment with a significant reduction in air travel due to COVID-19 and all remaining travel has been offset	

Energy consumption

Our energy consumption is a key area of focus as this, in turn, affects our carbon emissions.

Our energy consumption consists of both fuel consumed and energy purchased from third parties, including renewable energy. Total energy consumption was 3,502 GWh (12,606,859 Gigajoules), an increase of 12% on the previous year. Of this, 99% was from non-renewable sources, with no significant change from the previous year. Total energy consumption in the UK was 2,341 GWh and total energy consumption in the US was 1,161 GWh.

Operational energy use was 1,190 GWh (2020/21; 1,748 GWh), our transport energy use was 362 GWh (2020/21; 369 GWh), electricity consumption was 987 GWh (2020/21; 852 GWh) and heating was 163 GWh (2020/21; 156 GWh).

Electricity consumption includes the energy consumed in operating the generation assets in the US. Total energy does not include fuels consumed for power generation on behalf of LIPA, the contracting body, amounting to 19,610 GWh (net of energy required to operate the generation assets), a 21% increase on the prior year. Energy consumption related to power generation can vary greatly year-on-year and is determined by LIPA. We therefore report an energy consumption figure net of power generation allowing us to report underlying energy consumption across our business. For transparency, we have reported energy consumption from power generation as a separate line item. Transport covers company car business travel, and our own operational ground and aviation fleet. In addition to energy consumed, we calculate that system losses accounted for a further 11,117 GWh, of which 51% occurred in the US. This was a 0.3% decrease on the previous year.

Note: 2020/21 energy consumption has been re-stated to account for a minor misstatement following data reconciliation.

National Grid plc
Annual Report 2022, p67

What is useful?

National Grid sets out an overview of the company's specific commitments to reach net zero. This provides information on the scopes included, timelines, baselines and methodologies, as well as progress and status details for the current year.

We generate GHG emissions across Scope 1 (direct emissions from our operational activities), Scope 2 (indirect emissions from our purchase and use of gas and electricity) and Scope 3 (other indirect emissions from activities and sources outside of our ownership or control). Our RBC sets out a number of ambitious climate-related commitments, the most significant of which is to achieve net zero by 2050. Through this commitment we will reduce Scope 1 and 2 emissions by 80% by 2030, 90% by 2040, and net zero by 2050, from a 1990 baseline. At the end of 2021/22, we have achieved a 65% reduction.

Our Scope 3 target covers emissions across our entire value chain with a commitment to reduce the carbon emissions by 37.5% by financial year 2034 (from a financial year 2019 baseline). Our interim Scope 1, 2 and 3 emission reduction targets are validated by the SBTi, demonstrating a clear, credible commitment to achieve our longer-term net zero strategy in line with a well below 2°C pathway. Other commitments, including those relating to reductions in SF_6 emissions and increasing the proportion of EVs in our own fleet, are set out in the RBC.

We will publish our Climate Transition Plan in June 2022 as part of the RBR.

We are working to reduce our business travel emissions by changing to alternative fuel vehicles and reducing business flights. The response required by the COVID-19 pandemic has resulted in more flexible ways of working and has reduced business travel. We will reduce the energy consumed in our buildings and procure green energy where possible.

Our Scope 1 emissions were 5.3 $mtCO_2e$, a 12% increase on the prior year (4.7 $mtCO_2e$). Of this, 89% arose in the US and 11% in the UK. The increase resulted mainly from generation emissions exceeding projected levels due to increased LIPA operating hours, required to replace shortfalls in off-island generation and transmission.

Scope 2 emissions are reported on a market and location basis:

- market based – 2.2 $mtCO_2e$, similar to the prior year
- location based – 2.2 $mtCO_2e$, similar to the prior year

Approximately 57% of Scope 2 emissions (location basis) were generated in the UK, with the remainder through US operations. Reduction in Scope 2 emissions was mainly due to a reduction in emissions from line losses, resulting from a reduction in grid electricity carbon intensity.

Our total Scope 3 emissions are calculated as 30.1 $mtCO_2e$ for the year, an increase of 4% on the prior year.

We measure and report in accordance with the World Resources Institute and World Business Council for Sustainable Development Greenhouse Gas Protocol. 100% of our Scope 1, 2 and 3 emissions are independently assured against ISAE 3410 Assurance Engagements on Greenhouse Gas Statements, using an 'Operational Control' approach to determine our GHG emissions organisational boundary. The sources of Scope 1, 2 and 3 emissions are detailed in the RBR. We have also published a document, 'Our Reporting Methodology', which details the methodologies and protocols used for calculating key responsible business metrics.

National Grid plc
Annual Report 2022, p68

What is useful?
National Grid gives an indication of which elements are subject to assurance and links to further details on scope and methodology.

Our commitment to being a responsible business continued

Climate change

Streamlined Energy and Carbon Reporting (SECR)

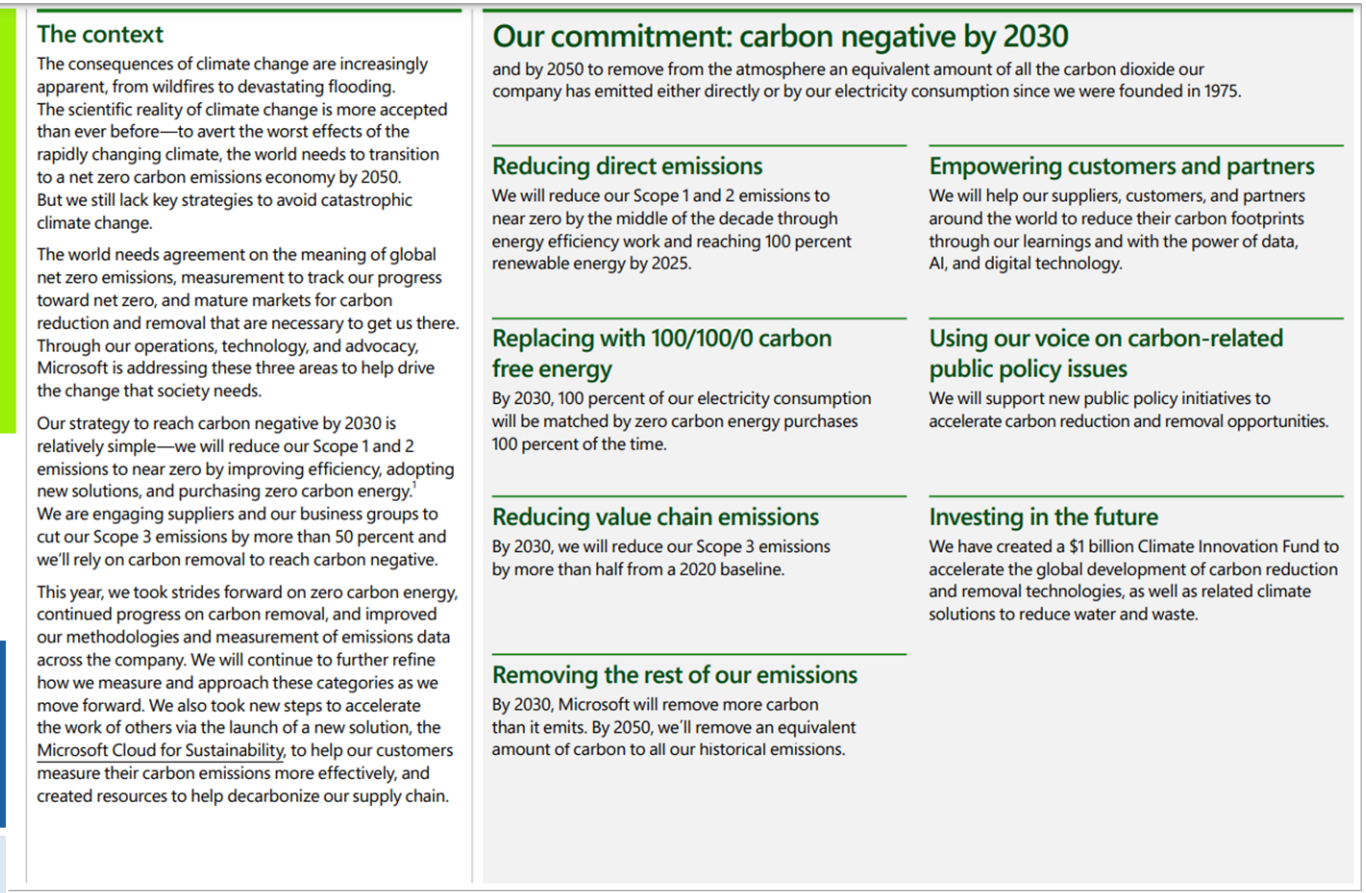
	mtCO₂e	
	2021/22	2020/21
Scope 1 (direct emissions)	5.3	4.7
Scope 2 (direct emissions)		
Market based	2.2	2.3
Location based	2.2	2.2
Total Scope 3 emissions	30.1	28.9
US Cat 3 (fuel and energy related activities)	4.3	4.1
US Cat 11 (use of sold products)	18.9	18.2
UK and US Cat 1 (purchased goods and services)	6.7	6.6
UK and US Cat 7 (employee commuting)	5	5
UK and US Cat 6 (business travel)	11	6
UK & US Cat 5 (waste generated in operations)	7	6

PwC Assured Data
Denotes information subject to limited assurance by PricewaterhouseCoopers LLP; see page 61 for full definition.

A commitment to a carbon negative future

Microsoft Corporation Environmental Sustainability Report 2021, p16

What is useful?
Microsoft sets the context of the commitment, clearly defines the approach and sets out the specific commitments to be reached by 2030 and 2050.



The context

The consequences of climate change are increasingly apparent, from wildfires to devastating flooding. The scientific reality of climate change is more accepted than ever before—to avert the worst effects of the rapidly changing climate, the world needs to transition to a net zero carbon emissions economy by 2050. But we still lack key strategies to avoid catastrophic climate change.

The world needs agreement on the meaning of global net zero emissions, measurement to track our progress toward net zero, and mature markets for carbon reduction and removal that are necessary to get us there. Through our operations, technology, and advocacy, Microsoft is addressing these three areas to help drive the change that society needs.

Our strategy to reach carbon negative by 2030 is relatively simple—we will reduce our Scope 1 and 2 emissions to near zero by improving efficiency, adopting new solutions, and purchasing zero carbon energy.[1] We are engaging suppliers and our business groups to cut our Scope 3 emissions by more than 50 percent and we'll rely on carbon removal to reach carbon negative.

This year, we took strides forward on zero carbon energy, continued progress on carbon removal, and improved our methodologies and measurement of emissions data across the company. We will continue to further refine how we measure and approach these categories as we move forward. We also took new steps to accelerate the work of others via the launch of a new solution, the Microsoft Cloud for Sustainability, to help our customers measure their carbon emissions more effectively, and created resources to help decarbonize our supply chain.

Our commitment: carbon negative by 2030

and by 2050 to remove from the atmosphere an equivalent amount of all the carbon dioxide our company has emitted either directly or by our electricity consumption since we were founded in 1975.

Reducing direct emissions

We will reduce our Scope 1 and 2 emissions to near zero by the middle of the decade through energy efficiency work and reaching 100 percent renewable energy by 2025.

Empowering customers and partners

We will help our suppliers, customers, and partners around the world to reduce their carbon footprints through our learnings and with the power of data, AI, and digital technology.

