



# The Value of our Plan

WORKING TOWARDS A GREENER FUTURE

Climate Change Report 2023



**Central Asia Metals Plc ('CAML') is an established low-cost, diversified base metals producer listed on the AIM market of the London Stock Exchange. Our purpose is to produce base metals, essential for modern living, profitably in a safe and sustainable environment for all our stakeholders.**

CAML owns 100% of the Kounrad solvent extraction and electrowinning (SX-EW) copper facility in central Kazakhstan and the Sasa zinc and lead mine in North Macedonia. In 2023, CAML also formed an 80% owned exploration Company, CAML Exploration ('CAML X').



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## Our reporting suite



Annual Report



Sustainability Report



Climate Change Report



Click to download the ESG Datasheet or scan the QR code to download

ESG Datasheet





# The Value of our Plan

As an organisation, we recognise the growing importance of understanding the impact of climate change on the environment in which we operate and its potential impact on our business.





# INTRODUCTION

In order to address climate change, CAML is committed to implementing a strategy that aligns with the global UN Sustainable Development Goals ('SDGs'). Our approach involves minimising carbon emissions and energy consumption throughout our operations and considering carbon emissions, energy and climate in our growth plans. We prioritise the adoption of cleaner technologies and the integration of renewable energy sources where feasible. Additionally, we are dedicated to sustainable resource management, focusing on responsible extraction practices and efficient use of water resources. Through continuous monitoring, assessment and innovation, we aim to reduce our environmental impact and contribute positively to the global effort in combatting climate change.

Public transparency and engagement are integral components of our approach, as we strive to foster a culture of environmental responsibility within our company and communities. We further recognise that by aligning ourselves to global climate goals, we are building a more resilient business for the future. We are complementing this alignment by developing a strong view of the climate-driven risks and opportunities that may materially impact our strategic or financial planning and our ability to deliver performance across the business.

## About this report

This is the third Climate Change Report published by CAML. We continue to engage with our stakeholders and have worked to further progress our initiatives in 2023, as well as to enhance our disclosure. This report discusses our approach to addressing climate change and includes disclosure in accordance with the recommendations of the Task Force on Climate-related Financial Disclosures ('TCFD').

Data is provided for the 2023 financial year, ended 31 December, in line with its financial reporting, with comparisons provided for previous periods where possible.

We welcome any feedback or questions on our climate change reporting from stakeholders. Please contact Louise Wrathall, Executive Director of Corporate Development, on [louise.wrathall@centralasiametals.com](mailto:louise.wrathall@centralasiametals.com).

## Scope and boundaries

This document provides an overview of how we are embedding climate-related governance, strategy, risk and opportunity management, metrics and targets across our business, both operationally (for both Kounrad in Kazakhstan and Sasa in North Macedonia) and at the Group level.

In 2023, we continued the evaluation of our Scope 1 and 2 emissions and enhanced our reporting with the completion of our Scope 3 emissions inventory. This document outlines the boundaries, calculation rationale, methodology and assumptions applied in formulating CAML's inventory of Scope 1, 2 and 3 greenhouse gas ('GHG') emissions for the reporting year 2023.

Scope 1 GHG emissions, classified as direct emissions, result from energy sources owned or controlled by the Company, such as coal burnt within our boilers at Kounrad. In contrast, Scope 2 GHG emissions, considered indirect, stem from the generation of purchased electricity consumed by the Company, specifically originating at the facility where the electricity is produced. Scope 3 GHG emissions, also categorised as indirect, encompass additional emissions originating from sources owned or controlled by other entities within our value chain. These include emissions arising from the use of our products and the transportation of materials that we both procure and sell.

Our Scope 1 and 2 emissions are calculated in alignment with the Greenhouse Gas Protocol: A Corporate Accounting and Reporting Standard. The strategy and methodology used to estimate our Scope 3 emissions adhere to the guidelines outlined in the Greenhouse Gas Protocol Corporate Value Chain (Scope 3) Standard, commonly known as the GHG Protocol. Additionally, we align with the Technical Guidance for Calculating Scope 3 Emissions provided by the GHG Protocol.

Our Scope 1, 2 and 3 GHG emissions are reported in this report, our 2023 Sustainability Report and in our 2023 ESG Datasheet. For more information on our Scope 3 methodology, see the CAML GHG Emissions Methodology Report found on the website.

To provide more detailed insights, we have separately disclosed Scope 1 and 2 emissions for our two operations.

Emission values are expressed in carbon dioxide equivalent (CO<sub>2</sub>e), encompassing CO<sub>2</sub>, CH<sub>4</sub>, N<sub>2</sub>O, PFCs, SF<sub>6</sub>, and NF<sub>3</sub> as applicable.

## CAML's Climate related UN Sustainable Development Goals (SDG's)

Ensure access to affordable, reliable sustainable and modern energy for all



Ensure access to affordable, reliable sustainable and modern energy for all



# 2023 HIGHLIGHTS



tCO<sub>2</sub>e Group Scope 1 and 2 GHG emissions

**58,139tCO<sub>2</sub>e**  
(2022: 59,082 tCO<sub>2</sub>e)

Reduction in Group Scope 1 and 2 GHG emissions

**41%**  
2023 versus 2020 base year

Reporting of

**Scope 3**  
emissions for the first time



**Kounrad Solar  
Power Project**



construction completed and now  
in operation

**B-**

First Carbon Disclosure Project  
(‘CDP’) score

## AT A GLANCE



Kazakhstan

### Copper

In 2012, CAML completed construction and began producing copper from the Kounrad in situ dump leach and SX-EW operation, close to Balkhash in central Kazakhstan. Two self-funded expansions followed, and the Company has now fully developed Kounrad, with copper production expected to continue until the end of the licence in 2034. Since production commenced, 152,211 tonnes of copper have been produced at Kounrad, at costs that are amongst the lowest in the world.

