

Non-financial disclosure

Task Force on Climate-related Financial Disclosures (TCFD)

Croda has long recognised the scale of the climate emergency, which we believe creates both opportunities and risks to our future growth. We develop innovative products which help our customers to reduce their own carbon footprint and we set stretching climate related targets as part of our Climate Positive Commitment to 2030 (page 12).

On pages 60 to 68 of this report we summarise material climate related disclosures consistent with the four pillars and 11 disclosures proposed by the TCFD, including the ‘Implementing the Recommendations of the Task Force on Climate-related Financial Disclosures’ released in October 2021. We also reference links to further information which can be found in our Annual Report, Sustainability Report (SR) and online factsheets to support compliance. We cross refer to our Sustainability Report throughout this TCFD section as that report offers us additional space to explain our strategic Climate Positive commitment, illustrate this through case studies (SR pages 22-27) and explain our targets, metrics and progress in more detail (SR pages 36-39). We continue to work to remain aligned with evolving climate and non-financial disclosure requirements as required by the Listing Rules.

Governance

	How we comply	What we have done in 2022	Next steps and timeframes supporting further improvement
a) Describe the Board's oversight of climate related risks and opportunities	<p>As one of the three pillars of our Commitment (page 12), climate risks and opportunities are core to our overall strategy and as such the Board considers climate related issues as part of its annual review of the strategy described on page 81. The Board is accountable for all risks, including those relating to climate and reviews these annually. It receives a quarterly report from the Chief Sustainability Officer (page 78) which considers progress against climate targets, including the risks to delivering these in the highlights and lowlights sections of the report. The Board approves significant capital expenditure and acquisition proposals and has oversight of the innovation strategy, considering how these align with our climate and decarbonisation goals.</p> <p>The Remuneration Committee agrees climate related performance objectives which are incorporated into senior leadership remuneration (page 107).</p> <p>The Board guides the leadership values we look for in Croda to ensure we build future leadership capabilities to include sustainability and decarbonisation know-how.</p>	<p>Board considered sustainability strategy and targets including sustainability of innovation technology platforms (pages 75).</p> <p>As part of a focus in 2022 on sustainability (page 81) the Board undertook a review of corporate level risks and opportunities associated with climate, considered future compliance with rapidly changing reporting frameworks and progress towards delivering 2030 targets.</p> <p>Review of major capital expenditure considered the impact of new technology on our net zero carbon ambition (Dahej case study on page 81).</p> <p>The Audit Committee considered the results of the FRC's review covering TCFD disclosures and climate in the 2021 Annual Report (page 99).</p>	<p>Consider sustainability competence and experience as a criteria for Non-Executive Director appointments in 2023.</p> <p>Deliver climate education for the Board.</p>
b) Describe management's role in assessing and managing climate related risks	<p>The Board delegates responsibility for running the business to the Chief Executive, which includes responsibility for managing climate related issues. A sub-committee of the Executive, the Sustainability Committee, meets at least quarterly (page 87) chaired by the Chief Sustainability Officer, who is supported in this role by an internal centre of excellence, the Group Sustainability team. The Committee comprises senior leaders (including an executive sponsor for Climate Positive, the President of Global Operations, Mark Robinson) from across the business, each of whom has a responsibility to identify further strategic opportunities, understand the risks posed in delivery of the strategy, monitor progress towards declared targets and to develop and coordinate group wide engagement with our sustainability targets.</p> <p>Our global Sustainability Professionals Network and local sustainability champions facilitate best practice sharing throughout the organisation and are supported by the Group Sustainability team. Our organisation structure is included on page 17 of the Sustainability Report.</p> <p>Through our risk management framework (page 52) climate related risks are captured, assessed, mitigated and owned at the appropriate level of the organisation.</p>	<p>Created our global Sustainability Professionals Network, described on page 14 of our Sustainability Report. Sustainability champions supported the development of decarbonisation roadmaps for every Croda location. Invited all Croda employees to regional carbon summit webinars, presenting an update on our decarbonisation progress and initiatives and answering questions.</p>	<p>More completely define the role of sustainability champions in cascading communication on climate throughout the organisation.</p> <p>Review the terms of reference and composition of the Sustainability Committee in the light of Croda's strategy to become a pure play Consumer Care and Life Sciences company.</p>