Replacing with 100/100/0 carbon free energy

By 2030, 100 percent of our electricity consumption will be matched by zero carbon energy purchases 100 percent of the time.

Using our voice on carbon-related public policy issues

We will support new public policy initiatives to accelerate carbon reduction and removal opportunities.

Reducing value chain emissions

By 2030, we will reduce our Scope 3 emissions by more than half from a 2020 baseline.

Investing in the future

We have created a $1 billion Climate Innovation Fund to accelerate the global development of carbon reduction and removal technologies, as well as related climate solutions to reduce water and waste.

Removing the rest of our emissions

By 2030, Microsoft will remove more carbon than it emits. By 2050, we'll remove an equivalent amount of carbon to all our historical emissions.

Getting to carbon negative (continued)

Removing carbon

In January 2021, Microsoft announced that we had made the world's largest purchase of carbon removal in history. Our focus on removals instead of avoided emissions offsets is aligned to our carbon negative commitment but is also motivated by what climate science tells us is needed to reach net zero—specifically the IPCC's projection that the planet could need as much as 10 gigatons of carbon dioxide removal by mid-century, depending on the scale and pace of decarbonization. With our purchases as well as our investments, we are working to help build this new market with integrity and quality.

It hasn't been easy. As we documented in our September 2021 Nature article, high-quality carbon removal is scarce for three reasons. First, there is not a clear common definition of net zero and the role that removals play in net zero goals. Second, removals are not well accounted for in the practice of carbon measurement, which itself is still evolving. And third, the removal market is very young, especially for truly permanent carbon removal, which is prohibitively expensive.

We know that we're among the early entities to do homework on this topic, and that's why we are committed to sharing lessons learned, as documented in our 2021 white paper and high-quality removal criteria. We are actively working with our Climate Innovation Fund to invest in promising carbon removal companies. We have contributed comments to policy frameworks that set the standards for carbon removal, such as a carbon removal certification program by the European Commission, and efforts by the United States federal government (both the Department of Agriculture and the Department of Energy) to specify high-quality removal. And we continue to evolve our own removal portfolio mix to be a balance of low-durability and high-durability volumes.

Carbon removal projects

In our first year, we chose projects that will help meet our commitment while supporting innovation in the market, including the following.

Community-based reforestation

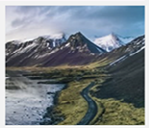
Taking Root's CommuniTree reforestation in Nicaragua—the largest such project in the country—partners with farming families to help develop sustainable livelihoods by growing native tree species on marginal farmland. The United Nations and the European Union have used this project as a model for reforestation.

Biochar

We invested in a portfolio from Puro.earth Oy, including from Carbon Cycle, Carbofex, and ECHO2, small operations in Germany, Finland, and Australia that use biomass residue (for example, wood chips and forest waste) to sequester carbon dioxide in biochar for use in soil amendment and other products.

Direct air capture

We are actively working with our Climate Innovation Fund to invest in promising carbon removal companies and projects. Climeworks' Orca direct air capture plant in Iceland removes carbon dioxide from the atmosphere and stores it permanently underground using a mineralization technology developed by the Icelandic company Carbfix.



Our FY22 aspiration was even larger, aiming for 1.5 million $mtCO_2$. We launched a new request for proposals in July 2021, seeking the highest quality of projects on the market, both nature-based and engineered. We are on a path to fulfilling that goal, with 1.1 million $mtCO_2$ contracted to date in FY22.

1.1M $mtCO_2$

removal contracted to date in FY22.

Looking ahead, we know that the market needs to improve the quality of carbon removal accounting, and that we need to have a clearer line of sight to affordable supply. That's why in 2021 we undertook the following projects.

- In partnership with Carbon Direct, we published our carbon dioxide removal guidance. These criteria are our minimal viable specifications for the most common project types that we will consider for procurement. We will continue to expand on our criteria as the market adapts and see this as part of our market development work.
- We funded research by CarbonPlan to produce their lessons learned and analysis from a systematic review of 14 protocols for soil carbon offsets for buyers from projects in the voluntary market today.
- We commissioned a report from Lawrence Livermore National Laboratory on likely carbon removal supply and cost projections for 2030, which will be available in Q1 of 2022.
- We collaborated with researchers from the University of Vermont, University of Minnesota, Concordia University, and Simon Fraser University to develop and explore the climate implications of temporary carbon storage in nature as a means to inform our carbon removal strategies.
- We co-founded the Business Alliance for Scaling Climate Solutions and the carbon removal workgroup of the World Economic Forum's Alliance of CEO Climate Leaders.

Microsoft Corporation Environmental Sustainability Report 2021, p30 and p100

Microsoft provides information on the offsets purchased, including information on the nature (removals) and types of projects. A specific note is included which quantifies the carbon offsets purchased over time and highlights that Microsoft has criteria for assessing the quality of the offsets.

Table 5

Carbon offsets ($mtCO_2e$)

	FY17	FY18	FY19	FY20	FY21
GHG Emissions within Carbon Neutral Boundary[9,10]	573,871	652,282	781,345	612,927	**292,106**
Offsets Applied to Reporting Year	573,871	652,282	781,345	612,927	**292,106**
Net GHG Emissions within Carbon Neutral Boundary[10]	–	–	–	–	–
Total Removal Offsets Contracted[11]					**1,391,187**

9 Represents the values prior to historic recalculations due to acquisitions and methodology changes.

10 This data supports Microsoft's ongoing target to be carbon neutral every year from fiscal year 2013 onward. The boundary for this carbon neutral commitment includes global Scope 1, Scope 2 Market-based, and Scope 3 business air travel. As progress is made towards the carbon negative commitment, which includes purchasing removal offsets, the commitment to carbon neutrality will also be maintained.

11 Values reported represent offsets contracted. Contracted removal values only include removal credits that have been evaluated as compliant with Microsoft's quality removal criteria. This number might change based on contract fulfillment.

SEGRO plc Annual Report and Accounts 2021, p91

What is useful?

Segro explains the main sources of emissions, providing a detailed breakdown of each scope and clearly annotates which elements are included within the net zero commitment.

CARBON FOOTPRINT – SCOPE 3 REPORTING

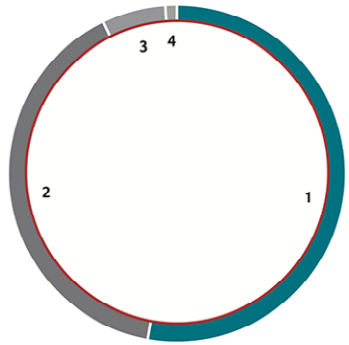
Due to the nature of our operations the majority of our carbon footprint falls outside our direct control and are reported in the Scope 3 table below. The operating carbon reflects the carbon emissions associated with the energy consumption of the portfolio, and includes sites where we have no visible data in accordance with our Science Based Target initiative (SBTi) approved targets. The embodied carbon of our developments is our second largest carbon impact, where gross emissions vary depending on the amount of floorspace delivered in the reporting year. The Scope 3 greenhouse gas reporting year is 1 October 2020 to 30 September 2021, this period is referred to as 2021. For these two Scope 3 categories we report intensity metrics within our Net Zero Carbon Metrics table opposite.

GREENHOUSE GAS (GHG) REPORTING

GHG Protocol Reporting Category	2020	2021 Tonnes CO_2e	%	Net Zero Commitment
Scope 1 – Operating carbon	1,401	1,278	0.2	Yes
Scope 2 – Operating carbon (market-based)	2,088	2,942	0.5	Yes
Scope 3 – Downstream Leased Assets (market-based)	308,626	276,355	48.2	Yes
Total Operating Carbon	**312,115***	**280,575**	**48.9**	
Scope 3 emissions:				
Capital goods	285,975	197,166	34.4	Yes
Upstream transportation and distribution	3,039	16,033	2.8	Yes
Total Embodied Carbon	**285,975**	**213,199**	**37.2**	
Purchased goods and services	36,471	34,103	5.9	Yes
Fuel and Energy related activities	22,181	38,915	6.8	No
Waste generated from operations	1,304	4,243	0.7	Yes
Use of sold products	2,651	1,913	0.3	No
Business travel	45	84	0.0	Yes
Commuter travel	202	94	0.0	No
Upstream leased assets	96	55	0.0	Yes
Downstream transportation and distribution		N/A		N/A
Processing of sold products		N/A		N/A
End-of-life treatment of sold products		N/A		N/A
Franchises		N/A		N/A
Investments		N/A		N/A
Total	664,079	573,181	100.0%	

* Downstream leased assets has been re-stated for 2020 to cover 100% of the portfolio using the estimation methodology approved by SBTi.

** Methodology for reporting upstream transportation and distribution changed in 2021. This is reported as stage A4 in the life cycle assessments under EN 15978.



NET ZERO CARBON

1.	Operating Carbon	53%
2.	Embodied Carbon	40%
3.	Supply chain emissions	6%
4.	Corporate emissions	1%

Anglo American plc
Climate Change Report 2021, p24-25

What is useful?

The disclosure provides details on how Anglo American will switch the company's Scope 2 emission to renewable sources, including information on specific projects to help develop additional green electricity capacity.

Switching to low carbon and renewable energy sourcing

We currently source approximately 36% of our electricity from renewable sources and are committed to increasing that proportion through a combination of power purchase agreements and our own embedded generation.

By 2023, all of our South American operations will be powered by 100% renewable electricity. We have secured renewable energy to meet all the power requirements for our copper operations in Chile from 2021, for our iron ore and nickel operations in Brazil from 2022, as well as for our copper operation in Peru by 2023. Our partnership in Brazil with Casa dos Ventos will see the construction of additional wind farms, adding to Brazil's renewable energy capacity.

Our embedded generation involves innovative pilot projects, such as a floating PV plant on the Las Tórtolas copper tailings facility in Chile. The plant combines the generation of solar electricity with reducing evaporation from the tailings facility. Given the importance of water management in that area of central Chile, this is particularly valuable. We are also implementing projects at our PGMs operations, including, in South Africa, installing large-scale solar PV panels at Mogalakwena, to enable the production of green hydrogen for hydrogen powered haul trucks, and generating electricity from waste heat recovered from the converting process at the Waterval smelter.

A key focus of our efforts in tackling Scope 2 emissions is the renewable power ecosystem that we are studying in South Africa (see box at top of page 25). This programme would not only enable us to ensure our operations have clean, affordable and reliable energy supplies, but will also complement and support South Africa's decarbonisation efforts.

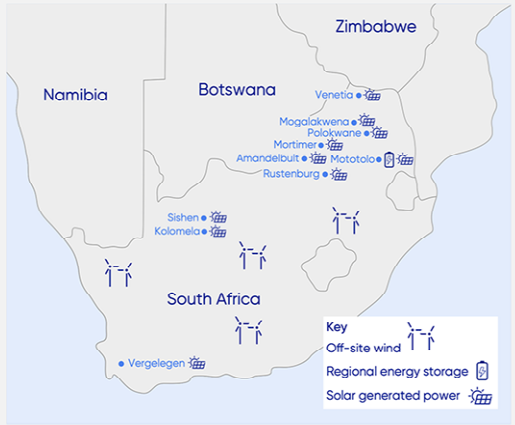
A regional renewable energy ecosystem in South Africa

The context for achieving carbon neutrality is set by each operating jurisdiction. In some, the availability of renewable energy is plentiful. In South Africa, while there is an abundance of renewable energy, there is no renewables infrastructure to harness it. As a result, Anglo American plans to partner with the government and communities in South Africa in the development of a regional renewable energy ecosystem. This concept provides an integrated approach to building out renewables across the country.

