

# Introduction



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RHI Magnesita is committed to being transparent about its climate-related risks and opportunities. In line with this commitment, we support the Task Force on Climate-related Financial Disclosures (TCFD) and the EU Taxonomy. We have made it a priority to identify, evaluate, and manage climate-related risks and opportunities, and we are always striving to improve our process while providing essential information to our stakeholders to make informed decisions.

RHI Magnesita has reported according to the TCFD Recommendations since 2019 and has updated its climate related risk assessment and enlarged its disclosure in 2022.

The TCFD Recommendations are the world's most commonly accepted standard for disclosing climate-related risks and opportunities. They focus on four key pillars of Governance, Strategy, Risk Management and Metrics and Targets. Recommended disclosures are presented on Table 1.

**Table 1. TCFD Recommendations** 

Recommendation	Recommended Disclosure	Page
Governance	Describe the Board's oversight of climate-related risks and opportunities	2
	Describe the Management's role in assessing and managing climate-related risks and opportunities	2
Strategy	Describe the climate-related risks and opportunities the organisation has identified over the short, medium and long term	3
	Describe the impact of climate-related risks and opportunities on the organisation's business, strategy and financial planning	6
	<ul> <li>Describe the resilience of the organisation's strategy, taking into consideration different climate-related scenarios, including a 2°C or lower scenario</li> </ul>	3
Risk Management	Describe the organisation's processes for identifying and assessing climate-related risks	
	Describe the organisation's processes for managing climate-related risks	5-8
	Describe how processes for identifying, assessing, and managing climate-related risks are integrated into the organisation's overall risk management	5-8
Metrics and Targets	Disclose the metrics used by the organisation to assess climate-related risks and opportunities, in line with its strategy and risk management process	
	Disclose Scope 1, Scope 2 and if appropriate Scope 3 greenhouse gas (GHG) emissions, and the related risks	9
	Describe the targets used by the organisations to manage climate-related risks, opportunities, and performances against targets	9



### Governance



#### **Board oversight**

The Board of RHI Magnesita guides the development of our strategy and appetite towards risk. It also has oversight of other material matters such as regulatory developments or reputational and financial topics. Responsibility for and oversight of climate–related risks and opportunities has been assigned to the Corporate Sustainability Committee (CSC). The Chairman of the

Committee, who is responsible for overseeing RHI Magnesita's climate strategy, engages directly with RHI Magnesita managers and employees on climate topics as required between the regular Committee meetings. Certain members of the Executive Management Team regularly attend the Committee meetings. The Committee Chairman reports to the Board on climate-related matters on a regular basis.

The Corporate Sustainability Committee regularly reviews climate risks and opportunities, strategy and performance, while the Remuneration committee reviews and approves bonus payment linked to climate.

Climate-related progress is discussed at every CSC meeting, with the Chair engaging directly with those driving the  $\rm CO_2$  strategy in between CSC meetings as needed. The audit committee oversees any material ESG risks including climate-related risks.

Figure 1. RHI Magnesita's Climate Governance



#### Management

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At Management level, in the C-Suite, the Chief Technology Officer (CTO) reports regularly to both the CEO and Board Corporate Sustainability Committee on a quarterly basis and anytime in-between as necessary. The CTO is also on the Executive Management Team. He directly oversees the development of the company's CO<sub>2</sub> strategy and its implementation across the organisation. The Global Sustainability Team reports to CTO and manages and facilitates sustainability across RHI Magnesita.

Driven by our Board and led by our Executive Management Team, we engage widely with stakeholders, investigate risks, and identify opportunities aligned with our ambitious strategy. Our climate governance is outlined on the Figure 1.