# 2034

Life of operation

# 16-18%

**Kounrad Solar Power Project is expected to provide this proportion of power requirements**

- Copper recovery from historic waste dumps
- Processing requires the heating of leaching and copper-bearing solutions with coal-fired boilers to prevent freezing in winter



North Macedonia

### Zinc, lead and silver

Sasa is a zinc, lead and silver mine in North Macedonia, approximately 150 kilometres from the capital city, Skopje. The operation is an underground mine, and the processing plant uses froth flotation to produce a zinc concentrate and a lead concentrate containing silver. These products are then delivered to smelters to be processed into metal. During 2023, CAML invested for the long-term future of its Sasa operation, where a new Central Decline was developed and the initial phase completed. The construction of a Paste Backfill ('PB') plant was also completed. This plant is crucial to allow the mine to transition its mining operations to paste fill mining methods, and this transition has also begun. In 2023, the mine produced 20,338 tonnes of zinc in concentrate and 27,794 tonnes of lead in concentrate.

# 2039

Life of mine

# 100%

**renewable grid power**

- Scope 1 emissions reflect the site's fuel consumption, together with explosives and other consumables. The processing plant is a standard froth flotation system operated by grid power



### Operating context in our geographies of operation

Historically, the majority of grid power in both of our operating areas originated from fossil fuels. Given our traditional reliance on grid power at both operations, this has therefore been a key focus for CAML in terms of our Climate Change Strategy. In just three years, we have achieved a significant milestone by securing exclusively renewable power for our operations in North Macedonia, resulting in a substantial reduction of emissions at Sasa. Additionally, we have completed the construction of a Solar Power Project at Kounrad.

### The lives of our assets

We currently expect the lives of our operations to extend until 2034 at Kounrad and 2039 at Sasa. This introduces economic and practical constraints to progression towards net zero for our current assets. Despite these challenges, we continue to make our best effort to identify and act on opportunities for emissions reduction, such as the initiatives outlined within this report.





# Addressing risks and opportunities associated with climate change

MSCI ESG Rating

**A**

Sustainalytics

**MED**

CDP Climate Change Score

**B-**

**Nick Clarke**  
Non-Executive Chairman

**Nigel Robinson**  
Chief Executive Officer

The metals we produce – copper, zinc and lead – are all essential to modern lives and the transition to clean energy. We are therefore aware of our duty to produce these metals in a responsible and sustainable way, recognising their critical role in addressing climate change at a global level.

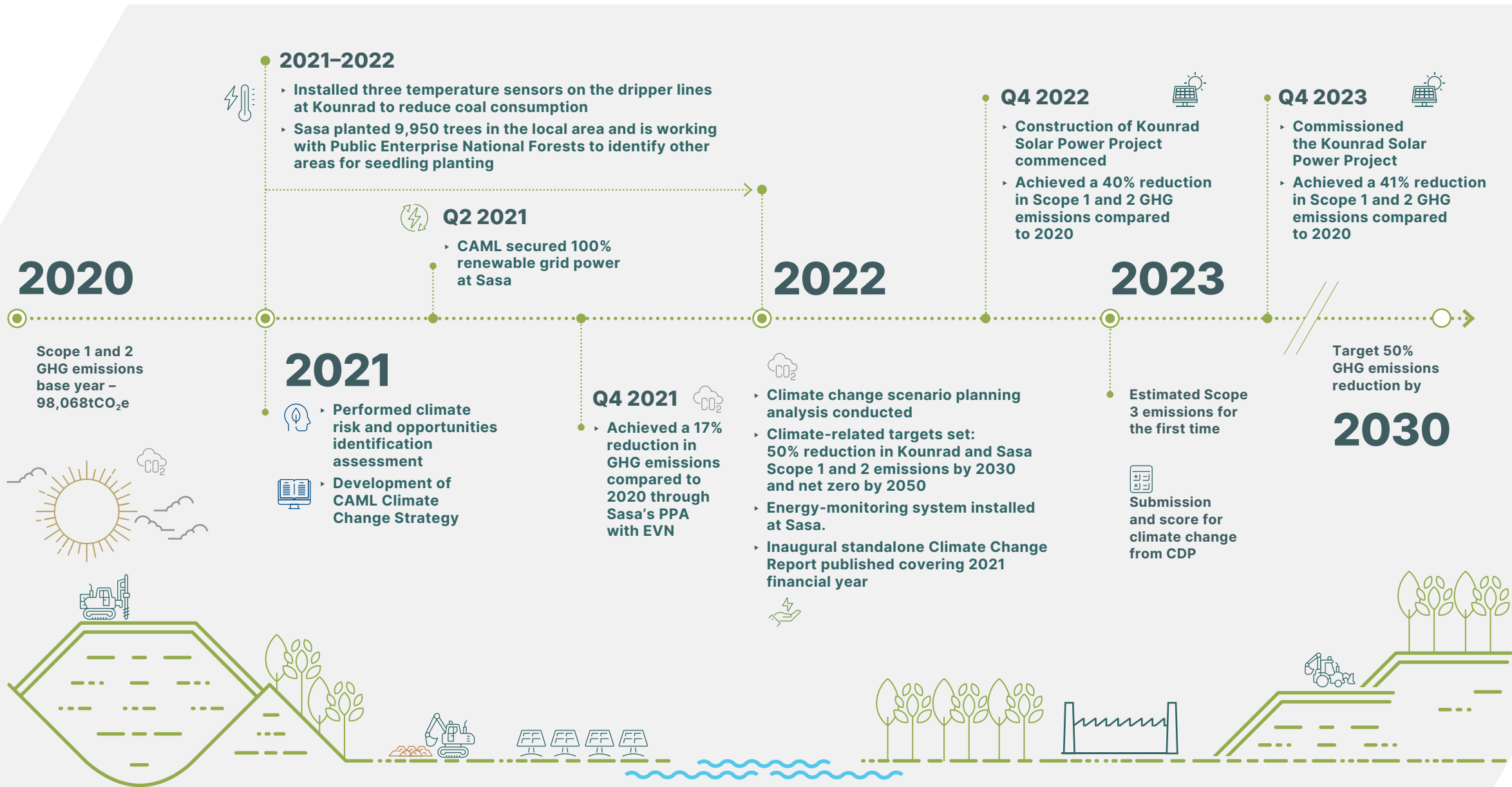
Decarbonising our assets has been a priority for CAML, resulting in a notable 41% decrease in Group Scope 1 and 2 GHG emissions since our baseline year. We believe this achievement positions us well to meet our medium-term target of a 50% reduction by 2030. Instrumental to our efforts has been the switch to renewable grid power at Sasa, as well as energy efficiencies we have been able to achieve across the Group. Having completed construction of our Solar Power Project at Kounrad on time and under budget in 2023, we expect to see further emissions reductions from 2024. In the knowledge that Scope 1 and 2 do not portray the whole picture, we have worked to estimate and better understand Scope 3 emissions, reporting these for the first time this year.