Strategy

	How we comply	What we have done in 2022	Next steps and timeframes supporting further improvement
<p>a) Describe the climate related risks and opportunities the organisation has identified over the short, medium and long term</p>	<p>Our definition of short, medium and long-term time horizons is included on page 63 and are aligned with our strategic commitments to 2030, with milestones for delivery set for 2024.</p> <p>Climate related, physical and transitional risks and opportunities are assessed using our global risk framework, described on page 53 of this report. They include increased raw material costs, carbon pricing, emerging regulation and the effects on our people and working environment. The four most impactful climate related risks, and how these were selected, are described in more detail on page 66 of this report, together with a summary of other less impactful risk themes identified from our bottom-up risk registers.</p>	<p>The Sustainability Committee reviewed all climate related risks identified from our bottom-up risk registers, and engaged the global operations team in discussion of these risks, identifying actions for further improvement and clarity.</p>	<p>Using the bottom-up risk themes identified in 2022, we will undertake a detailed review of all risk assessments with the risk owners to align assessments globally and to challenge the mitigating controls identified at local level.</p>
<p>b) Describe the impact of climate related risks and opportunities on the organisation's businesses, strategy and financial planning</p>	<p>Delivery of climate related commitments identified in our Climate Positive strategy form a core part of our overall business strategy and as such the impact of not delivering our climate related objectives is significant. We reflect this in our principal business risks on page 56. The financial impact of the four highest risks in our register is described in more detail on pages 66 to 68 of this report.</p> <p>We include a GHG emissions metric in a revolving credit facility (RCF), with carbon emission targets in the seven year agreement aligning with our 2030 Climate positive commitments (SR page 24). Savings are reinvested into the decarbonisation capital expenditure programme.</p> <p>Since 2020 we have applied an internal shadow carbon price to capital investment to help to prioritise projects that will reduce scope 1 and 2 emissions (SR page 24). All capital projects over £100k are required to complete a sustainability impact assessment. The impact of increased capital cost on impairment and useful economic life is considered on page 164.</p> <p>Since 2021 carbon budgets have been presented annually alongside the financial budgets at regional and sector level, which consider the impact of the short and long-term site decarbonisation plans.</p>	<p>A full review of the impact of climate change on fixed asset useful economic lives was completed in 2022, which concluded no material changes were required (page 164).</p> <p>All sites have now defined a 'decarbonisation roadmap' (see page 24 of the Sustainability Report for more details) which will be used to direct future capital and development plans.</p> <p>Shadow carbon price was increased from £55/tonne to £124/tonne in line with the UK Government's Green Book, highlighting the increasing importance of taking action to avoid exposure to the cost of carbon (see page 24 of the Sustainability Report for more details).</p>	<p>Sector teams will finalise 2030 decarbonisation roadmaps to include scope 3 emissions, enabling the sectors to make portfolio management decisions incorporating carbon footprint data, which will inform the development of the next generation of low carbon products.</p>
<p>c) Describe the resilience of the organisation's strategy, taking into consideration different climate related scenarios</p>	<p>Supported by external consultants, Accenture, we undertake detailed climate scenario analysis (CSA) of the most impactful climate related risks identified against three future climate related scenarios to assess our resilience to these risks. Under each scenario we consider impact across six, five year time periods, which is significantly in excess of our strategic planning horizon but is in line with our commitment to be net zero and our SBT targets. Our methodology is described in more detail on page 63.</p>	<p>In 2022 the Sustainability Committee reviewed the climate related risks to confirm those with the highest impact, for which scenario analysis was repeated (page 66).</p> <p>Baseline assessments and all scenarios were updated to reflect the divestment of the PTIC business. Although some changes were identified we concluded these would not materially impact our Climate Positive strategy.</p>	<p>Begin developing net zero roadmaps based on technology platforms, in addition to the individual site level roadmaps, to support the transformation and future preparedness of our business to grow.</p>