In 2022 we further integrated carbon considerations into key processes:

- A new internal pricing mechanism was introduced to incentivise sales teams to prioritise products with higher recycled content.
- 25% of the Long-Term-Incentive-Plan (LTIP) payout criteria is linked to the Group's target to reduce CO<sub>2</sub> emissions per tonne against 2018 baseline year.
- Increase of secondary raw material accounts for 10% of the annual bonus for all eligible employees.
- Enhanced monthly monitoring of CO<sub>2</sub>
  emissions (Scope 1 and 2) was integrated
  into the Group's enterprise resource
  planning tool.

In addition to that, we are currently implementing a more structured approach to engage with suppliers to fully integrate sustainability considerations — including climate change — into our procurement process.

Our goal is that by 2025 two-thirds of our suppliers will be rated by EcoVadis. In 2022, we achieved 31% of our spent are already rated by EcoVadis. Using the Carbon Action Scorecard of EcoVadis we are provided with a maturity status of a prospective supplier regarding carbon management and mitigation. Engagement on the subject of emissions also highlights to potential suppliers that reducing CO<sub>2</sub> is a key priority for the Group, which is expected to drive changes in supplier behaviour and energy use in the long term.

# Strategy



#### Climate strategy

Driving down carbon emissions is a key priority for RHI Magnesita. Besides mapping out our own transition path, we would like to be a reliable ally to our customers as they venture into a carbon-reduced economy.

The Group's emission reduction plans target a 15% reduction in  $\mathrm{CO}_2$  emissions intensity for Scope 1, 2 and 3 (raw materials) emissions by 2025, compared to 2018. Our climate strategy is based on:

- reducing the carbon footprint of our raw materials, including through the increased use of circular raw materials;
- 2. increasing energy efficiency in our operations;
- 3. reducing the carbon intensity of our energy sources; and
- 4. providing innovative solutions to reduce customer emissions.

All risks and opportunities were assessed in a qualitative scenario analysis, and the most material climate-related risks and opportunities (those with an inherent risk or opportunity rating of 'high') underwent quantitative scenario analysis to help better estimate the potential financial impact on the business.

For our analysis, we used two climate scenarios to understand the potential range of impacts. The climate scenarios were considered based on the Intergovernmental Panel on Climate Change Fifth Assessment Report and the International Energy Agency ('IEA') Sustainable Development Scenario. The scenarios consider greenhouse gas concentration trajectories in the atmosphere and relate to a 1.5°C—2°C, and >4°C increase in the global average surface temperature in 2100.

Below 2°C increase (RCP 2.6): Uses the Intergovernmental Panel on Climate Change ('IPCC') Shared Socio-economic Pathway (SSP) 1 — 2.6 and the International Energy Agency ('IEA') Sustainable Development Scenario. This scenario assumes a gradual buildup of climate policies over time and predicts that through the implementation of moderate mitigation measures, global net zero emissions can be achieved by 2070.

 Hot house World (RCP 8.5): Associated with approximately 4 degrees of global warming, based on the IPCC's SSP 5 — 8.5 scenario. This scenario assumes that without actions to limit emissions, it is likely the rise of emissions, leading to a variety of physical risks and substantial impacts.

We have conducted our analyses across three different time horizons. The short-term (2025) sits within our short-term business plan, while the medium (2030) and long-term (2050) time horizons are oriented towards the broader international policy developments, including the Paris Agreement and the EU Green Deal.

Having reviewed the analysis, the Corporate Sustainability Committee believes the Group is well positioned to mitigate the risks and embrace the opportunities associated with the climate-change related developments across both scenarios. These could range from disruptive regulatory developments, physical hazards for our operations or new business opportunities. The Group believes that through monitoring market developments and enhancing its business adaptability and planning, RHI Magnesita can maintain a strong level of climate resilience over the short, medium and long-term across both scenarios. We remain committed to supporting our customers' decarbonisation efforts as well as actively managing our own



## Strategy

continued

## Decarbonisation of refractory production

Refractory production is a 'hard to abate' industry. Raw material processing generally uses fossil fuels for ignition and burning of carbonate rock, which results in significant geogenic  $\mathrm{CO}_2$  emissions. These geogenic emissions are classified as Scope 1 when resulting from the Group's own production or Scope 3 in the case of externally purchased raw materials.