Whilst the lives of our existing operations are not expected to stretch to 2050, we are committed to achieving net zero over this time frame and are integrating climate considerations into business development.

We appreciate the increasing level of engagement required between us and our stakeholders on our approach to climate change, having produced a standalone report for three consecutive years. We are also pleased to have responded to CDP for the first time in 2023, marking yet further progress in terms of our transparency.

We are proud of the work we have done to date in addressing and managing our climate-related risks and opportunities and welcome any feedback on our approach.

# OUR DECARBONISATION JOURNEY

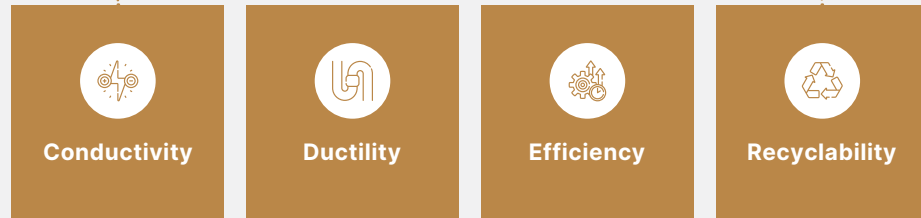




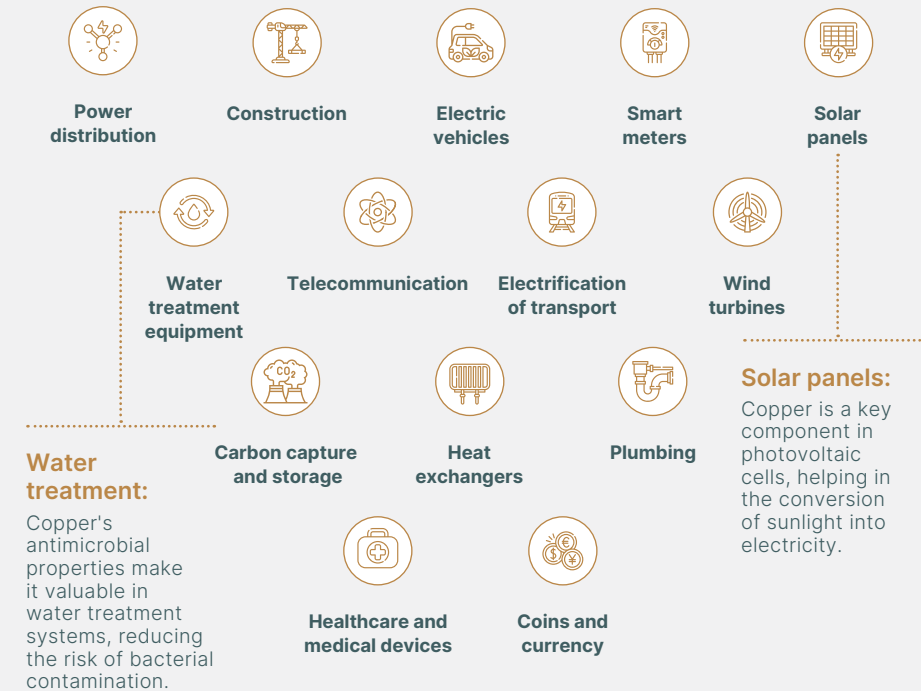
# CAML'S ROLE PRODUCING METALS FOR MODERN LIVING

CAML recognises its role in producing base metals, essential for the future decarbonised economy and modern living, in a safe and sustainable environment for all our stakeholders.