The initiative draws on the huge natural renewable potential of South Africa and would require the construction of a network of on-site and off-site solar and wind farms. Our modelling suggests that it would be possible to deliver 24/7 renewable power with this distributed generation, but we are considering the inclusion of pumped hydro storage to bring additional resilience to the system. Our current intention is that the full programme is completed and operational by 2030. The ultimate goal would be a regional renewable energy ecosystem that would not only meet the full demand of Anglo American's operations in the region, but would also support the resilience of the local electricity supply systems and the wider decarbonisation of energy systems in South Africa.

The ecosystem would not only help us reduce our Scope 2 emissions, but would also provide the foundation for green hydrogen production, facilitating the roll-out of our hydrogen powered haul trucks across South Africa.

Beyond supporting the delivery of our ambition of carbon neutrality by 2040 by tackling the largest element of the Group's Scope 2 emissions, the ecosystem is expected to bring a host of other benefits. It could increase the grid capacity by 2.7–4.4 GW of green energy and enhance grid stability. It could support and enhance the decarbonisation initiatives of our host governments and power companies, including through stimulating the development of localised production and supply chains.



We also believe that the provision of new sources of clean, reliable and affordable energy could provide a stimulus for wider socio-economic benefits for businesses and communities across South Africa. Specifically, we expect that hydrogen and electrification will displace diesel and petrol for vehicles and other machinery. The economic development associated with these changes could provide the backbone for the creation of a hydrogen economy in the region. We foresee that this could help to catalyse entirely new hubs of industry and other economic activity, embracing circular and low-waste principles. See how we are supporting the development of a hydrogen valley on page 33.

We are in the process of engaging with a wide range of interested parties to enable this ecosystem approach to deliver benefits not only for Anglo American, but for host communities and South Africa as a whole.

Keller Group plc Annual Report 2021, p47, p48

What is useful?
Keller provides a comparison of emissions by regions and business areas, as well as discusses differences in regions on Scope 1 and 2 emissions and specific actions undertaken.

Carbon reduction

As we highlight in our journey to net zero, Keller is committed to reducing the carbon intensity of our work and increasing the quality and granularity of our carbon reporting. Throughout 2021, we continued to measure our performance on carbon reduction, and wider climate change governance, in a number of different ways.

As in previous years, Keller disclosed our performance to CDP; CDP assesses the carbon intensity of Keller's operations, as well as our ability to identify and mitigate climate-related risks and opportunities. In 2021, we achieved a score of B. This is an improvement on our score in 2020, with improvements in all disclosure categories. This means Keller remains above the global average CDP score of a B-. Since this CDP score reflects our progress in 2020, the score does not include our progress on setting net zero targets, nor our improvements on TCFD climate risks and opportunities disclosures. These should be reflected in next year's CDP score.

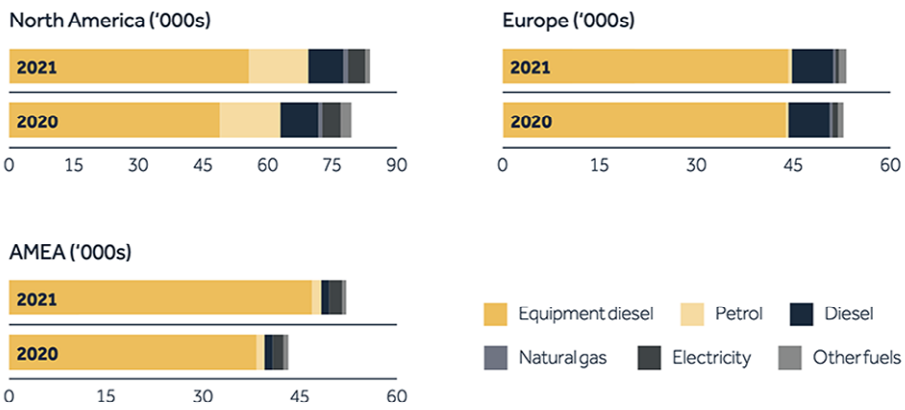
Keller has a number of ongoing initiatives to improve the energy efficiency of our operations. In terms of Scope 1 reductions, all the rigs we produced in 2021 were electrohydraulic or fitted with the latest tier 5 engines. This reduces our emissions on site, improves fuel efficiency and reduces our fuel consumption. Through our in-house rig manufacturers, we are constantly innovating to develop the rigs of the future; this includes developing more efficient machinery and trialling biofuels in our rigs. Our vehicle fleet is also a large source of emissions. Therefore, in North America, where vehicle emissions are largest, we are trialling hybrid trucks as a way to reduce carbon emissions and improve air quality.

Our Scope 2 emissions are predominantly from permanent operations in our offices and yards. In particular, our rig manufacturing division, KGS, has one of the largest individual yard emissions in Keller Group. We have therefore placed particular focus on decarbonising this yard, with a specific carbon reduction strategy. This has been funded from KGS' existing rolling budget for improving their yard and equipment. All our European business units are implementing recommendations from Energy Efficiency/ ESOS audits, with improvements including installing LED lights, replacing old single-glazed windows and educating employees about saving energy. Certain offices, such as the UK and Austria, generate their own renewable energy using solar panels. Similarly, multiple branches, such as Germany and the UK, have switched to entirely green energy tariffs.

Both Keller's Scope 1 and Scope 2 emissions are independently third-party verified. This is an important step that we take to properly monitor progress on our carbon targets and mitigate key climate-related risks.

In 2021, we started proactively monitoring our Scope 3 emissions on key projects, training over 100 employees on the EFFC – DFI embodied carbon calculator. This has enabled us to offer lower-carbon solutions to our clients, as well as helping identify carbon-intensive Scope 3 hotspots to target with future carbon reduction initiatives.

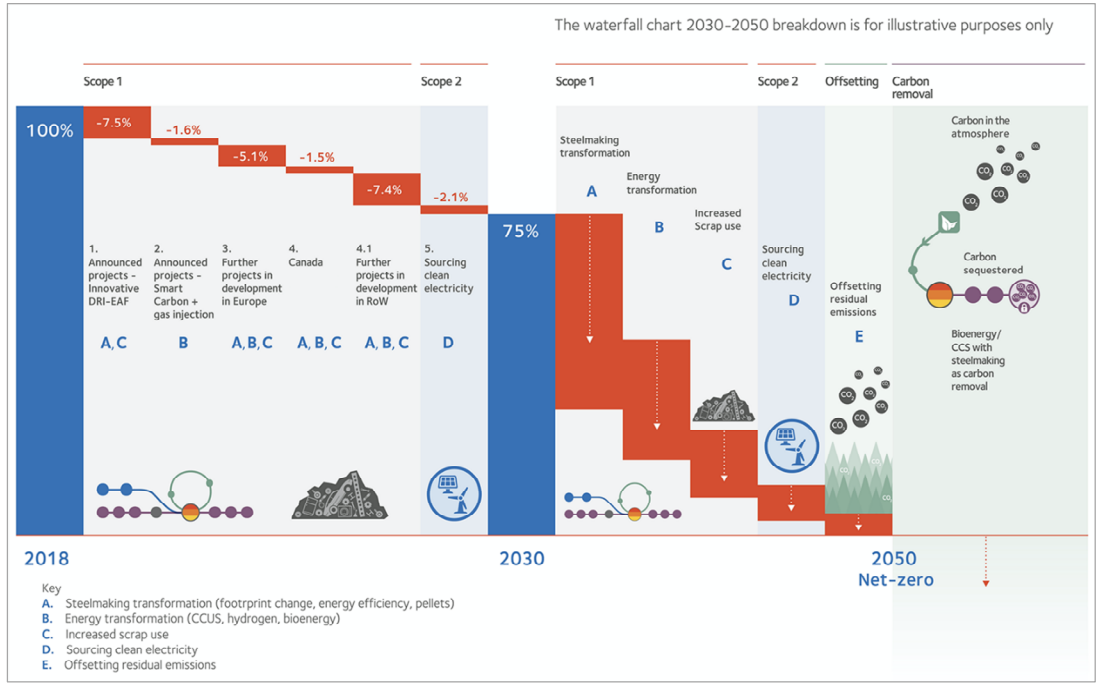
Keller Group 2021 and 2020 greenhouse gas emissions (tCO_2e)



ArcelorMittal S.A.
Annual Report 2021, p48-49

What is useful?

The disclosure breaks down ArcelorMittal's approach to reducing Scope 1 and 2 emissions over the period 2018 to 2030 using planned and actual impacts, as well as illustrative values for 2030 to 2050. This balances short term viability with information about longer-term direction where outcome remains uncertain. ArcelorMittal describes five initiatives that form part of the company's net zero roadmap.



Net zero roadmap

In July 2021, in its second Climate Action Report, ArcelorMittal published a net-zero roadmap detailing its journey to net zero for the first time. It is based on five initiatives that will help to achieve carbon neutrality by 2050: transforming steelmaking, transforming energy, increasing scrap use, sourcing clean electricity, and offsetting residual emissions.

Transforming steelmaking: Over the coming decades, the steel industry will undergo a transition not seen for over 100 years. This includes switching ironmaking from blast and basic oxygen furnaces ("BF-BOF") to DRI and iron ore preparation from sinter plants to pellet plants. DRI is usually coupled with the EAF method of steelmaking. Until now, the use of DRI-EAF has been limited except in regions where gas prices are low. However, given the rising cost of carbon and need to decarbonize, the potential of green hydrogen is now making this look increasingly economically feasible.

Transforming energy: In recent years, while energy use in BF-BOF steelmaking has become much more efficient and continues to evolve, it remains heavily dependent on fossil fuels. At the same time, a shift towards cleaner energy is underway. This will involve one of three approaches, or a combination thereof: clean electricity (which could be in the form of green hydrogen), continued use of fossil carbon coupled with carbon capture storage ("CCS") to ensure that no carbon is emitted, and use of circular carbon either through natural or synthetic carbon cycles. Natural carbon cycles include the use of sustainable forestry and agriculture residues, to produce bioenergy for steelmaking. Emissions from this will be captured by the regrowth of the biomass waste used. Synthetic carbon cycles rely on the use of waste plastics as an energy source, transforming the carbon in waste gases through carbon capture usage ("CCU") into equivalent new plastics and ensuring that no emissions are generated.

Increasing scrap use: In addition to using scrap in EAF, the use of low-quality scrap in the BF-BOF steelmaking process can be increased in several ways. These include improving steel scrap sorting and classification, installing scrap pre-melting technology and adjusting the steelmaking process to accommodate increased amount of scrap.

Sourcing clean electricity: To reduce its Scope 2 emissions, ArcelorMittal will need to focus mainly on sourcing low-carbon electricity. This will be an increasing challenge, as it launches projects to transition from BF-BOF to scrap and DRI-EAF technology, which will result in electricity becoming a greater part of the energy mix used to make steel. As decarbonizing the overall electricity grid is unlikely, the Company plans to do this by purchasing renewable energy certificates and through direct power purchase agreements with suppliers from renewables projects.

ArcelorMittal S.A.
Annual Report 2021, p50

What is useful?

The disclosure highlights how ArcelorMittal plans to use offsetting and provides an estimate of the amount of overall emissions that will likely need to be offset. The disclosure also provides further information on other elements of the company's plan, such as two technology pathways that ArcelorMittal is working on.