Significant energy is also required for firing of products in the refractory manufacturing stage. Further emissions are generated in the shipping and distribution of refractory products to customers worldwide.

Through its investment in research and development of emissions avoidance or reduction technologies, the Group has developed a theoretical pathway to decrease its Scope 1, Scope 2 and Scope 3 (raw materials) carbon emissions from refractory production to close to zero. Figure 2 displays the RHI Magnesita theoretical pathway for CO<sub>2</sub> reduction. Stage 1 (red) shows the CO<sub>2</sub> reductions that can be achieved through measures taken by the Group itself. Stage 2 (dark grey) estimates the reduction that would be achieved by the implementation of CCSU measures. Stage 3 (medium-dark grey) estimates the reduction of CO<sub>o</sub> emissions that would be achieved by the implementation of green energy use, including hydrogen. Lastly, stage 4 (very light grey) estimates the reduction of CO<sub>2</sub> emissions in the supply chain related to the Group's raw materials. The required measures have been prioritised in order of deliverability, with those the items that are fully within the control of the Group to be expedited.

#### Offsetting carbon emissions

The Group has significant  $\mathrm{CO}_2$  emissions within its own value chain and there are large emissions savings that can be delivered for its customers through improved heat management or other solutions. The Board therefore considers that the priority should be to allocate capital and other resources to reducing the Group's own  $\mathrm{CO}_2$  footprint and the emissions of its customers rather than investing in carbon offset projects. The Board believes that taking this approach will deliver a faster, greater and more sustainable decrease in net  $\mathrm{CO}_2$  emissions than could be delivered by allocating capital to offsets.

The first stage of CO<sub>2</sub> emissions reduction is to be delivered through measures which can be implemented by the Group without significant external support, including increased use of recycled raw materials, fuel switches and energy efficiency measures. It is estimated that these measures could deliver an absolute reduction of around 1 million tonnes of CO<sub>2</sub> emissions, or 20% of the baseline total by 2035. Beyond this initial reduction, decarbonisation measures become progressively harder to deliver. Recycling has a natural ceiling since refractories are consumed during use and only residual materials can be reclaimed, whilst fuel switches to natural gas only offer a partial reduction. The pathway for stages 2 to 4 is reliant on the provision of (i) new infrastructure or renewable energy sources such as hydrogen by outside parties; (ii) the use of technologies which do not yet exist or are not proven at pilot or production scale and (iii) significant capital expenditure, which may not be possible for the company to generate from its existing operations, obtain from its finance providers or receive via government funding.

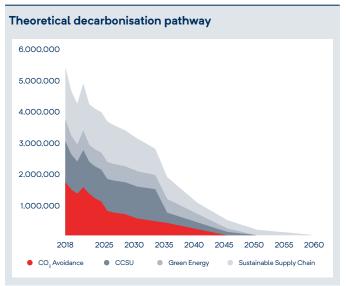
The costs of emitting carbon, which could provide an incentive to accept higher capital expenditure and operating costs for the purposes of reducing  $\mathrm{CO}_2$  emissions, apply in certain jurisdictions and provide a business case for reducing emissions in those geographies. Estimates of future potential  $\mathrm{CO}_2$  costs are built into the Group's financial forecasts and planning decisions. However, the Group has a global production and customer network and competes with other refractory producers who are not subject to additional  $\mathrm{CO}_2$  costs.