Non-financial disclosure continued

Task Force on Climate-related Financial Disclosures (TCFD) continued

Risk management

	How we comply	What we have done in 2022	Next steps and timeframes supporting further improvement
a) Describe the organisation's processes for identifying and assessing climate related risks	<p>The process for identifying climate related risks, assessing both their impact and likelihood, is fully embedded as part of our global risk management process which is described on page 53. New and emerging risks and opportunities can be identified at a local level (mainly physical risks) or by the Sustainability Committee (emerging risks requiring action to be driven globally, or requiring more granular analysis). We have used the TCFD framework to support our assessment of climate related risks.</p> <p>Impact and likelihood scoring for all risks uses the 6 point scoring methodology defined in the Group risk framework.</p> <p>Emerging risks and opportunities include those resulting from the rapidly evolving climate and sustainability regulation. In both cases a business owner is identified, and the risk is assessed for both impact and likelihood using the global risk framework. As the impact of emerging risks on specific sites or regions is understood, local business owners are identified, and the risks are moved to local risk ownership to drive mitigating actions.</p>	<p>Regulations are changing rapidly at present and we have worked with external consultants to identify those which are relevant to Croda to enable us to assess the opportunities and risks relating to the changes.</p>	<p>Consider the implications of the International Sustainability Standards Board (ISSB) and the EU Corporate Sustainability Reporting Directive (EU) 2022/2464 (CSRD) on our reporting requirements, and whether these offer future opportunities and risks.</p> <p>Complete a gap analysis of our global footprint against emerging and current climate regulation to identify emerging risks.</p>
b) and c) Describe the organisation's processes for identifying and managing climate related risks, and how these are integrated into the organisation's overall risk management	<p>Our group risk framework, described on page 53, includes risk/opportunity areas across six categories and 17 subcategories, against which risk owners identify local interpretations. Sub-categories most relevant to climate include growth (organic and inorganic), innovation, production, sourcing, supply chain, and external environment, which incorporate the risks and opportunities referred to in appendix 1 of Implementing the Recommendations of the Task Force on Climate-related Financial Disclosures June 2017.</p> <p>Whole Group transitional and emerging risks and opportunities are currently identified by the Sustainability Committee through the 'sustainability risk register'. When fully defined, these risks are migrated into the appropriate local risk register and transferred to local ownership. This includes risks identified through scenario analysis.</p> <p>Local physical climate related risks (both acute and chronic) are already embedded and managed in local risk registers with local owners and mitigation actions defined.</p>	<p>During 2022 the Risk Committee (page 53) received a presentation from the Chief Sustainability Officer on management of climate related risks as part of a focus review of sustainability risks.</p> <p>In addition, the Sustainability Committee undertook a full review of the local climate related risks, identifying some regional inconsistencies which will be addressed in 2023.</p> <p>We recruited a Group ESG Reporting Manager (SR page 19) to work with the pillar owners and sites to further embed risks, mitigating actions and controls.</p>	<p>Work with most material sites to ensure that mitigating actions are embedded in site plans.</p> <p>Address regional inconsistencies in local risk registers relating to physical climate risks.</p> <p>Ensure that risks to the delivery of site level carbon roadmaps are identified in the local risk registers where they are owned and managed.</p>

Climate scenario analysis (CSA) methodology

The CSA was conducted using a standard methodology in line with the TCFD's guidance. Climate scenarios defined primarily by the Network for Greening the Financial Systems (NGFS) and supplemented with comparable Shared Socioeconomic Pathways (SSP) and Orbital Finance scenarios, were used to model the potential climate related risks and opportunities that Croda may be exposed to, which were identified through our risk assessment process described in more detail on pages 62 and 66 of this report.