Offsetting residual emissions: Despite the commitment to achieving net zero from operations, residual emissions are likely: those for which either there will be no feasible technological solution or an approach involving excessively high economic or social costs. ArcelorMittal currently estimates these at less than 5% of its overall emissions. To deal with them, it intends to buy high-quality offsets or launch projects to generate high-quality carbon credits that would not have happened without its intervention.

Technology pathways

The steel industry is a large carbon emitter and responsible for 7-9% of global CO2e emissions. The majority of this today is the result of BF-BOF steel production, which mainly uses coking coal in the blast furnace to turn iron oxide into iron which is then cast into steel. BF-BOF steelmaking currently accounts for 1.4 billion tonnes of the 1.9 billion tonnes in annual steel production and has an emissions intensity of an average of 2.2 tonnes of CO2e per tonne of steel (source: WSA, 2021; IEA, 2020).

While the use of scrap will increase for the coming decades that means achieving a zero carbon-emissions steel industry by 2050 is predominantly reliant on making net zero primary steel. While ArcelorMittal produces lower-carbon steel via scrap and EAF (approximately 11% of our global production is via this route), its efforts are focussed on successfully decarbonizing primary steel-making.

The Company is increasingly confident this is achievable and is actively developing two technology pathways (Innovative DRI and Smart Carbon) that have the potential to deliver zero-carbon emissions steel.

Innovative DRI: As renewable and low-carbon electricity becomes increasingly available, the production of affordable, industrial-scale green hydrogen becomes a possibility and the prospect of zero carbon emissions steel made via the green hydrogen-DRI-EAF route becomes viable. In Europe, the Company's strategy is largely focused on the Innovative DRI pathway. This reflects the commitment in Europe to prioritize the availability of green hydrogen at competitive prices.

Smart Carbon: This involves modifying the blast furnace route to create near-carbon zero steelmaking through the recirculation of top gas, enrichment with hydrogen and the use of circular carbon – in the form of sustainable biomass or carbon containing waste streams – and CCU/CCS — all technologies that the International Energy Agency and the UN Intergovernmental Panel on Climate Change see as critical to achieving net-zero by 2050. Smart Carbon also has a potential to become carbon negative. ArcelorMittal has progressed well on constructing several commercial-scale projects to test and prove a range of Smart Carbon technologies.

Carbon neutrality in the Smart Carbon route can be achieved by relying on the earth's natural carbon cycle and using biowaste materials, such as sustainable forestry and agriculture residues, to produce bioenergy for steelmaking. Other biomaterials such as waste plastics can also be used, thereby helping to reduce the world's plastic waste challenge. Carbon by-products from steelmaking can further be converted back into biomaterials at the end of the steelmaking process in a fully circular fashion.

Direct Electrolysis of Iron: This is a third potential technology route, which is at an earlier stage of development, and so is not expected to mature in this decade. Nonetheless, the Company remains cautiously optimistic about this as a future route.

Supported by two net-zero pathways, innovation is escalating across the Company's global footprint, driving ArcelorMittal towards its decarbonization ambitions.

Impacts

Helping investors understand	Extract
The strategy and potential business model impacts to reaching net zero	Anglo American, Intel
Potential risks, opportunities and uncertainties to reaching net zero	BHP, Aviva
Potential financial impacts	National Grid

Anglo American plc Climate Change Report 2021, p22-23

What is useful?
Anglo American provides a roadmap split by key elements of the business, forecasting the pathway to carbon neutrality by 2040. The company includes information on specific events which will lead to reductions, as well as highlights aspects such as targets and reliance on offsetting.

A clear pathway to operational carbon neutrality

We have identified clear abatement pathways to achieve our ambition of becoming carbon neutral across our operations by 2040. We are radically reducing energy consumption, switching to low carbon energy sourcing and significantly increasing the role of renewables in our energy mix. We will also implement nature-based solutions on land we manage.

Our pathway to operational carbon neutrality by 2040

Achieving our ambition of carbon neutrality across our operations is a complex, multi-dimensional challenge. It begins from a clear and detailed understanding of current emissions sources (see figure on page 27). This understanding allows us to take decisions on the best means of abatement. The target of a 30% reduction in GHG emissions by 2030, with eight sites carbon neutral, is an interim target on our journey to carbon neutrality.

Scope 1 abatement

Our ongoing deployment of our FutureSmart Mining™ programme across the portfolio will see a step-change in low and zero emissions technologies, significantly reducing our Scope 1 emissions. This includes the capture of methane from our mines, which is our largest single source of Scope 1 emissions, as well as innovative means of displacing diesel at the mines, including the development of the world's first hydrogen fuel cell powered haul truck (see page 25).

We are also working on new applications for our metals and minerals that will enable lower emissions, both at our operations and globally. One such example is green hydrogen-powered fuel cell transport using PGMs.

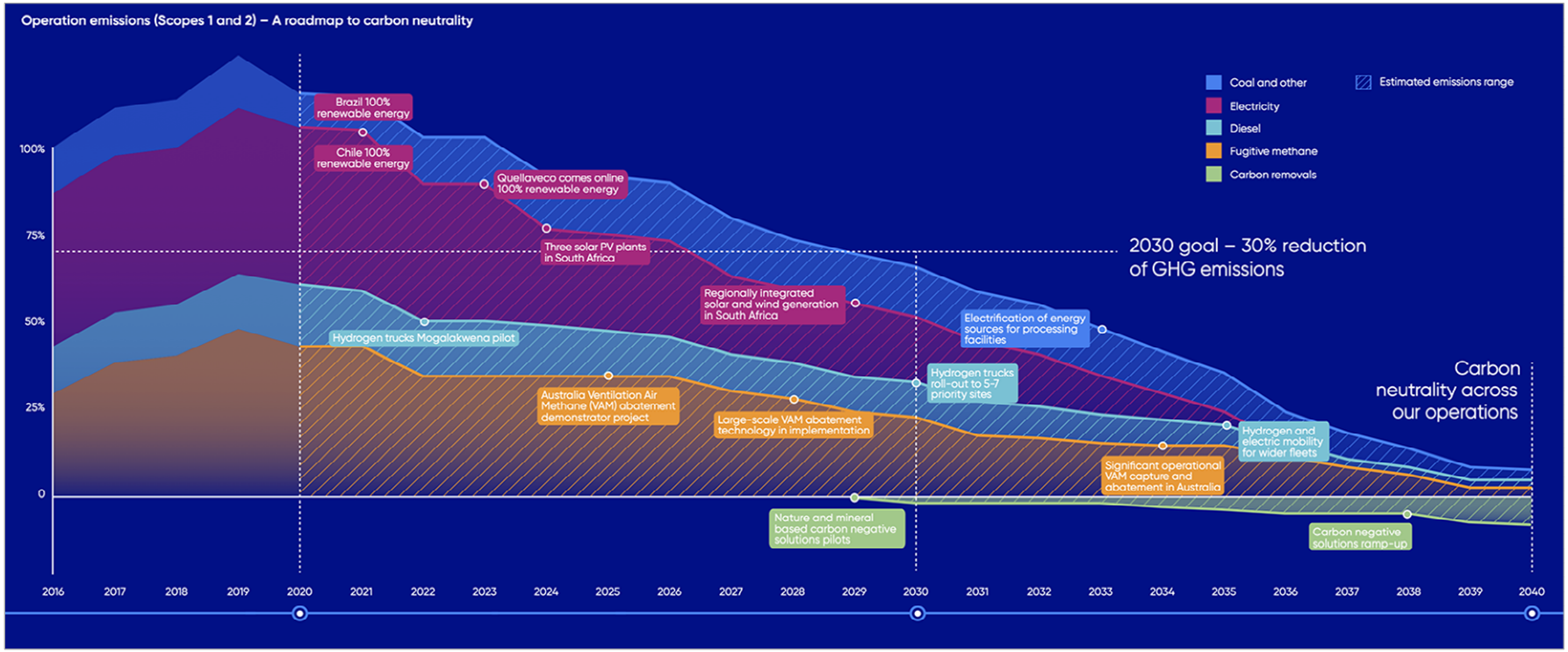
Scope 2 abatement

We are following two separate tracks to reduce our Scope 2 emissions. First, we are working to consume less energy through the application of FutureSmart Mining™ technologies. For example, we are deploying energy reduction applications in ore processing, which is the most energy intensive part of mining. Other ways that we are reducing our energy consumption and intensity include the application of P101 performance improvements – our transformational asset productivity programme that builds on the stability provided by our Operating Model – as well as new technologies and digitalisation.

Secondly, we are increasing the proportion of renewable energy in our mix. We will be sourcing 100% renewable power in Chile from 2021, as well as in Brazil from 2022, and Peru in 2023. We are also examining the potential for a renewable power network in South Africa that we expect to cover 100% of our requirements by 2030 (see text box on page 25).

Reducing emissions at the source

The ECO_2MAN programme (described in detail on page 11) has provided understanding, experience and progress towards the decarbonisation of our operations since 2011. FutureSmart Mining™, our innovation-led approach to sustainable mining, seeks to fundamentally change our operations, from how we evaluate the ore body to how we mine, sort and process the ore. Extending beyond business improvement and operational productivity, it represents a fundamental rethinking of the methodology underpinning resource extraction and processing.


Operation emissions (Scopes 1 and 2) – A roadmap to carbon neutrality
Coal and other
Electricity
Diesel
Fugitive methane
Carbon removals
Estimated emissions range
100%
75%
50%
25%
0
Brazil 100% renewable energy
Chile 100% renewable energy
Quellaveco comes online 100% renewable energy
Three solar PV plants in South Africa
Regionally integrated solar and wind generation in South Africa
Electrification of energy sources for processing facilities
2030 goal – 30% reduction of GHG emissions
Hydrogen trucks Mogalakwena pilot
Australia Ventilation Air Methane (VAM) abatement demonstrator project
Large-scale VAM abatement technology in implementation
Hydrogen trucks roll-out to 5-7 priority sites
Hydrogen and electric mobility for wider fleets
Significant operational VAM capture and abatement in Australia
Carbon neutrality across our operations
Nature and mineral based carbon negative solutions pilots
Carbon negative solutions ramp-up
2016
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Intel Corporation
Sustainability Report 2021, p77-78

What is useful?

The disclosure discusses Intel's carbon neutral goals for a key part of the company's business, including changes to products to meet goals. Intel provides a case study that connects to other sustainability goals.

intel. Introduction Our Business Responsible Inclusive Sustainable Enabling Appendix

Achieving Carbon Neutral Computing

As we continue to take actions to reduce Intel's own global manufacturing and supply chain climate footprint and to advance product energy efficiency, we have also taken on the global challenge to partner with the technology industry and other stakeholders to achieve carbon neutral computing by 2030. In addition, Intel announced plans in 2022 to achieve net-zero greenhouse gas emissions in its global operations by 2040. Conceptually, carbon neutral computing is achieved when the positive benefits of the ICT sector "handprint"—the ways in which technology is applied to reduce climate impact across the economy—equals or exceeds the climate and energy "footprint" of product-related emissions and carbon embedded in technology systems.

Our global challenge framework includes partnering with others to accelerate the sustainability of PCs, improve the energy efficiency of data centers, and accelerate handprint projects to reduce emissions across high-impact industries such as utilities, oil and gas, and manufacturing.