#### Our decarbonisation commitment

Working within these limitations, the Group is committed to:

- Leading the refractory industry by decarbonising its operations as fast as sustainably possible.
- Annually updating its decarbonisation pathway based on the latest developments in technology, infrastructure and estimated capital expenditure.
- Continuing to invest in the development of new technologies to avoid CO<sub>2</sub> emissions, proving our technical readiness to use alternative low-carbon energy sources and to capture CO<sub>2</sub> emissions for storage or utilisation.
- 4. Offering our customers enabling technologies for their own low-carbon production technologies together with low-carbon products and heat management solutions (with full transparency on carbon footprint) to enable them to reduce their Scope 3 CO<sub>2</sub> emissions from the purchase of refractories.
- Lobbying governments to invest in the necessary infrastructure to decarbonise the refractory industry and other energy intensive industries, including additional renewable energy generation, hydrogen supply networks, CO<sub>2</sub> transportation and storage and carbon capture and utilisation technologies.
- Working with partners in the private sector to develop new renewable energy solutions, hydrogen energy networks and carbon capture and utilisation technologies.

Figure 2. Theoretical decarbonisation pathway





#### Climate risks management

The Group has an established risk management approach with the objective of identifying, assessing, mitigating, monitoring and reporting uncertainties and risks that could impact the delivery of RHI Magnesita's strategy. Since the environment and climate change represent both strategic and operational risk to our business, they are considered as RHI Magnesita's principal risks (see Annual Report 2022 page 47). Several mitigation measures are in place to ensure that the risk is appropriately managed and within the Group's risk appetite.

Risks were grouped as physical risks and transitional risks.

Physical risks include greater severity of flooding, droughts or other extreme weather events which could disrupt our operations and supply chain.

Transitional risks range from regulatory frameworks and the rising price of carbon to the viability and customer acceptance of emerging technologies.

Our most material climate-related risks and opportunities result from disruptive regulations for CO<sub>2</sub> emissions reduction.

In 2022, the Group has updated the modelling and analysis of climate related transitional risks and opportunities that are foreseen to impact the Group over the short, medium, and long-term horizons. Results shown that physical risks remained unchanged, and the impact of transitional risks was reviewed (see table 2).

#### Short term (2025)

Our first set of sustainability targets are planned within this timeframe. We are also actively monitoring emerging trends and opportunities that may require us to adjust our strategic plans. We are committed to staying agile and adapting our plans as needed to ensure that we remain competitive in the marketplace and continue to meet our sustainability goals, specially our 2025 climate related target. (For more information, see our Annual Report, 2025 Targets Page 61.)

#### Medium term (2030)

This is the most likely horizon for the regulatory frameworks (such as the EU Emissions Trading System and Carbon Border Adjustment Mechanism) adopted in 2023 with a 3 years transition period for selected sectors. It is expected an expansion to all sectors under EU ETS from 2030 thus having partial effect due to the gradual phase out of free allocations. We are anticipating and considering major adjustments to our industrial footprint.

#### Long term (2050)

The deadline that has been set by the United Nations and many policy–making bodies to set decarbonisation goals is the year 2050. During 2021 and 2022, we completed a detailed assessment of all possible measures to reduce  $\mathrm{CO}_2$  emissions in our operations based on proven technology and available financial resources. Whilst it may be possible to reduce emissions in line with a 'well below 2 degrees' scenario, it is our current

assessment that it is not possible to set a target that is aligned with a 1.5-degree scenario which is not dependent on the development of as-yet unknown technologies or significant external financial and infrastructure support.

We are committed to reduce our carbon footprint and we will continue to monitor the variables which support this conclusion and update our transition plan accordingly if the Group's own research and development activities result in the development of new technologies that could deliver a faster reduction in  $\mathrm{CO}_2$  emissions that is financially achievable.

## Transition-related risks and opportunities

Operating in an emissions intensive industry, it is likely that RHI Magnesita's business model will be affected by the transition to a low-carbon economy. As well as risks, there are a number of significant opportunities that the Group is well positioned to benefit from.