Three climate scenarios

	Orderly	Disorderly	Hot House World
Description	Assumes climate policies are introduced early and become gradually more stringent. There is increased international coordination and commitment to achieving development goals that reduce inequality across and within countries. Consumption is generally oriented toward low material growth as well as lower resource and energy intensity.	Assumes uneven commitment to climate policies with some countries making relatively good progress while others fall short of expectations. Disorderly scenarios exhibit higher transition risks due to coordinated policies being delayed to latter half of the century and medium-term and immediate progress being divergent across countries and sectors.	Assumes the drive for economic and social development is coupled with increased emissions due to continued consumption of fossil fuels and the adoption of resource and energy intensive lifestyles around the world. Climate policies are implemented in some jurisdictions, but global efforts are insufficient to halt significant warming.
NGFS scenarios	Net Zero 2050	Delayed Transition, Divergent Net Zero	Current Policies
SSP scenarios	SSP 1-2.6	SSP 2-4.5	SSP 5-8.5
Orbitas scenarios	Co-ordinated Projects	-	BAU Projections
Estimated 2100 warming	1.5-2°C	2-3°C	3°C+

Three time horizons:

Short-term: to end 2025, this is aligned with our time horizon used in our viability assessment (page 59) with our interim sustainability milestones focused on delivery by or ahead of this date.

Medium-term: to end 2030, this is aligned to our Commitment to be Climate, Land and People Positive by 2030.

Long-term: to end 2050, this is aligned to our Commitment to be net zero by 2050.

Six time points:

The assessment considered six time points, each five years apart, from 2025 to 2050, with 2030 reflecting our medium-term timeframe.

Defining financial impact materiality:

Risk impact is assessed using the same six point financial impact scale used in our group risk framework and is colour coded as follows:

Risk impact score	Financial impact
1-2	Opportunity – Minor Impact
3-4	Low – Moderate Impact
5-6	High – Critical Impact

Building the scenarios:

The 2021 CSA model was used as a starting point with several steps taken to refine and refresh the analysis. The starting basis was updated to use actual financial and process data for 2021, re-baselined to remove the contribution of the majority Performance Technologies and Industrial Chemicals business divested in June 2022 and include the climate footprint of businesses acquired in 2021. Multi-disciplinary workshop groups were convened to review the assumptions for forecasting our growth (using financial assumptions used in our strategic forecasting process), and our demands for each of raw materials, energy and people. The baseline for our energy estimates and site water use are taken from our non-financial reporting system, Sphera, which is fed with quarterly actual data from all our sites globally.

Modelled in conjunction with external scenario data from the NGFS, Orbital Finance and SSP to forecast and quantify the potential levels of climate related financial risk in line with Croda's risk matrix, the results of our 2022 assessment are shared on pages 67 and 68.

For each transitional risk we also considered the impact under the assumption that Croda continues to operate as today (business as usual) and secondly that currently planned mitigating actions to meet our verified science based targets are successfully implemented. This clearly illustrates the significance of the mitigating steps Croda is taking.

Croda climate scenario analysis has been conducted at an organisational level, however regions or sites that have material contributions to the overall risks have been identified, affording the opportunity to account for any dominant locations in the assumptions used.

Non-financial disclosure continued

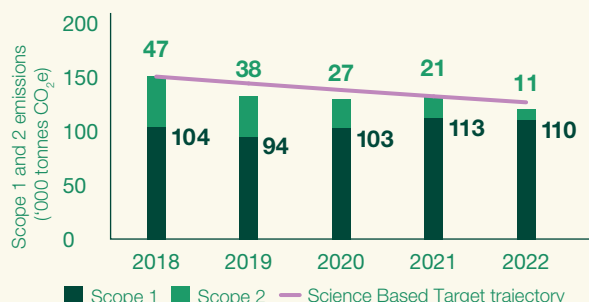
Task Force on Climate-related Financial Disclosures (TCFD) continued