Collaborating on Sustainable PC Design

Partnering with PC manufacturers, we are assessing the carbon footprint of PCs across their life cycles to identify carbon reduction opportunities. To illustrate, Intel published the ATX12VO power supply specification, which provides higher platform power efficiency in a smaller footprint. Together with Modern Standby, the latest ATX12VO desktop systems will have over 40% reduction in typical energy consumption relative to an average system.[1] In March 2022, Intel partner MSI announced the first ATX12VO system.

In addition, Intel's Project Athena Desktops take advantage of both Modern Standby and the ATX12VO power supply unit to ensure smaller, more efficient form factors designed to help OEMs meet Energy Star and EPEAT environmental responsibility standards.

Enabling Customers to Achieve Platform Carbon Neutral Goals

Based on power and performance optimization done in partnership with OEMs, Intel 11th Generation Intel® Core™ mobile processor (Tiger Lake)-based systems achieve 16 hours of battery life on Windows[2]—double the eight hours of battery life in 2015.

In addition to enhanced battery life, Intel has set a new goal to lower emissions related to reference platform designs for client form factors by 30% or more by 2030. These efforts are taking shape with Dell's Concept Luna prototype device, developed in partnership with Intel to showcase future possibilities for sustainable PC design.

In our efforts to reduce carbon footprint at a platform level, we are also implementing technologies across the product life cycle (manufacturing, use, and asset retirement). Specifically, we focus on reducing component count and the area of the main board, and increasing system and display energy efficiency. We are also advancing the use of bio-based printed circuit boards to aid in the separation of materials and components when recycling, and to reduce overall electronic waste. For enterprises, the Intel vPro® Platform enables sustainable management throughout the entire device life cycle, enabling IT organizations to reduce emissions.

Intel's interoperable, secure, and scalable industrial computers along with our software components are driving advancements in smart energy.

Intel® NUC – Sustainability in Action

The Intel® NUC line of small form-factor PCs demonstrates sustainability in action. We have achieved over 25% savings in electricity during the product's manufacturing process by transitioning to a low-temperature solder. With Intel NUC Mini PCs, Intel continues to focus on landfill avoidance and use of recyclable materials. In 2021:

- Intel repaired, reused, or recycled over 70,000 units returned by customers through the Intel NUC return material authorization program.
- We kept >99.5% of all returned material (by weight) out of landfills.
- Over 95% of packaging for all Intel NUC products (by weight) was designed to be recyclable or reusable in secondary markets.
- Post-consumer recycled polymers were used to manufacture many of the Intel NUC Mini PC chassis.

Find out more at intel.com/NUCsustainability.

[1] See notices and disclaimers for details. Read more complete information about performance and benchmark results.

[2] https://www.intel.com/content/www/us/en/products/systems-devices/sku/h91417889/microsoft-surface-laptop-4/specifications.html

intel. Introduction Our Business Responsible Inclusive Sustainable Enabling Appendix

Reducing the Carbon Impact of Data Centers and the Network

We have worked with our worldwide ecosystem to reduce data center carbon impact in two areas: 1) Lowering energy consumption during the compute "use phase," which accounts for the primary source of data center carbon emissions; and 2) Reducing the embodied carbon in the equipment itself in the "create phase," which represents roughly 10%-20% of emissions.

Use phase. The primary source of emissions in the use phase is from electricity used to power the data center and network. One of the ways we are reducing electricity use is through AI-based telemetry, which intelligently monitors and controls electricity in the data center and throughout the network. Intel® Xeon® Scalable processors incorporate registers for monitoring cache, CPU frequencies, memory bandwidth, and input/output (I/O) access. These telemetry capabilities show the potential for significant energy savings at scale; within its data center that houses 5G communication facilities, Japan Telecommunications operator KDDI reduced overall electricity consumption by 20% in a trial using 3rd Generation Intel Xeon Scalable processors and Intel's comprehensive power management and AI capabilities.

Create phase. Intel is focusing on efforts to reduce the carbon footprint at a platform level by enabling modular component design where CPU, I/O, and accelerator modules can be repaired or upgraded independently to extend the useful life of the platform. Working alongside key data center partners, we are contributing to the Open Compute Project (OCP) to advance modular designs, establish carbon footprint metrics, and set reduction goals. The most recent advancements are specified in the Blue Glacier project, which published a Revision 1 specification for modular design through OCP.

Optimizing software for sustainability. We work with the world's largest cloud and communications service providers, independent software vendors, and open source software communities to optimize hundreds of data center and network applications to address software inefficiencies. Software efficiency continues to lag hardware capabilities, resulting in wasted electricity and higher carbon footprint through over-provisioning of equipment. Intel introduced oneAPI to better exploit the latest hardware's cutting-edge features to unleash application performance across CPUs, GPUs, FPGAs, and other accelerators.

Emerging Innovation. Other ways Intel is working to increase data center and network efficiency include:

- Advanced liquid cooling technologies that reduce the data center air conditioning burden while enabling reuse of exhaust heat are in various stages of proof-of-concept and production deployment. This technology can reduce cooling electricity expenses by 90% and the carbon footprint by 40%. Read more about Intel's pilot with Submer.
- The latest Intel® Xeon® processor roadmap features products using both efficiency cores and performance cores. Efficiency cores—used in the upcoming Intel Xeon processor code-named "Sierra Forrest"—enable lower power consumption across workloads that are optimized for best power efficiency. Performance cores—used in the future product code-named "Sapphire Rapids"—have built-in accelerators to drive artificial intelligence, data streaming, crypto, and a range of other workloads at a lower energy cost.
- Collaborations with industry partners to proliferate sustainable compute at the 5G edge by enabling local, renewable energy sources to power data centers placed closer to where data originates are ramping at worldwide scale.

Expanding the Technology "Handprint"

To build a supportive policy environment for private sector leadership on climate change, we participate in a range of organizations, policy forums, and coalitions. We are working with other companies and policymakers to enable technology-based solutions that provide greater carbon benefit than the carbon embedded in those solutions. For example, Intel has developed a solution that can be integrated into existing energy grid infrastructure to create a smarter grid that can adapt to changing energy consumption needs and sources. We aim to accelerate the deployment of such projects within Intel's operations and also in external projects in collaboration with our customers.

In addition, we are working with the Center for Climate Change and Energy Solutions and Gridwise Alliance, which advocate for innovation and investments in climate solutions, including expanding ICT's role in driving change and grid modernization appropriations as part of future infrastructure investments. We also worked within our Digital Climate Alliance, a coalition of technology companies, to successfully support policies in the "Infrastructure Investment and Jobs Act" passed by the US Congress late in 2021. Finally, we worked with the American Council for an Energy-Efficient Economy to evaluate methodologies for quantifying the climate benefits of Intel's handprint technologies. For more detail, see "Governance, Ethics and Public Policy" in the Our Business section of this report.

Parking lot solar panels and electric vehicle charging stations at Intel's campus in Folsom, California.

BHP Group plc
Climate Transition Action Plan 2021, p16-18

What is useful?

BHP provides a deep-dive on the uncertainties for the steel industry in reaching net zero. BHP is a key supplier to the industry and understanding how this key customer set might evolve allows BHP to consider the risks and opportunities that transition represents for these customers. The company also highlights the differences between these exploratory scenarios and internal planning assumptions.

Steelmaking: inherent uncertainties to net zero

There are a number of global uncertainties that must be reckoned with in terms of achieving net zero in steel. These are principally in the areas of technology development (including cost). Beyond this, there are a range of regional factors that are equally influential (and in some cases maybe more so) in determining likely future pathways. Key factors include:

- Availability of lower carbon raw material feedstock (including but not exclusively scrap)
- Age of existing facilities
- Variable levels of policy support (either subsidies for technology or carbon pricing to incentivise abatement)
- Exposure to international trade in steel and steel products
- Future growth in demand for affordable steel

Different regions will progress decarbonisation at different paces because of the factors outlined above. Today's policies and signposts indicate that most regions will only achieve a green end-state after 2050, as illustrated by the steel outcomes in our Central Energy and Lower Carbon scenarios (Figure 5)[67].

Even assuming a step-change and global convergence in regulatory and technological factors over the next decade, our modelling indicates that it is still difficult to achieve net zero sector emissions for key steel producing regions. To explore the bottom-up limits of steel decarbonisation on a regional basis, we have developed a "Deep Green" hypothetical for the steel sector.

Deep Green seeks to simulate the specific impact on the steel sector of a much more rapid global convergence towards decarbonisation, universal access to zero emissions electricity and a US$200 per tonne global carbon price. It is not like the whole-system modelling with global temperature outcomes like our Central Energy or Lower Carbon scenarios. Deep Green is also entirely separate to BHP's 1.5°C scenario (which is a global top-down technical model more similar in approach to the Central Energy and Lower Carbon scenarios) In this Deep Green hypothetical, global steel emissions fall by around two-thirds from current levels, bringing absolute volumes well below the 1990 base level. That is significant, but is not net zero. Even in Europe, which has positive exposure to the factors outlined above, net zero is not achieved. Under the Deep Green hypothetical, primary iron demand could be modestly affected due to higher scrap use. Metallurgical coal demand volumes may be lower than projected in our climate change scenarios due to higher penetration of alternative steelmaking processes. However, potential reduction in demand could be offset by expected increase in premiums for higher quality coal, which BHP would be well placed to capture. It is important to emphasise that we consider the likelihood of the Deep Green hypothetical to be much lower than our Central and Lower Carbon scenarios.

We do note that the commitment to enable swifter decarbonisation pathways in the steel sector is gathering momentum. Today, 34 per cent of BHP's current iron sales are to customers that have net zero targets in place. These commitments are underpinned by net zero commitments in the major Asian steelmaking nations of China (2060), Japan (2050) and South Korea (2050). However, although ambitions are growing, a pathway to net zero for steel is still highly uncertain. Despite the supportive regulatory landscape, emitters may still be constrained by bottlenecks in scrap availability and the ramp up of low emissions steelmaking capacity. Notably, some steelmakers expect to utilise offsets and carbon abatement solutions (including CCUS), in addition to new production technologies, to achieve their long-term goals.

Finally, steel producers have available various decarbonisation levers (such as scrap usage), which do not always result in reduced emissions from customers' processing of our products. Net zero for some of our steel producers may not result in equivalent reduction of BHP's value chain emissions.

Steelmaking: BHP's action plan

Recognising the particular challenge of a net zero pathway for customers' processing of our products[68], which is dependent on the development and downstream deployment of solutions and supportive policy, we will continue to partner with customers and others to accelerate the transition to carbon neutral[69] steelmaking.