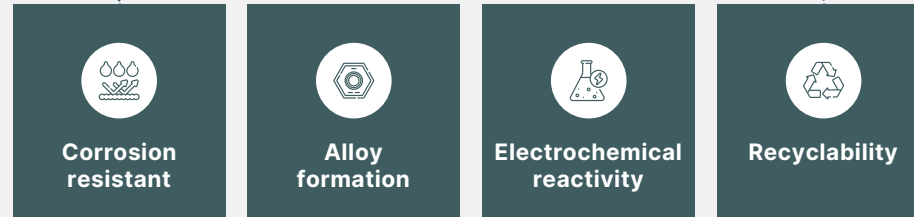
## Why Copper?



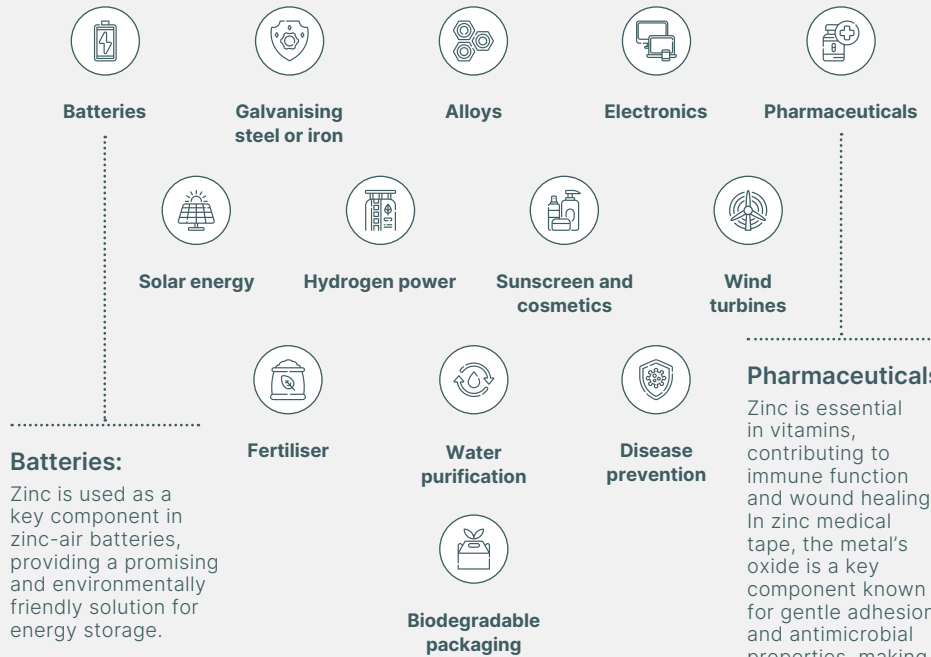
Fundamental to renewable energy infrastructure, storage systems and EVs, copper plays a critical role in the clean transition.



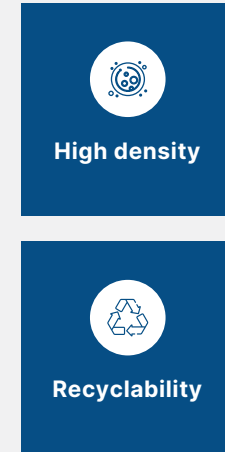
## Why Zinc?



As one of the most versatile materials, zinc is crucial to modern living and a key enabler for green technologies.



## Why Lead?



As an adaptable substance, lead is essential for modern living, notably as a key component in lead-acid batteries, its use in construction and for electronics.





# TCFD DISCLOSURES

## Summary table

The table below offers an overview of our current efforts to understand and align with the TCFD recommendations, organised under the four principal topic areas delineated by the TCFD – governance, strategy, risk management and metrics and targets.

Recommendation	Disclosure topic	Alignment status
<b>Governance</b>	Board oversight	Our Board receives regular climate-related updates from committees and management in most meetings, and these findings shape our strategies and decision-making processes.
	Management's role	We have several committees and management-level positions with climate-related responsibilities, including assessing and managing climate-related risks.
<b>Strategy</b>	Risks and opportunities	Our 2021 climate risk assessment work resulted in us developing a specific risk register and beginning to identify risks and opportunities over the short, medium and long term. In 2023, the team continued to work through the recommendations of the 2022 climate change scenario work, with a focus on building operational resilience and adaptability to withstand climate change-related shocks.
	Impact on organisation	Our 2021 climate risk assessment work assisted us in developing our Climate Change Strategy. This was further tested by our climate scenario analysis that was undertaken in 2022, which deepened our understanding of the direct and indirect climate-related impacts to our business, financial planning and strategy.
	Resilience of strategy	Scenario analysis completed to support strategic resilience under three plausible climate futures. We continue to refine our strategy for resilience and will update our scenario analysis in 2027 (this date will be reviewed if there is a material change).
<b>Risk management</b>	Risk identification and assessment	We have identified existing and emerging physical and transition climate risks and incorporated these into our Group risk register.
	Risk management	Risk owners are identified, and we have established measures to mitigate, transfer, accept or control the impacts of identified climate-related risks. Risks, and our response, are monitored on a quarterly basis.
	Integration of risk management	Our identified climate-related risks are included in our Group-level risk register and are integrated into our established risk management practices.
<b>Metrics and targets</b>	Climate-related metrics	We assess emissions and proportion of renewable energy. We have established a shadow carbon price, which can be applied to our financial models to aid decision-making. We will continue to evaluate other relevant metrics as we further analyse the results of the risk assessment and begin to act on our Climate Change Strategy.
	Scope 1, 2, 3	Having reported Group Scope 1 and 2 emissions for a number of years, CAML reported Scope 3 emissions for the first time in 2023.
	Climate-related targets	We are targeting a 50% reduction in Group Scope 1 and 2 combined GHG emissions by 2030 from a 2020 base year. We are also aiming for net zero by 2050. We will continue to evaluate other potential targets, such as for Scope 3 or for risk and opportunity management.