Table 2 illustrates the material climaterelated risks and opportunities selected for quantitative scenario analysis.



continued

Table 2. Climate-related transitional risks and opportunities

Climate Drivers	Risk/Opportunity	Category	Impact (see reference table)	RHI Magnesita response and	d strategy	Main affected Time Horizon	Related metrics and targets
Policy- Making & Regulatory Pressure	Carbon Pricing	Risk	RHI Magnesita foresees a significant impact due to the increase in operating costs because of increase in level or scope of carbon pricing	The Group integrates of projections into its final has a hedging program future exposures  We are developing new such as carbon capture storage to reduce our e€50 million in research of these solutions  The Group aims to incresecondary raw materia CO₂ emissions comparor purchase of fresh raw  We will continue to inverse wheeling as additional mitigation our carbon intensity	ncial planning and one in place to fix we technologies, e and utilisation/emissions, investing hand development tease the use of all which will reduce red to the mining we material rest in fuel switching, energy efficiency	Medium- Long Term	We have set a 15% emissions intensity reduction target by 2025 on a 2018 baseline of Scope 1, 2 and 3 raw materials emissions. By the end of 2022, our emissions intensity was 8% lower than the 2018 baseline
Market & Customers	Increased demand for the Group's products arising from the development of or transition to lower-carbon emitting industrial processes by our customers	Opportunity	RHI Magnesita foresees a low financial impact regarding the increased demand from customers for refractory products that help them reduce their emissions is considered low (e.g. EAF)	We are already providing with refractory production account for 80% of our electric arc furnaces for which is an enabling teamissions reduction. RHI Magnesita has a high in lower CO <sub>2</sub> emitting as as EAF) and a lower religion high emitting applicibles Furnace. We will continue to officiand carbon services are including process opting services, coating techniculations.	ts that support low cesses. This includes customers who or business. For roducts supporting or the steel industry, echnology for CO <sub>2</sub> gher market share applications (such ative market share ations (e.g. BOF, er our low energy d product offering misation, recycling	Short- Medium- Long Term	Sales of refractory products supporting electric arc furnaces, associated with the lower carbon production of steel, was 552 million in 2022
Market & Customers	Increased demand for RHI Magnesita products that are produced with lower carbon footprint	Opportunity	Higher revenue due to increased demand for low-carbon (e.g. recycled) refractory products	In the short term, increof secondary raw mate products will help us to geogenic emissions from and create attractive low In the longer term, if that developing and operate and sequestration or ut technologies and swittenergy sources, refract be manufactured with zero CO2 emissions This is expected to tran and/or market share ad to competitor products particularly as custome their Scope 3 emission	rial (SRM) in our preduce our construction of the construction of	Short- Medium- Long Term	We have set a target of 10% SRM content in refractory products by 2025. We achieved 10.5% of secondary raw material content in 2022 (2021: 6.8%) Ur target is to reduce CO <sub>2</sub> intensity by 15% by 2025

Opportunities			Risks			
High	>€875m		High	>€875m		
Medium	€175m-€875m		Medium	€175m-€875m		
Low	<€175m		Low	<€175m		

continued

#### **Risks**

RHI Magnesita's main risk is the additional operating expense resulting from carbon pricing developments. The financial impact of this risk has increased due to implementation of Carbon Border Adjustment Mechanism (CBAM) in Europe, which is an EU policy instrument designed to level the playing field for domestic producers subject to carbon pricing by implementing a carbon-based import tariff on goods from countries without equivalent carbon pricing. The CBAM is designed to protect domestic producers from competitive disadvantages resulting from carbon pricing by making imports from countries without equivalent carbon pricing more expensive. This mechanism would help to ensure that domestic producers and consumers are not put at an economic disadvantage by having to bear the cost of carbon pricing, while their international competitors do not. The CBAM is intended to incentivise countries to adopt similar carbon pricing policies, thereby reducing the global emissions of greenhouse gases.