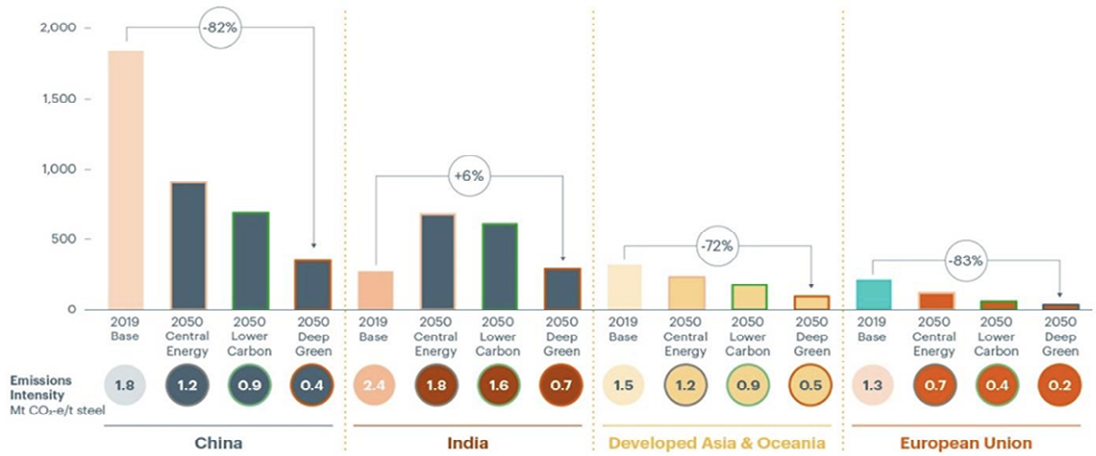
In the medium term, we will continue supporting industry to develop technologies and pathways capable of 30 per cent emissions intensity reduction in integrated steelmaking, with widespread adoption expected post 2030 (our goal for 2030).

As the IIGCC noted in their report, the decarbonisation of the steel industry is inherently a value chain effort that will require contributions from policy makers, investors, steel producers, suppliers and customers. We have a number of partnerships and internal initiatives underway to test and implement low-carbon steelmaking technologies and raw materials.

- In FY2021, we announced memoranda of understanding for partnerships with China Baowu, JFE and HBIS to invest up to a total of US$65 million in research and development of steel decarbonisation pathways. We also established a research program with University of Newcastle in Australia to study raw material properties in low carbon iron and steel making.
- Additionally, BHP Ventures is strategically investing in a range of emerging companies, including some focused on low- or no-carbon steelmaking. Our portfolio includes various investments in electrochemical technologies that are particularly amenable to processing our Pilbara iron ores, potentially providing BHP and our customers with added optionality to complement other more readily available technologies, such as hydrogen-based DRI.
- We are currently assessing the opportunity to implement beneficiation at our Jimblebar operation. By improving our product quality, we can support emissions reduction in the short- to medium-term within the integrated BF-BOF steelmaking process. Longer-term, advancements in beneficiation and or EAF technology may see a greater proportion of BHP's ores used in DRI-EAF steelmaking.

We will continue to seek opportunities to form partnerships with our customers and others in the industry to advance the development of key technologies and products. In FY2022, we intend to progress research and development and develop plans for operational testing and trials under the three steelmaking partnerships described above. In the long-term, we expect significant advancements in CCUS for the blast furnace and green hydrogen DRI-EAF will also be needed.

Figure 5: Steel emissions for key regions under different assumptions



Source: BHP analysis.
Note: The "Central Energy" and "Lower Carbon" steel sector emissions portrayed in the chart are outcomes of the Central Energy View and Lower Carbon View scenarios described in more detail in BHP's Climate Change Report 2020, available at bhp.com. The "Base" levels portrayed are business-as-usual scenarios that are reflective of today's policies and future scrap availability, without considering additional abatement efforts. "Deep Green" is a hypothetical we described above that considers only strictly the impact on regional steel sectors assuming much more rapid global convergence towards decarbonisation, universal access to zero emissions electricity and a US$200 per tonne global carbon price.

Aviva plc Climate Transition Plan 2021, p18-19

What is useful?

The disclosure breaks down Aviva's transition plan by key elements of the company's business. Aviva sets out how the company will measure Scope 3 investment emissions, uncertainties in the pathway forward, and future actions to reach targets, including on unabatable emissions.

3.1.2 Targets

We believe that our targets on investments should not only be ambitious but also able to address all the different ways in which we can contribute to the world's transition to a low carbon economy.

We seek to align our investments with a pathway towards Net Zero carbon emissions and ensure consistency with the 1.5°C ambition. We signed up to key global targets in line with the NZAOA and plan to reduce the carbon intensity of our investment portfolio by 25% by 2025, and by 60% by 2030, aiming to achieve Net Zero emissions by 2040.[10] These targets are in line with the required emission reduction to reach the 1.5°C ambition as defined in the latest IPCC analysis.

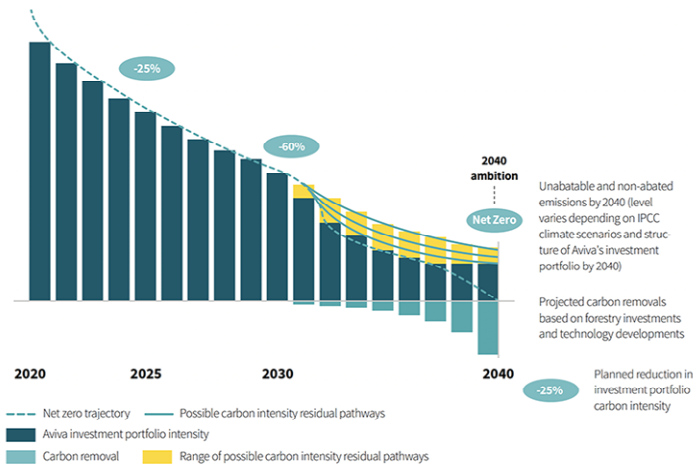
We're also pursuing SBTi-approved targets to ensure the alignment of our commitments with the requirements of the most ambitious and recognised standard setter on climate today. We'll be setting targets for required asset classes such as listed equity and debt, real estate and electricity generation project finance, and are looking forward to sharing these in due course.

Further, we intend to explore possible sector-level targets for the highest-emitting sectors where we have a material exposure in line with NZAOA requirements during 2022 and their best use in the context of risk assessment, decision making and engagement approaches.

Figure 8: Delivering on our Net Zero ambitions

Establishing a methodology to project corporate emissions for all the companies we invest or could invest in	
Stakeholder alignment	One Aviva working group to formalise a methodology to project corporate emissions
Tools designed for scale	Need-designated systems, not spreadsheets to operate at scale required to meet our needs
Whole portfolio analysis	Ability to dissect client's portfolio at the granularity most appropriate to their needs
Integrate with trading systems	Empower investors to incorporate forward looking carbon metrics into portfolio management

Aviva's Net Zero trajectory for Scope 3 (investment) emissions



[10] This will cover shareholder and policyholder assets where we have control and data; and the main asset classes of Aviva's core markets (credit, equities, direct real estate and sovereign debt). We will be able to expand this further as new data and methodologies become available. For more details, please see www.aviva.com/climate-goals

3.1.3 Action plans

To deliver on our pledges, we work with a full set of levers across five main areas:

- Active ownership: using our voice and vote to pressure companies and directors to change
- Divesting where necessary, and applying portfolio constraints for high carbon-emitting sectors and individual names
- Tilting investments towards cleaner sectors and the best companies within sectors
- Financing the transition: grasping the opportunity of a low carbon economy
- Providing products and services for our customers and tools to interrogate their portfolio.

National Grid plc Annual Report 2022, p9, p80

What is useful?
National Grid quantifies the amounts the company intends to invest in 'green capex'. This is further tied into the opportunities, timeframes and KPIs.

Our vision for our future energy networks aligns with the global push towards net zero, and demonstrates the vital role we play. And with that vision, as we look to the decades ahead, we believe the scale of opportunity across the business is significant.

1. Our pivot to electricity brings visibility and certainty of growth, right now and out to 2050.
2. Our scale magnifies our vital role at the heart of the energy transition.
3. We have a strong track record of delivering growth.
4. Green capex[1] in decarbonisation of energy systems, will make up around £24bn of our investment between 2021/22 and 2025/26.

1. Capital expenditure invested in decarbonisation of the energy systems and considered to be aligned with the principles of the EU Taxonomy legislation at the date of reporting.

3. Transition Opportunity
Electricity use and share of final demand will increase: with the transition pivoting energy needs from fossil fuels to cleaner gas and electricity, the Group will deliver a larger share of society's needs in the future. This will increase investment opportunities as growth is across transmission and distribution electricity networks.

Business:
ET, ED, NY, NE, NGV, ESO

Timeframe:
Short, medium and long term

Likelihood:
High

Measurement indicators:
EU Taxonomy KPIs, green capex forecasts, GHG emissions

Sensitivities have been run versus our business plan to investigate the impact of the scenarios and we will continue to monitor triggers to capital expenditure.

We estimate that the Orderly Transition or Acceleration scenario would result in an increase over the Slow Progress scenario of between 0.5% to 1.0% in underlying operating profit CAGR over the period to 31 March 2031. Capital expenditure increases may include expanding electricity networks, natural gas leak reductions and investment and expansion of renewable generation operations, but these are expected to be within our regulatory regime.

Beyond 2030, and in line with our scenario modelling, the trends towards greater electrification, driven by expanded renewables generation and investment into decarbonising our gas networks is expected to continue and may accelerate.

Our acquisition of WPD positions National Grid for this increase in electricity use across transmission and distribution. We are also continuing to invest in both onshore renewables via National Grid Renewables and in our interconnector portfolio, which will form an important part of UK decarbonisation.

Across our businesses, we are also heavily investing in the infrastructure required to support the decarbonisation of transport and during 2021 in the US we delivered 1,684 EV charging ports in our jurisdictions, a company record for a calendar year.

We are also carrying out critical studies and pilots exploring how to decarbonise our gas networks, for example the HyGrid project described in Transition Risk 6 and the FutureGrid project, which is testing the possibility of converting the NTS in the UK to transport hydrogen.

In the UK, we are continuing to work with the Department for Transport and the Office of Zero Emissions Vehicles to ensure that the underlying network infrastructure is in place, ahead of need, to support the successful delivery of Project Rapid. We welcomed the Transport Decarbonisation Plans commitment to publish an Electric Vehicle Charging Infrastructure Strategy and establish a Delivery Body to progress the grid upgrades required to meet future ambitions.

We also continue to engage with key stakeholders from across all modes of transport through our 'ask, not tell' engagement principles to understand the main barriers and potential future demand and infrastructure requirements for each sector.

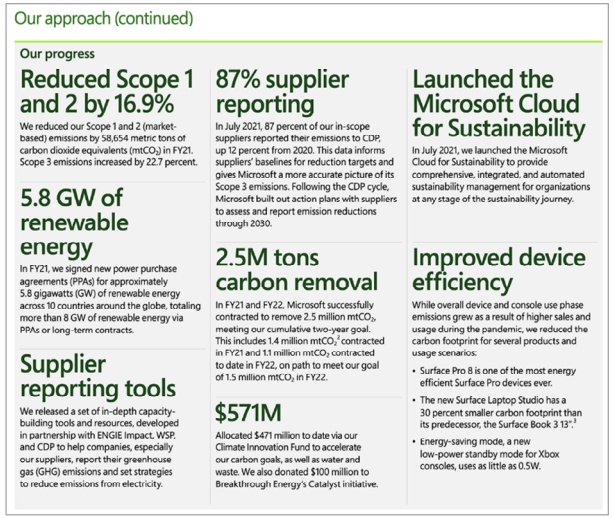
Performance

Helping investors understand	Extract
How the company is currently performing	Microsoft, AstraZeneca
Regional differences in performance	Microsoft
Revised commitments and targets	Marks and Spencer

Microsoft Corporation
Environmental Sustainability Report 2021, p17-18

What is useful?

The disclosure details Microsoft's progress against headline emission figures, and offsets, as well as providing other metrics, such as leading indicators (new power purchase agreements, improved device efficiency, and working with suppliers) that build towards the company's targets.