# GOVERNANCE

Management of climate-related risks and opportunities is integrated into our overall risk management at CAML, with the Board carrying ultimate responsibility. This includes both our response to climate change and our overall approach when considering emissions, climate and energy usage and identification and management of risks and opportunities that climate presents to the business.

Reflecting our strategic focus on addressing climate change, our Board and Committee members have relevant climate and climate risk-related experience, including:

- ▶ A former institutional investor with knowledge and understanding of shareholder expectations, with respect to climate action, and a focus on Executive Director remuneration
- ▶ A strategy and corporate development professional who brings a forward-looking climate perspective
- ▶ A sustainability professional with a focus on non-financial reporting
- ▶ A geoscience professional with a focus on integrating technical and sustainability concerns

During 2023, the Board discussed issues related to climate change and climate-related risks and opportunities, demonstrating the integration of climate considerations into our decision-making processes. Discussion on the developments within the principal risk 'Climate change' is a standing item on the agenda for every Board meeting as part of Group risk updates.

Principal risks, including climate change, are presented to the Group Risk Committee ('GRC') on a quarterly basis to solicit feedback and input from executive management regarding mitigation actions and to discuss any emerging risks. The outcomes of these GRC meetings are used to prepare periodic updates for the Board. Additionally, detailed results are reported to the Audit Committee at least once annually, separately from the regular reporting.

Our Remuneration Committee is instrumental in our efforts to evaluate relevant and meaningful key performance indicators ('KPIs'). These KPIs support monitoring and measurement of progress in our approach to climate governance at the Board and management levels. The Committee sets sustainability targets as part of our long-term incentive plans ('LTIPs') and short-term incentive plans ('STIPs') to ensure management accountability across all aspects of business performance.

In 2023, we included the construction of the Kounrad Solar Power Project in the 2023 STIPs and have introduced additional climate change initiatives and targets where appropriate regarding STIP and LTIP timelines.

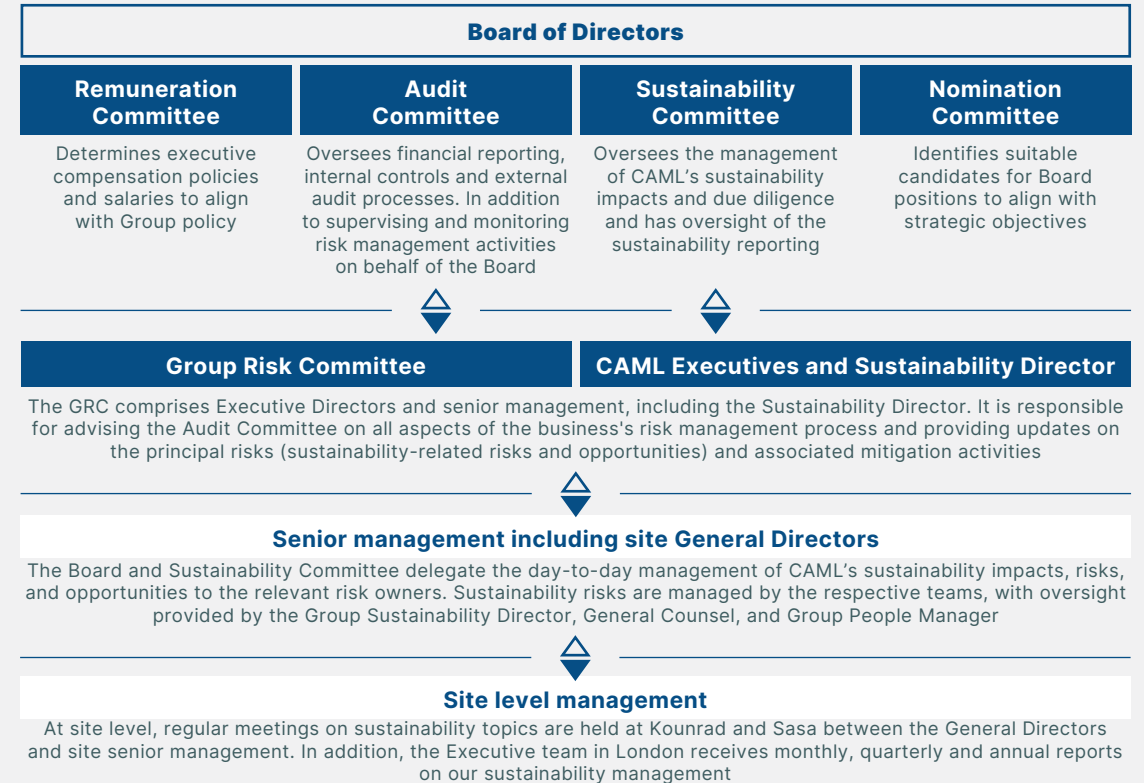
By integrating these measures, we are highlighting the intrinsic link between climate and sustainability performance and our overall Group strategy.