Metrics and targets

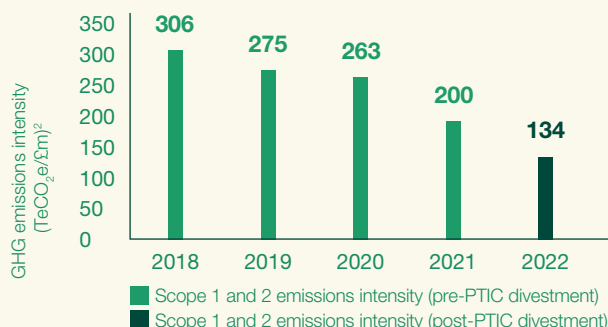
	How we comply	What we have done in 2022	Next steps and timeframes supporting further improvement
<p>a) Disclose the metrics used by the organisation to assess climate related risks and opportunities in line with its strategy and risk management process</p>	<p>Our sustainability strategy (page 22) defines strategic targets and milestones for 2030, progress towards which is reported quarterly to the Executive and Board. The metrics used to assess progress, and a description of the targets are presented in more detail in our Sustainability Report on pages 36, 39 and 40, and cover the following:</p> <ul style="list-style-type: none"> Reducing emissions Carbon cover Sustainable innovation Sustainable sourcing and supplier partnerships Environmental Stewardship Responsible Business Quality Assurance <p>Emissions metrics are recorded in our Sphera system by all Croda locations globally and this is the single source of data for reporting of these metrics. We include the 'reducing emissions' metric in our key metrics on page 48 and these are externally verified by Avieco (part of Accenture).</p> <p>The Remuneration Committee includes sustainability targets in the Performance Share Plan for senior executives currently relating to 10% of the award. In 2022 the targets selected related to reduction of scope 1 and 2 emissions, aligned with our external commitment to achieve a SBT in line with a 1.5°C pathway and the development of decarbonisation roadmaps (page 107).</p>	<p>A detailed description of the targets and our performance against these in 2022 is included in our Sustainability Report on pages 36, 39 and 40.</p> <p>As part of our due diligence around the divestment of the majority of the Performance Technologies and Industrial Chemicals business in June 2022 we rebaselined all relevant sustainability metrics back to our baseline year of 2018 and reviewed our 2030 targets (see case study in our Sustainability Report page 40). In every case we decided to maintain or increase the level our target ambition.</p> <p>Increased the shadow carbon price applied to capital expenditure proposals from £55/tonne to £124/tonne in line with UK Government recommendation.</p>	<p>Develop dashboards to next level of detail to make metrics and targets more transparent at regional and sector levels in addition to Board and Executive level reports.</p> <p>Complete detailed assessment of our current metrics against TCFD and emerging ISSB recommendations.</p>
<p>b) Disclose scope 1, scope 2 and, if appropriate, scope 3 greenhouse gas emissions and the related risks</p>	<p>Scope 1, 2 and 3 greenhouse gas emissions and our calculation methodology are disclosed on page 65. These are verified by Avieco (part of Accenture). Their formal independent verification statement is available at www.croda.com/carbonverification, which includes a summary of the calculation methodologies used.</p> <p>Our chosen calculation of carbon intensity is not industry standard and uses 'value add' as a measure of profit. This allows us to demonstrate how we are decoupling economic growth from environmental impact.</p>	<p>Developed corporate scope 3 dashboards to increase transparency of emissions data.</p> <p>Initiated carbon accounting to provide sectors with product carbon footprint data for the majority of our product portfolio.</p>	<p>Develop net zero roadmaps based on technology platforms rather than individual site level to support the transformation and future preparedness of our business.</p>
<p>c) Describe the targets used by the organisation to manage climate related risks and opportunities and performance against targets</p>	<p>We have set strategic targets and milestones for 2030 as described in section a) above. Progress towards meeting these targets is reported quarterly to the Executive and Board. All targets are absolute and are described in more detail on pages 36, 39 and 40 of our Sustainability Report.</p>	<p>A detailed description of the targets and our progress towards these in 2022 is included in our Sustainability Report pages 36, 39 and 40.</p> <p>A full non-financial data pack has been developed and is available on our website at www.croda.com/sustainability.</p>	<p>All non-financial metrics to be captured in Sphera in time for 2023 annual reporting, and to be fully linked to TCFD Appendices A1 and A2.</p> <p>Develop drill down reporting dashboards to ensure target delivery status is transparent across the Group.</p> <p>Achieve limited assurance of Climate Positive KPI's for 2023.</p>