Our approach (continued)

Our progress

Reduced Scope 1 and 2 by 16.9%

We reduced our Scope 1 and 2 (market-based) emissions by 58,654 metric tons of carbon dioxide equivalents ($mtCO_2$) in FY21. Scope 3 emissions increased by 22.7 percent.

5.8 GW of renewable energy

In FY21, we signed new power purchase agreements (PPAs) for approximately 5.8 gigawatts (GW) of renewable energy across 10 countries around the globe, totaling more than 8 GW of renewable energy via PPAs or long-term contracts.

Supplier reporting tools

We released a set of in-depth capacity-building tools and resources, developed in partnership with ENGIE Impact, WSP, and CDP to help companies, especially our suppliers, report their greenhouse gas (GHG) emissions and set strategies to reduce emissions from electricity.

87% supplier reporting

In July 2021, 87 percent of our in-scope suppliers reported their emissions to CDP, up 12 percent from 2020. This data informs suppliers' baselines for reduction targets and gives Microsoft a more accurate picture of its Scope 3 emissions. Following the CDP cycle, Microsoft built out action plans with suppliers to assess and report emission reductions through 2030.

2.5M tons carbon removal

In FY21 and FY22, Microsoft successfully contracted to remove 2.5 million $mtCO_2$, meeting our cumulative two-year goal. This includes 1.4 million $mtCO_2$ contracted in FY21 and 1.1 million $mtCO_2$ contracted to date in FY22, on path to meet our goal of 1.5 million $mtCO_2$ in FY22.

$571M

Allocated $471 million to date via our Climate Innovation Fund to accelerate our carbon goals, as well as water and waste. We also donated $100 million to Breakthrough Energy's Catalyst initiative.

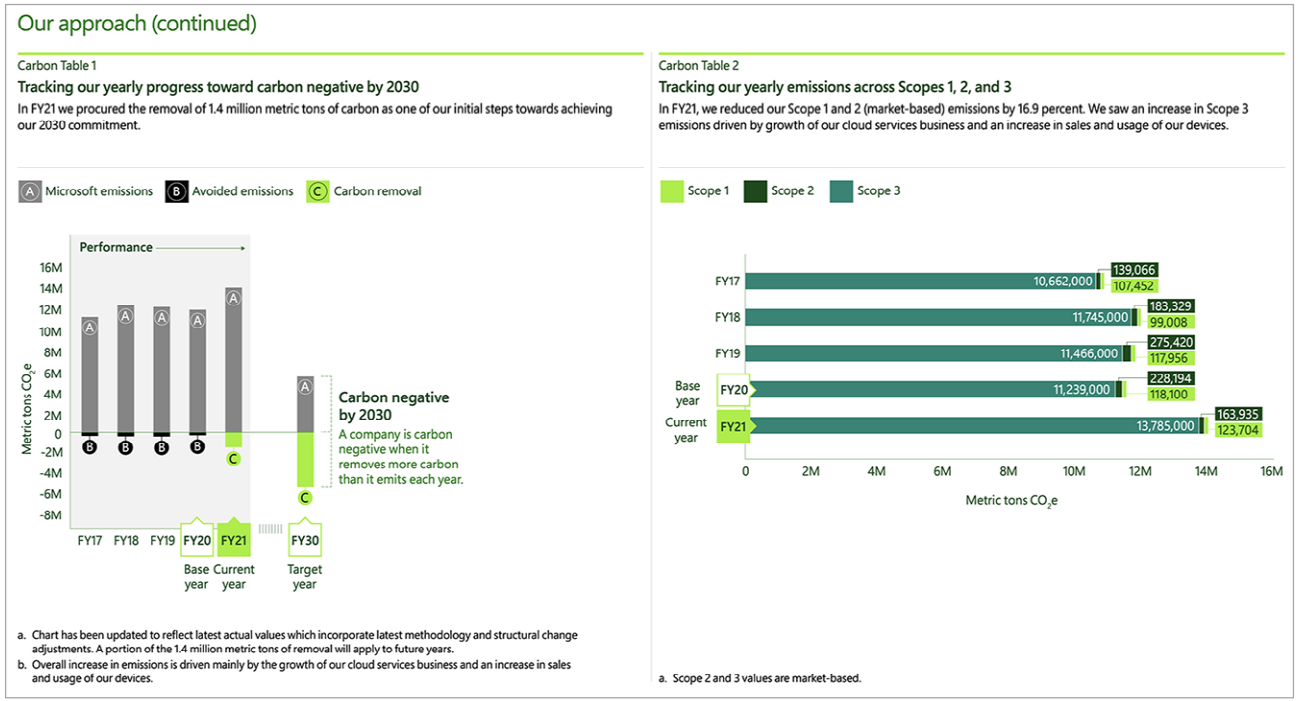
Launched the Microsoft Cloud for Sustainability

In July 2021, we launched the Microsoft Cloud for Sustainability to provide comprehensive, integrated, and automated sustainability management for organizations at any stage of the sustainability journey.

Improved device efficiency

While overall device and console use phase emissions grew as a result of higher sales and usage during the pandemic, we reduced the carbon footprint for several products and usage scenarios:

- Surface Pro 8 is one of the most energy efficient Surface Pro devices ever.
- The new Surface Laptop Studio has a 30 percent smaller carbon footprint than its predecessor, the Surface Book 3 13".[1]
- Energy-saving mode, a new low-power standby mode for Xbox consoles, uses as little as 0.5W.



Our approach (continued)

Carbon Table 1

Tracking our yearly progress toward carbon negative by 2030

In FY21 we procured the removal of 1.4 million metric tons of carbon as one of our initial steps towards achieving our 2030 commitment.

a. Chart has been updated to reflect latest actual values which incorporate latest methodology and structural change adjustments. A portion of the 1.4 million metric tons of removal will apply to future years.
b. Overall increase in emissions is driven mainly by the growth of our cloud services business and an increase in sales and usage of our devices.

Carbon Table 2

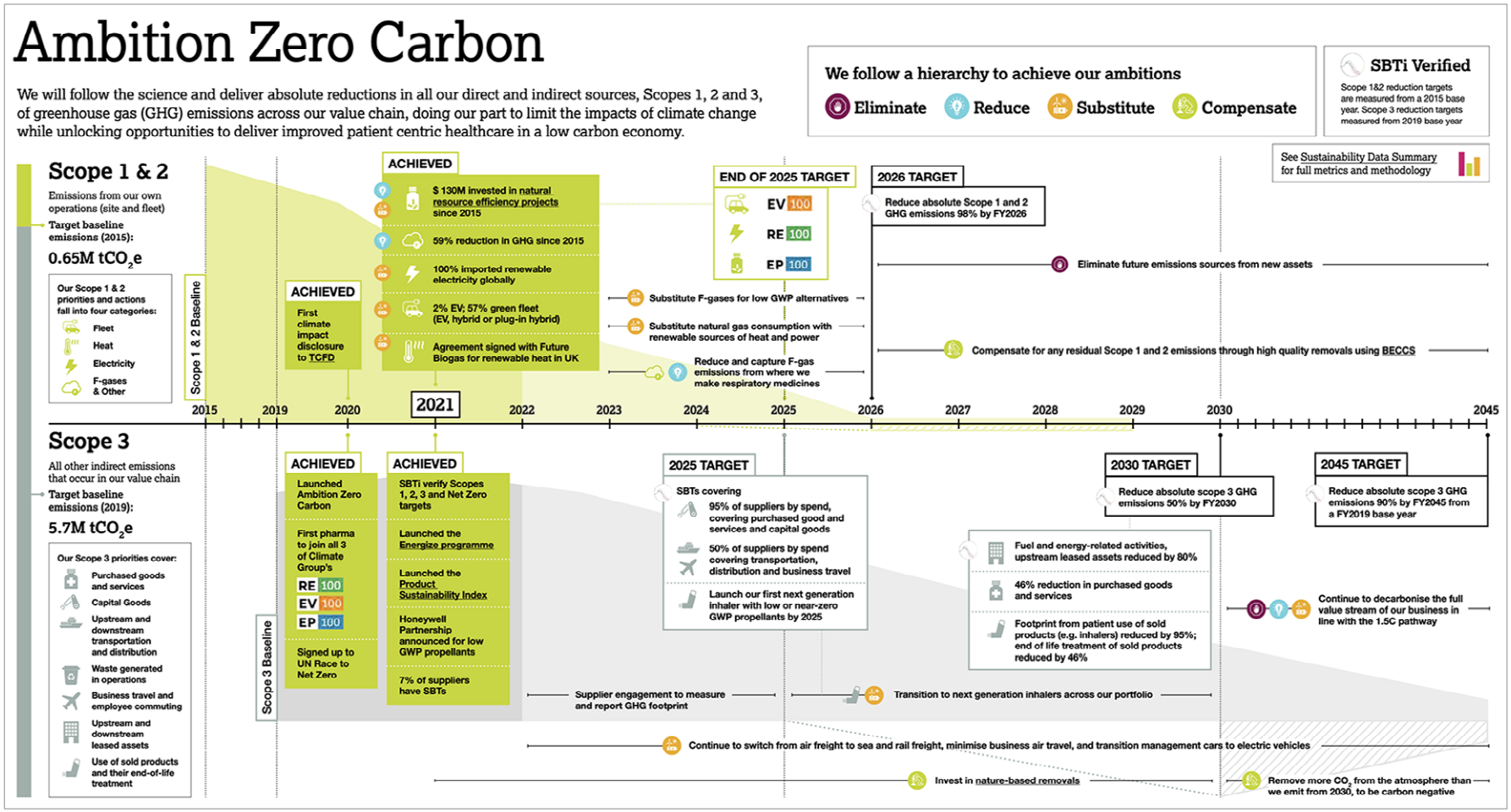
Tracking our yearly emissions across Scopes 1, 2, and 3

In FY21, we reduced our Scope 1 and 2 (market-based) emissions by 16.9 percent. We saw an increase in Scope 3 emissions driven by growth of our cloud services business and an increase in sales and usage of our devices.

a. Scope 2 and 3 values are market-based.

AstraZeneca plc Sustainability Report 2021, p21

The disclosure maps out AstraZeneca's performance against the company's plan and targets, noting key milestones achieved in the year. AstraZeneca also provides a future planned trajectory, including targets and enabling actions.



Microsoft Corporation Environmental Sustainability Report 2021, p99

Microsoft provides a detailed appendix breaking down GHG emissions in a number of ways, including splitting out GHG emission by region. For Scope 2, this allows users to easily understand how exposed the company is to areas with less 'green' grids.