 [See Committee Terms of Reference on our website for further details.](#)



**Dr Gillian Davidson**  
Sustainability Committee  
Chair

## How sustainability is overseen and managed at CAML



## Q&A with Dr Gillian Davidson

### What do you think about CAML's net zero target for 2050, as the Company's current operations look set to close before that date?

Our long-term strategic objective is to deliver growth through exploration, mergers and/or acquisitions to ensure that our business remains strong for the future. Our long-term net zero targets are, therefore, very much linked to our business development activities. When we appraise future opportunities for growth, we do so considering the sources of power for natural resource operations, likely emissions that are or may be generated and ways in which we could look to reduce those. Our financial models have the functionality to apply a carbon price to our evaluations so we can take this transition risk factor into account as well. We would also use climate-specific consultants for our business development activities where appropriate, to ensure we are fully appraised of all climate-related risks and opportunities relating to the projects or businesses we consider.



# STRATEGY

When setting our Climate Change Strategy, goals and priorities, the context of our operations is fundamental to our approach – see detail on our geographies and assets in 'At a glance' on page 4.

 1. Energy transition metals

 2. Decarbonisation

 3. Operational resilience

 4. Strategic and business resilience

 5. Climate reporting

## Scenario planning

In 2022, CAML initiated scenario planning supported by external consultants Climate Risk Services ('CRS') to align with TCFD recommendations. Three scenarios - Net Zero 2050, Net Zero 2090, and High Physical Risk - were developed based on IPCC guidance, testing CAML's strategy against climate risks. Physical risk assessments were conducted for Sasa, Kounrad and supply chains, while transition risks were evaluated including policy, capital allocation and business models. This analysis was integrated into our broader risk management and strategy processes. For further details on our approach to scenario planning, see pages 26-28.

## Climate Change Strategy

Our climate change strategy encompasses the current lives of our operations. Given that they are expected to extend until 2034 at Kounrad and 2039 at Sasa, we have prioritised the identification of meaningful GHG emission reduction targets for these operations, which should see us reduce our carbon footprint and thereby contribute to the global climate change effort.

Beyond this, we have committed to working towards net zero by 2050 and by embedding climate considerations into our long-term business development decisions. We will not overpromise and underdeliver, so our GHG reduction targets are stretching, yet we believe achievable.

As a relatively small company with limited financial means and many stakeholders with whom to share our value creation, we believe that we must focus on achievable and affordable climate change solutions that are the right size for our business and meaningful to these stakeholders.

We support the SDGs and recognise the importance of taking urgent action to combat climate change and its impact. As shown in our Sustainability Report, our focus on climate change is also joined by many other important sustainability priorities, such as those identified by our own stakeholders in our double materiality assessment.

## Collaborating for change in our host countries

We are dedicated to working towards climate change resilience. Our team in North Macedonia is in communication with NGOs and other relevant organisations regarding climate change. In 2023, we discussed programmes for tree planting and carbon credits, including the specific methodology for their calculation and verification. Unfortunately, no such schemes are established in North Macedonia. However, we will continue to collaborate with relevant organisations to further develop these ideas.





## Strategy continued

Our five Climate Change Strategic pillars are shown below, with detail on the related initiatives and activities thereafter:



### 1. Producing metals that contribute positively to the energy transition

We produce copper, zinc and lead from our operations - Kounrad and Sasa. Base metals, particularly copper which is used in renewable energy technologies and electric vehicles, are integral components of the clean energy transition. Zinc is used to galvanise steel and iron, which reduces corrosion and increases the lifespan of these products. Additionally, zinc is used in batteries and may offer a cheaper alternative to lithium-ion batteries. Lead is used in lead-acid batteries, which are required in EVs.

As the world transitions to a less carbon-intensive energy mix, we believe that CAML's most material way of supporting this global effort is by producing these metals safely and responsibly to aid global economic development, contribute to energy security and the energy transition whilst delivering value for all our stakeholders.

Our Kounrad operation is founded on the key sustainable concept of circularity, through the reprocessing of historical waste dumps to produce copper. We believe that our activities here positively impact on the environment by mitigating further historical contamination, as, prior to the Company's ownership, copper-rich solutions were naturally leaching into the environment. Environmental benefits are not the only contribution we can make by capturing the copper leaching from the waste dumps, we also bring socio-economic development to the region through our activities. The technology used by Kounrad received a patent as a form of chemical reclamation of mature dumps.



### 2. Working towards decarbonisation

Our interim target of achieving a 50% reduction in Scope 1 and 2 emissions by 2030 (compared to the 2020 base year) and our 2050 net zero target are supported by our Climate Change Strategy. We made significant strides forward in 2022 and 2023 to achieve our targets. This involved a wide range of current and planned decarbonisation initiatives that should support decarbonisation through the lives of the asset. These initiatives, which focus initially on renewable energy acquisition or generation, fuel improvements and implementing systems to better understand energy use, include:

#### ► Renewable power for Sasa

In mid-2021, Sasa negotiated the acquisition of renewable power from its North Macedonian power provider, EVN. At the end of 2021, EVN's auditor, PwC, confirmed that Sasa

purchased 100% renewable power in the H2 2021 period and this assurance has also been received for 2022 and 2023. We will also continue to seek ongoing assurance to substantiate our GHG emissions reduction disclosures.