Greenhouse gas emissions and intensity charts

GHG emissions¹



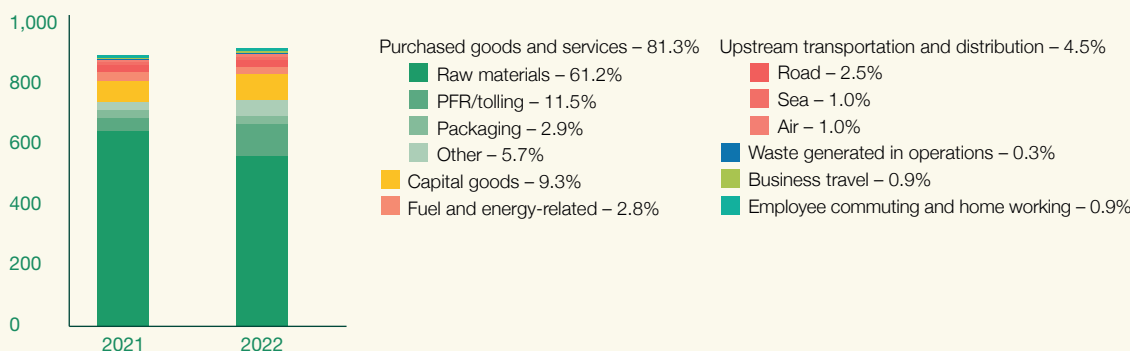
GHG emissions intensity (TeCO₂e/£m)²



Emissions and energy usage

	2022			2021		
	UK	Rest of world	Total	UK	Rest of world	Total
Scope 1/tonnes CO ₂ e	16,993	93,493	110,487	17,077	95,826	112,903
Scope 2/tonnes CO ₂ e	278	10,328	10,606	90	20,906	20,996
Total scope 1 and 2/tonnes CO₂e	17,271	103,822	121,093	17,168	116,732	133,899
Scope 1 energy use/kWh	90,562,665	584,713,998	675,276,663	91,857,495	567,545,663	659,403,157
Scope 2 energy use/kWh	22,428,163	177,840,733	200,268,896	21,468,075	183,808,298	205,276,373
Total energy use/kWh	112,990,828	762,554,731	875,545,559	113,325,570	751,353,961	864,679,531

2022 scope 3 emissions³ by category ('000 tonnes of CO₂e)



We have restated our historical scope 1, 2 and 3 carbon emissions, removing the divested PTIC operations. Our carbon reduction targets have been re-baselined to ensure our level of ambition remains unchanged (see non-financial data pack for details). Since 2018, our baseline year, our total scope 1 and 2 greenhouse gas (GHG) emissions have reduced by 19.8%. Within this, scope 1 emissions increased by 6% and we have seen a greater than 77% reduction in scope 2 emissions. This has been driven by a switch to renewable electricity across our manufacturing sites.

Scope 1 and 2 GHG emissions from our UK operations were 17,271 TeCO₂e in 2022 (2021: 17,168 TeCO₂e) representing approximately 14% of our global GHG emissions.

In 2022, scope 3 emissions increased by 3% (see page 24 of our Sustainability Report for more detail).

Emissions verification

Our scope 1, 2 and 3 GHG emissions are verified by Avieco, part of Accenture.

Emissions intensity

Our chosen measure of GHG emission intensity divides our GHG emissions (market-based scope 2 emissions) by value added², a measure of our business activity. The GHG emission intensity for 2022 has been calculated using verified scope 1 and scope 2 emissions data and estimated value added if the PTIC divestment had completed on 1 January 2022. Results for 2018-2021 use actual value added and scope 1 and scope 2 emissions inclusive of the divested locations. On this basis, our GHG emissions intensity has improved by 56% since 2018, illustrating how we are decoupling growth from our environmental impact.