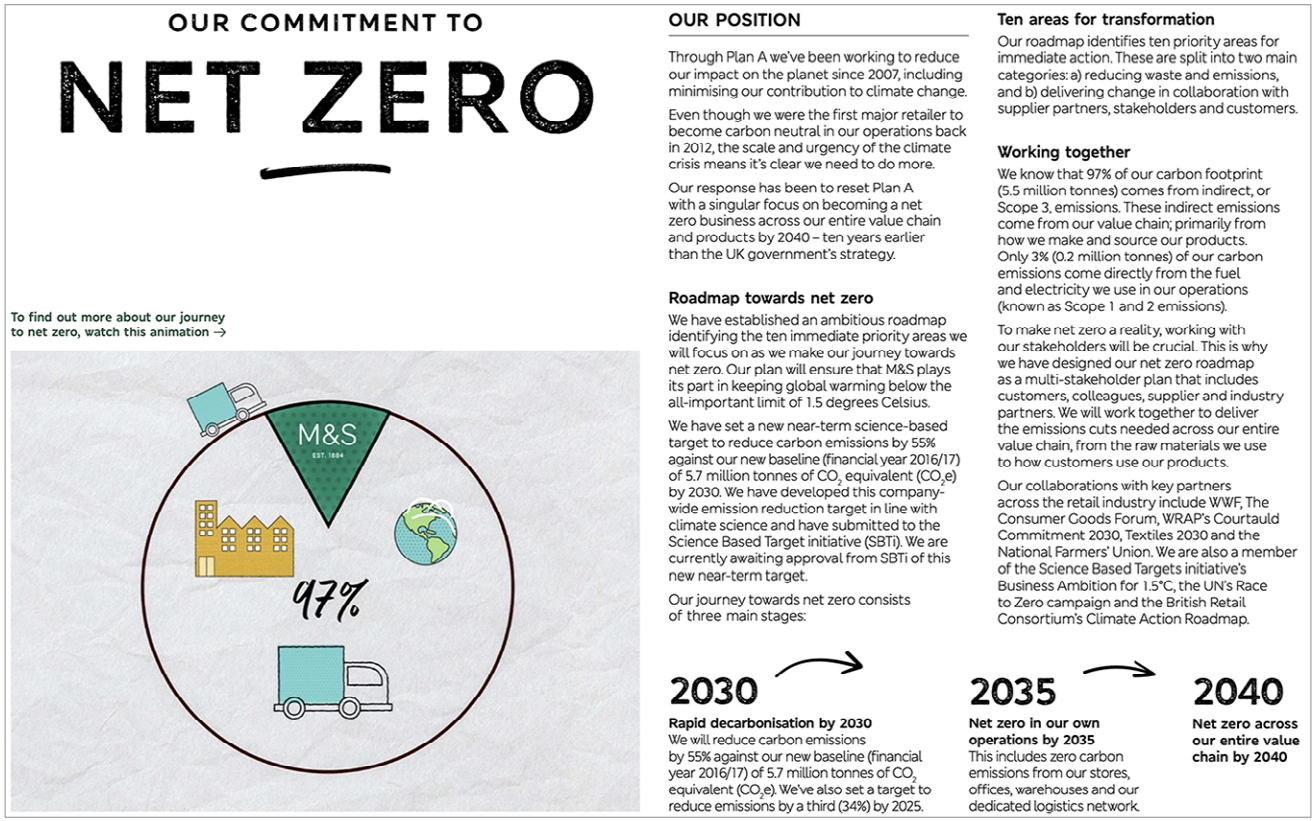
Table 3

GHG emissions by region ($mtCO_2e$)

	FY17	FY18	FY19	FY20	FY21
Scope 1					
Asia	9,699	6,483	7,330	8,650	**9,664**
Europe, Middle East, Africa	44,873	41,276	57,957	61,719	**69,251**
Latin America	6,260	6,173	3,919	3,871	**4,403**
North America	46,620	45,076	48,750	43,860	**40,386**
Subtotal	*107,452*	*99,008*	*117,956*	*118,100*	***123,704***
Scope 2 (Location-Based)					
Asia	439,035	528,277	691,772	804,567	**942,892**
Europe, Middle East, Africa	399,194	519,058	681,743	860,858	**866,689**
Latin America	20,968	23,450	25,403	15,707	**16,204**
North America	1,838,357	1,875,258	2,158,600	2,421,313	**2,919,412**
Subtotal	*2,697,554*	*2,946,043*	*3,557,518*	*4,102,445*	***4,745,197***
Scope 2 (Market-Based)					
Asia	121,930	174,533	266,725	219,416	**157,841**
Europe, Middle East, Africa	14,460	7,301	7,463	7,376	**5,353**
Latin America	2,053	751	632	594	**433**
North America	623	744	600	808	**308**
Subtotal	*139,066*	*183,329*	*275,420*	*228,194*	***163,935***

Marks and Spencer plc Sustainability Report 2022, p21, p28

Marks and Spencer sets out how the company's strategy has changed from carbon neutral to net zero. They provide information on milestones, as well as how the approach will no longer involve investing in offsets.



OUR COMMITMENT TO

NET ZERO

To find out more about our journey to net zero, watch this animation →

OUR POSITION

Through Plan A we've been working to reduce our impact on the planet since 2007, including minimising our contribution to climate change.

Even though we were the first major retailer to become carbon neutral in our operations back in 2012, the scale and urgency of the climate crisis means it's clear we need to do more.

Our response has been to reset Plan A with a singular focus on becoming a net zero business across our entire value chain and products by 2040 – ten years earlier than the UK government's strategy.

Roadmap towards net zero

We have established an ambitious roadmap identifying the ten immediate priority areas we will focus on as we make our journey towards net zero. Our plan will ensure that M&S plays its part in keeping global warming below the all-important limit of 1.5 degrees Celsius.

We have set a new near-term science-based target to reduce carbon emissions by 55% against our new baseline (financial year 2016/17) of 5.7 million tonnes of CO_2 equivalent (CO_2e) by 2030. We have developed this company-wide emission reduction target in line with climate science and have submitted to the Science Based Target initiative (SBTi). We are currently awaiting approval from SBTi of this new near-term target.

Our journey towards net zero consists of three main stages:

Ten areas for transformation

Our roadmap identifies ten priority areas for immediate action. These are split into two main categories: a) reducing waste and emissions, and b) delivering change in collaboration with supplier partners, stakeholders and customers.

Working together

We know that 97% of our carbon footprint (5.5 million tonnes) comes from indirect, or Scope 3, emissions. These indirect emissions come from our value chain; primarily from how we make and source our products. Only 3% (0.2 million tonnes) of our carbon emissions come directly from the fuel and electricity we use in our operations (known as Scope 1 and 2 emissions).

To make net zero a reality, working with our stakeholders will be crucial. This is why we have designed our net zero roadmap as a multi-stakeholder plan that includes customers, colleagues, supplier and industry partners. We will work together to deliver the emissions cuts needed across our entire value chain, from the raw materials we use to how customers use our products.

Our collaborations with key partners across the retail industry include WWF, The Consumer Goods Forum, WRAP's Courtauld Commitment 2030, Textiles 2030 and the National Farmers' Union. We are also a member of the Science Based Targets initiative's Business Ambition for 1.5°C, the UN's Race to Zero campaign and the British Retail Consortium's Climate Action Roadmap.

2030

Rapid decarbonisation by 2030
We will reduce carbon emissions by 55% against our new baseline (financial year 2016/17) of 5.7 million tonnes of CO_2 equivalent (CO_2e). We've also set a target to reduce emissions by a third (34%) by 2025.

2035

Net zero in our own operations by 2035
This includes zero carbon emissions from our stores, offices, warehouses and our dedicated logistics network.

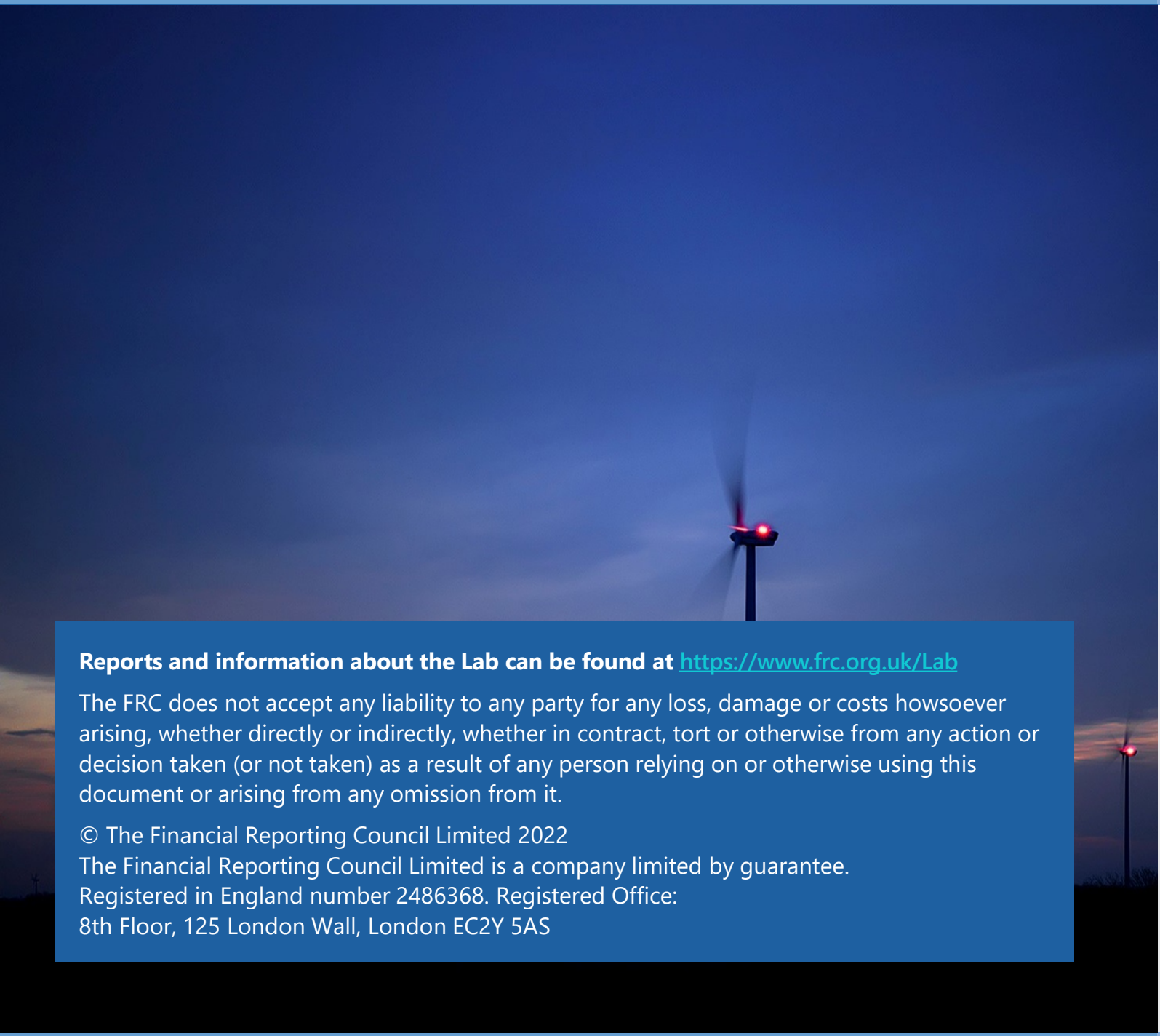
2040

Net zero across our entire value chain by 2040

Carbon neutral operations

In previous years, in addition to driving energy efficiency and procuring renewable electricity, we achieved carbon neutrality in our own operations by offsetting our residual Scope 1 and 2 GHG emissions. In line with our new net zero target, we are no longer investing in offsets to achieve carbon neutral status and are redirecting funds that would have been invested in offsets into our new Climate Innovation Fund.

The Climate Innovation Fund (see **page 22**) will invest in projects in our value chain alongside our trusted supplier partners, in our own operations and, where appropriate, to help identify solutions for industry-wide climate-related challenges.



Reports and information about the Lab can be found at https://www.frc.org.uk/Lab

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