#### ► Renewable power for Kounrad

In line with our stated climate goals, Kounrad's Solar Power Project is now operational and is expected to result in a 16-18% energy reduction at Kounrad. This is equivalent to a 10% reduction in Kounrad's Scope 1 and 2 GHG emissions.

#### ► Reducing coal consumption at Kounrad

During Q4 2022-Q1 2023, Kounrad installed 23 additional temperature sensors on the Western Dumps to lower coal use.

#### ► Tree planting

In 2023, we planted 1,910 seedlings, adding to a total of over 29,160 trees and shrubs planted since 2009. Though these trees do not offset our emissions, we acknowledge the significant positive impact they have on biodiversity and the wider environment. Their benefits go beyond emission reduction, contributing to the enhancement of ecosystems and fostering a healthier environment.

#### ► Energy efficiency at Sasa

In 2022, Sasa installed an energy monitoring system. The system enabled us to better understand the energy needs of the milling process, which will allow us to identify and assess energy saving measures, where possible. Additional monitors have been installed at the PB Plant, management buildings and crushing plant and have led to the identification of a number of energy-saving initiatives. See page 24 for further details.



### 3. Ensuring we are operationally resilient

Having identified our physical risks for Sasa and Kounrad, as well as relevant transition risks, these are now incorporated alongside key operational risks into our Group-level risk register, and we will continue to monitor these risks and our mitigation responses on a quarterly basis. Our climate scenario planning exercise increased our understanding of transition risks that may affect our operations, as well as extending our physical risk analysis to our supply chain. In 2023, we started working through the recommendations from the scenario planning exercise conducted in 2022, to further increase our operational resilience.

The engagement process with key technical stakeholders at both sites as part of the scenario analysis helped to raise awareness of the emerging physical risks that they have to manage.

We are introducing a number of mitigation measures at Sasa to reduce the risk of damages from wildfires. In addition to this, we have further developed a water management plan at Sasa to achieve an interim goal of 75% surface water consumption reduction by 2026.

In 2023, a key progress step for operational resilience was our work on Scope 3 emissions and we aim to start engaging with suppliers in our value chains to manage and monitor Scope 3 emissions from 2024.



### 4. Focusing on our strategic and business resilience

CAML completed its first climate scenario planning exercise in 2022 with the active involvement of senior management and identified a number of strategic risks and opportunities to incorporate into its strategic planning.

The Company's key products are copper, zinc and lead; all of which are critical materials that are expected to remain in high demand during the clean transition, specifically in the deployment of renewable energy infrastructure and clean energy storage solutions. CAML's business is, therefore, expected to be resilient during the transition, benefitting from the increased demand for these metals.

We have flexibility to include a shadow carbon price for future-oriented financial planning and to build our resilience to policy shocks, such as the EU's proposed carbon tariffs for imports expected to in 2026 (see EU Carbon Border Adjustment Mechanisms).



### 5. Delivering clear and transparent climate-related reporting and disclosures

We are aware that clear and transparent disclosures are crucial for our stakeholders and have been working hard to achieve further alignment with TCFD recommendations. This has involved undertaking a TCFD-aligned scenario analysis in 2022 and reporting our Scope 3 emissions for the first time in 2023, which we consider a significant step forward. In 2023, we submitted climate change information to CDP for the first time and received a score of B-.



# RISK MANAGEMENT

We identify and monitor our climate-related risks at the corporate and site level. Identified physical and transition risks are fully integrated into our comprehensive risk register. Quarterly reviews of these risks are facilitated by site-based risk coordinators, who actively engage with onsite management and the onsite Risk and Sustainability Committees. The outcomes of these reviews are then reported to the Group and presented to the GRC as part of our principal risk update; climate-related risks are reported as part of principal risk 'Climate change'. For a detailed understanding of our climate-related risk management process, please refer to the Governance section on page 10.

The risks associated with climate change can be either physical risks or transition risks:

- **Physical risks** are caused by changing planetary conditions and can be chronic, such as changing precipitation patterns, or acute, such as flooding events.
- **Transition risks** are related to the global effort to transition to a low carbon and sustainable society and economy, arising through policy and regulation, market shifts, technology and reputational impacts.

Within our business, there are several avenues that are used to identify, manage and monitor climate-related risks and opportunities.

We have previously engaged a third-party climate specialist to conduct a comprehensive climate-risk assessment exercise across our operations. The results have been integrated into the Group's existing risk management processes, serving as a baseline by establishing the risks most consequential and material to the business.

In 2022, the physical risk assessment was expanded to include our supply chain, such as transport networks, with assistance from our third-party climate specialist. The results from this assessment have been added to our risk register and are now subject to our risk management process.

Following completion of our scenario planning exercise, we have a better understanding of climate scenarios and the relative frequency, impact and speed of onset of transition risks associated with these scenarios.

## Indirect global risks

In our 2022 scenario planning, we looked at indirect global risks that may impact CAML's operations and our resilience. These include: mass migration, agriculture, water resources and losses to ecosystem services and biodiversity. We recognise that these indirect global risks will not be unique to CAML and could bring significant future challenges to our operations, communities and stakeholders, as well as the regions in which we operate.