Energy consumption and efficiency improvements

In 2022 we consumed 875,545,599 kWh (2021: 864,679,531 kWh) of energy across our global operations. This included 112,990,828 kWh (2021: 113,325,570 kWh) consumed by UK operations.

As part of our strategy to improve the efficiency of energy consumption, 26 projects were implemented globally, realising 17,180,619 kWh of annualised efficiency improvements, equivalent to 2,767 TeCO₂e avoided emissions.

1. Our GHG inventory has been completed in accordance with the Greenhouse Gas Protocol, Corporate Accounting and Reporting Standard (Revised Edition) using the operational controls approach. Scope 1 emissions are calculated using UK Government emission conversion factors for greenhouse gas company reporting. Scope 2 emissions are market-based.
2. Value added is defined as operating profit before depreciation and employee costs at reported currency.
3. Our scope 3 emissions are calculated in accordance with The GHG Protocol Corporate Value Chain Scope 3 standard and cover all relevant upstream categories. Scope 3 emissions are calculated using primarily LCA data, and where this is not available, an Extended Environmental Input-Output (EIO) model method – using spend data, to quantify the emissions associated with a sector of the economy in a given geography.

Non-financial disclosure continued

Task Force on Climate-related Financial Disclosures (TCFD) continued

Identifying our highest impact climate risks and opportunities

Climate related risks and opportunities are identified at all levels of our organisation and are assessed for both impact and likelihood using our global risk framework (page 53). Based on these bottom-up assessments, the Sustainability Committee complete an annual review and selected the four risks with the highest financial impact to investigate in more detail using scenario analysis. Based on the 2021 scenario analysis, the impact of climate on labour productivity was reduced, and this was not modelled in 2022. Following more detailed assessment undertaken throughout 2022, the impact of water usage was assessed as increased and therefore we have included water usage as a new scenario for assessment. We consider the geographical impact of these key risks below.

Transitional risks

Climate risk	Description of risk/opportunity	Geographical impact
Impact of carbon pricing on our emissions	Rising carbon emissions from our sites may impact profits through increased direct costs if emissions are taxed. Evolving local regulation in key markets and regions, such as the EU carbon border tax, will add further pressure.	Atlas Point is our largest contributor to scope 1 & 2 emissions and when viewed with our other manufacturing sites in North America this region is the most material, accounting for c.50% of our scope 1 & 2 emissions.
Impact of carbon pricing on the cost of utilities, particularly natural gas	The increasing cost of natural gas resulting from geopolitical issues in 2022 may increase further as a result of carbon pricing. Natural gas is a key utility used in our manufacturing process, accounting for 64% of our energy consumption.	Atlas Point is currently our largest consumer of natural gas and when viewed with our other manufacturing sites in North America this region is the most material, accounting for more than 50% of our natural gas consumption.

Physical risks

Climate risk	Description of risk/opportunity	Geographical impact
Climate change impact on the availability of natural raw materials	Potential changes in mean global temperatures are likely to affect the location, yield and type of crops grown around the world, with a resulting impact on raw material availability and cost. In 2022 palm oil derivatives formed a significant volume of our raw materials and this trend is expected to continue. As such the future change in the price of palm derivatives will have a direct effect on the cost of palm-based products/ingredients.	The use of palm oil derivatised raw materials is fairly evenly spread across our operations in Asia, North America and Western Europe with each using 25 – 40% of our total purchased palm oil derivatives.
Water usage	Changes in global climate can significantly increase/decrease precipitation at a given location over time. Potential changes in precipitation and reduced rainfall over extended periods are likely to affect water stressed locations by causing droughts. This can impact regional water supply and have financial implications for local industry.	Changes in global climate have varied localised effects and therefore periods of both high and low precipitation levels will become increasingly extreme and prolonged. Sites located in water stressed areas across Southern Europe, Northern Africa and Latin America are expected to face increasingly arid conditions.