The implementation of the Carbon Border Adjustment Mechanism (CBAM) is expected to have a financial impact on the Group from 2030 onwards as free carbon allowances under EU-ETS are phased-out. This is due

to levies on imported materials, which are designed to protect the EU domestic business. This is expected to increase refractory pricing for all suppliers selling into the EU. Additionally, products manufactured in the EU and then exported will incur higher costs, as there are currently no compensation mechanisms for exporters. The financial impacts of the CBAM have been included in the Group's updated TCFD modelling, resulting in impact on equity value ranging from €193 million to €320 million.

#### **Opportunities**

Two opportunities were identified
(i) increased demand for products that
customers will require for technology
transition, e.g. EAF refractories, and
(ii) increased demand for low-carbon
refractory products containing recycled
raw materials.

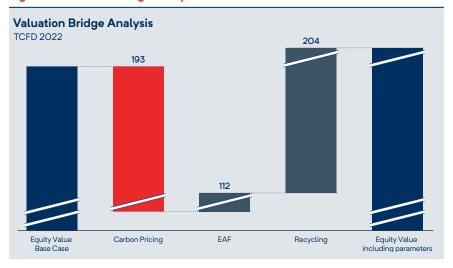
The steel industry is undergoing a decarbonisation process which is predicted to continue into 2050 and beyond. This megatrend has led to an increased demand for electric arc furnaces (EAF) and electric smelter furnaces. As the pressure to reduce carbon emissions intensifies, RHI Magnesita is well–positioned to benefit from this growing trend. With its vertically integrated model,

RHI Magnesita has access to the raw material required for an electric arc furnace from its European mines in Austria, Hochfilzen and Breitenau. This gives RHI Magnesita a competitive edge and makes it the leading refractory partner of choice in the green transition of the steel industry. (Read more on decarbonising across industries on Annual Report 2022, page 21.)

Besides that, in the first half of 2022, RHI Magnesita entered into a joint venture with Horn & Co. to combine their recycling activities in Europe and increase production, use and offering of secondary raw materials. This will result in a significant decrease in CO<sub>2</sub> emissions. The newly formed entity, MIRECO (Horn & Co. RHIM Minerals Recovery GmbH), will be positioned at the forefront of the circular economy, providing services to customers in steel, cement, glass and other process industries. (Read more on decarbonising our products on Annual Report 2022 page 21.)

The net impact on equity value of these opportunities combined is +£123 million (2021: +£352 million).

Figure 3. Valuation Bridge Analysis



continued

#### Physical-related risks

The Group assessed its major production sites and strategic port locations across a broad range of physical climate hazards. The following table presents 7 highest risk assets were selected for 'deep dive' analysis. These sites remain in the 'Moderate' or 'High' VAR¹ categories across 2023, 2030 and 2050 and both scenarios. We considered the impacts including asset damage, disruption to operations and impacts on the value chain (upstream and downstream). Riverine flooding was identified to be the most dominant hazard to our portfolio in relation to value at risk of damage across both scenarios and all three-time horizons.

The results of the assessment indicated that impact of physical risks is limited. Our current insurance coverage provides sufficient coverage for asset damage and operational disruption. The assessment did not indicate that there are likely to be any material increases in the cost or coverage of insurance in the future. The results of the assessment will be used to guide resilience building within our operations and value chain.

This assessment will be reviewed to include the new assets RHI Magnesita has acquired during the year 2022.

Climate risks also form part of our third CDP climate submission, for which we were awarded a A-rating by CDP in December 2022.