Other climate related risks/opportunities identified

Other climate related risks currently assessed to have a lower impact are identified in our risk registers across products and services, distribution and supply chain, suppliers, R&D, operations and acquisitions and divestments. These were considered by the Sustainability Committee and confirmed as lower impact in 2022.


Non-financial disclosure continued

Task Force on Climate-related Financial Disclosures (TCFD) continued

Impact of climate change on raw material availability

Driver for assumptions	Risk profile and financial impact	Planned mitigations
<p>The potential changes in the cost of sales that Croda may be exposed to has been modelled using the future percentage increase of palm oil prices (Orbitas – Climate Transition Risk Analyst Brief: Indonesian Palm Oil) against the total volumes and price of palm oil derivatives purchased by Croda in 2021. Indonesia is the dominant origin of Croda’s supply (see Sustainability Report page 20).</p> <p>The cost of palm oil is forecast to expose Croda to varying levels of risk across the two different climate related scenarios – Current Policies and Net Zero 2050 – for which clear models are available.</p>	<p>In the Hot House World scenario, the cost of palm oil increase is limited, resulting in a low level of financial risk to the business out to 2035, at which point the cost of palm oil is forecast to drop below the 2021 baseline cost resulting in a cost saving opportunity for the business, driven by continual efficiency improvement in farming technologies (partially supported by Croda crop innovation) driving prices down.</p> <p>In an Orderly transition scenario, a predicted increase in the cost of palm oil (driven by increasing demand for palm oil as an alternative to fossil based oils for fuel) is expected to drive initially moderate impacts towards critical levels of financial risk by 2045.</p>  <p>(Orderly transition)</p>	<p>Roundtable on Sustainable Palm Oil (RSPO) certified palm oil cultivation leads to increased yields due to more efficient farming practices, increasing availability of palm and palm kernel oil without further deforestation. Being a leading voice in industry and working with coalitions such as Action for Sustainable Derivatives (ASD) to drive further industry transition to RSPO helps to mitigate the risks associated with increased pricing due to lack of availability.</p> <p>89.3% of our palm derivative purchases in 2022 were RSPO-certified and >95% of purchased volumes in 2021 were mapped back to either refineries, mills or plantations, working with ASD. For further details see page 20 of our Sustainability Report.</p> <p>Our focus on high value niches and differentiated products with unique characteristics also helps to mitigate this risk by enabling us to pass on raw material cost increases to our customers.</p>

Water usage

Driver for assumptions	Risk profile and financial impact	Planned mitigations
<p>An initial assessment to identify the nine most at-risk sites was conducted using the WRI Aqueduct tool for baseline water stress and site-level water use data.</p> <p>Forecasted precipitation data was collected under three SSP scenarios and the 12-month Standard Precipitation Index (SPI) was calculated to determine the occurrence of extreme drought conditions at each Croda site. Extreme drought conditions are correlated with low water supply and replenishment, affecting local industry.</p> <p>Extreme drought conditions were assumed to have financial implications on Croda’s water-stressed sites.</p>	<p>By following an orderly transition pathway, most costs associated with risk of water stress are mitigated and only minor financial implications are expected.</p> <p>Hot House World and Disorderly Transition scenarios infer a similar level of warming by 2050 and this will have low financial implications for Croda from 2040 onwards.</p>  <p>(Hot House World)</p>	<p>The outcome of this scenario analysis has demonstrated that there is no material financial risk associated with operating our sites in water stressed regions. However, as leaders in sustainability and as part of our social licence to operate, we plan to do more to support our local communities and the environment in which we operate. As part of our ambition to be Net Nature Positive by 2030 we are targeting a reduction in water use impact of 50%, focusing on sites in water stressed areas, including considering quality indicators and displacement effects. Our understanding of our water use impact both within our operations and upstream supply chain will present opportunities to support customers with their own nature targets and collaborate to ensure a greater positive impact for nature and society.</p>

Risk impact score	Financial impact
1-2	Opportunity – Minor Impact
3-4	Low – Moderate Impact
5-6	High – Critical Impact