Table 3. Climate-related physical risks

			R	CP 8.5	RCP 2.6		
Country	Plant		Likelihood	Dominant hazard	Likelihood	Dominant hazard	
India	Cuttack	2025	High	Riverine Flooding	High	Riverine Flooding	
		2030	High	Riverine Flooding	High	Riverine Flooding	
		2050	High	Riverine Flooding	High	Riverine Flooding	
France	Flaumont	2025	Moderate	Riverine Flooding	Moderate	Riverine Flooding	
		2030	Moderate	Riverine Flooding	Moderate	Riverine Flooding	
		2050	Moderate	Riverine Flooding	Moderate	Riverine Flooding	
Mexico	Tlalnepantla	2025	Moderate	Soil Subsidence	Moderate	Soil Subsidence	
		2030	Moderate	Soil Subsidence	Moderate	Soil Subsidence	
		2050	Moderate	Soil Subsidence	Moderate	Soil Subsidence	
Brazil	Vale do Aço	2025	Moderate	Riverine Flooding	Moderate	Riverine Flooding	
		2030	Moderate	Riverine Flooding	Moderate	Riverine Flooding	
		2050	Moderate	Riverine Flooding	Moderate	Riverine Flooding	
Mexico	Ramos Arizpe	2025	Moderate	Soil Subsidence	Moderate	Soil Subsidence	
		2030	Moderate	Soil Subsidence	Moderate	Soil Subsidence	
		2050	Moderate	Soil Subsidence	Moderate	Soil Subsidence	
US	Ashtabula	2025	Moderate	Forest Fire	Moderate	Forest Fire	
		2030	Moderate	Forest Fire	Moderate	Forest Fire	
		2050	Moderate	Forest Fire	Moderate	Forest Fire	
China	Chizhou	2025	Moderate	Forest Fire	Moderate	Forest Fire	
		2030	Moderate	Forest Fire	Moderate	Forest Fire	
		2050	Moderate	Forest Fire	Moderate	Forest Fire	

<sup>1.</sup> MVAR is a measure of the annual risk of damage to an asset. The MVAR captures the costs of expected extreme weather and climate-related damage, relative to the replacement cost of the building.

# Metrics and targets



#### **Metrics and Targets**

We continue to publish our Scope 1, 2 and 3 (raw materials) GHG emissions within our Annual Report. In 2022, the Group's new product carbon footprinting methodology was independently verified and we are in the process of integrating monthly monitoring of  $\mathrm{CO}_2$  into our SAP enterprise resource planning tool. Reducing  $\mathrm{CO}_2$  emissions was introduced as a remuneration target in 2021 and now accounts for 10% of the annual bonus for all eligible employees.

In addition to that, in 2022, the Group completed a major project to increase transparency for its customers by disclosing the carbon footprint of its c.200,000 refractory products. The calculations follow the principles of ISO 14067 standard and include all scope 1 and 2 emissions, as well as relevant scope 3 emissions related to the manufacturing process (known as 'cradle-togate' greenhouse gases from raw material extraction to production and packaging).

#### **Tracking our Progress**

We use metrics and targets to track our progress in relation to our material climate-related risks and opportunities.

#### **Outlook**

We recognise the importance of understanding our risk and opportunity landscape in guiding our climate strategy. In addition to charting our own transition, we want to be a trusted partner to our customers on their journey to net zero. We will further deepen our climate related initiatives in the coming years to help us to continue to be a sustainability leader within the sector.

#### Our carbon emissions<sup>1</sup>

	Absolute emissions (thousand tonnes of CO <sub>2</sub> )					
	2018	2019	2020	2021	2022	
Scope 1	2,400	2,007	1,973	2,499	2,193	
of which geogenic emissions	1,305	1,066	1,075	1,340	1,112	
of which fuel-based emissions	1,045	918	873	1,146	1,082	
of which other emissions	50	24	25	14	_	
Scope 2	208	188	143	147	89	
Scope 3 (only raw materials)	2,875	2,506	2,181	2,404	1,912	
Total	5,483	4,702	4,297	5,050	4,196	
Carbon Intensity						
(t CO <sub>2</sub> /t product) <sup>2</sup>	1,90	1,89	1,97	1,85	1,75	
Biogenic Scope 1 emissions	5	8	10	13	13	

 Historical CO<sub>2</sub> emission data were revised to reflect new acquisitions and changes that were made following an external verification process that took place in July 2022.

 Adaptations in line with the Greenhouse Gas protocol and refinement in reporting result in updated CO<sub>2</sub> intensity figures for 2018–2022.