We believe CAML can contribute to reducing the potential severity of these indirect global risks by reducing our GHG emissions (strategic pillar 2). We have several decarbonisation initiatives planned and ongoing, such as the completion of our Kounrad Solar Power Project. Furthermore, we can respond to some of these indirect global risks by implementing adaptation measures to improve our operational resilience (strategic pillar 3). For example, we have established a 75% reduction in surface water abstraction at Sasa by the end of 2026 compared to a 2020 baseline.

We will continue to assess mitigation responses to identified risks.





**Climate change-related risks and opportunities**

Risk	Risk / opportunities	Risk description	Entity	Short-term	Medium-term	Mitigation measure	
<b>Physical risks</b>	<b>Wildfires</b>	Wildfire can pose significant risks because it can destroy equipment and infrastructure, lead to site evacuations and shutdowns, cut access to and from the mining site, and cause fatalities. In addition, disruptions during wildfire events can lead to revenue losses, and capital costs for repairing/maintaining equipment.	<b>Kounrad</b>			Fire suppression systems have been installed at both Kounrad and Sasa.  Additionally, at Kounrad there is a site-based fire brigade, and regular fire drills are conducted with employees and the fire brigade.  In 2023, Sasa continued to enhance its fire protection systems across site. The hydrant system installed throughout the site enables the site-based rescue team to address fires within the facilities and combat forest fires.  Regular training sessions are conducted with employees to familiarise them with the use of fire hydrants and fire extinguishers.	
			<b>Sasa</b>				
	<b>Water stress</b>		Water stress can lead to local competition for water resources, affecting pricing and availability. This could potentially impact our operations and associated costs due to our reliance on water within our processing facilities.	<b>Kounrad</b>	N/A	N/A	We aim to minimise freshwater or make-up usage wherever possible.  At Kounrad, emerging concerns relate to the declining water level in Lake Balkhash, which serves as one of the two main sources of water supply for operations. There are no immediate impacts on operations, and management continues to closely monitor the situation.  At Sasa, our water management strategy is focused on increasing the recycling/reuse of technical waters within the operation and decreasing the usage of surface water.
				<b>Sasa</b>			

The physical risks disclosed include those assessed as medium-high or above, in the short-term (2011-2040) and medium-term (2041-2070). We have not focused on long-term (2071-2100) physical risk due to the life of our operations.

**Risk key**

- Extremely high
- High
- Low-medium
- Low

**Legend**

- **Short-term** covers 2011-2040
- **Medium-term** covers 2041-2070



### Climate change-related risks and opportunities

Risk	Risk/opportunities	Risk description	Short-term	Medium-term	Mitigation measure
<b>Transition risks</b>	<b>Policy and regulatory risks, including external carbon pricing</b>	CAML may face direct exposure through its emissions profile and indirect exposure via channels like fuel carbon taxes and supplier pricing, with more stringent disclosure and permitting standards. Significant costs could arise directly from CAML's emissions profile.	●		Proactively monitoring evolving landscapes and integrating climate risk considerations into business strategies to lower CAML emission profile in operating jurisdictions.
	<b>Market behaviour</b>	Supply chain disruptions caused by physical hazards, affecting the reliability and efficiency of operations.	●		Identifying and engaging with alternative suppliers that have low- carbon footprints or more sustainable practices, which could help reduce costs in the long term. CAML could also engage with suppliers and encourage them to adopt more sustainable practices, which could help reduce the costs of their products and services over time.
		Shifts in supply and demand for commodities, products and services.	●		
		Supply chain disruptions exacerbated by the disorderly nature of a delayed transition.	●		
	<b>Technological shifts</b>	Increased energy needs due to older technology. CAML's mine sites not implementing cleaner technology fast enough compared to other mine sites around the world.	●		CAML could investigate carbon capture and storage, electrification of transportation, investing in onsite renewables and energy technology and implementing emerging renewable technology and/or more energy efficient opportunities.
<b>Reputation</b>	Reputational risk is related to emission reduction performance in comparison to past performance against peers.	●		Increased investment in research and development of sustainable mining practices and technologies that can reduce environmental impact of mining operations.	





**Climate change-related risks and opportunities**

Risk	Risk/opportunities	Risk description	Short-term	Medium-term
Opportunities	<b>Technology advancements</b>	<p>Technological innovations are paving the way for reduced energy consumption through enhanced efficiency and the adoption of cleaner energy sources. Key initiatives currently underway include:</p> <p>In 2021-2022, Kounrad added temperature sensors to the Western Dumps allowing for efficient heating of leachate solution and reducing coal consumption by 15%.</p> <p>In 2023, completion of a Solar Power Project, with a 4.77MW capacity, is expected to supply 16-18% of Kounrad's electricity needs.</p>		●
	<b>Increased demand for copper</b>	<p>Copper's importance in the low-carbon economy is growing, driven by its use in renewable energy, electric vehicles and energy-efficient technologies.</p> <p>Kounrad's copper production method, reprocessing waste dump rocks, addresses this increased demand and cuts CO<sub>2</sub> emissions by 18% compared to traditional mining.</p>		●
	<b>Jurisdictions that favour renewables transition</b>	<p>Our projects are strategically located in regions committed to renewable energy, evident from their updated NDCs. This alignment is crucial for the long-term development of technologies aimed at fully electrified mining and energy-efficient equipment.</p> <p>Our North Macedonia operation uses 100% renewable energy, sourced from a combination of solar and hydropower.</p>	●	





# METRICS AND TARGETS

## Our emissions

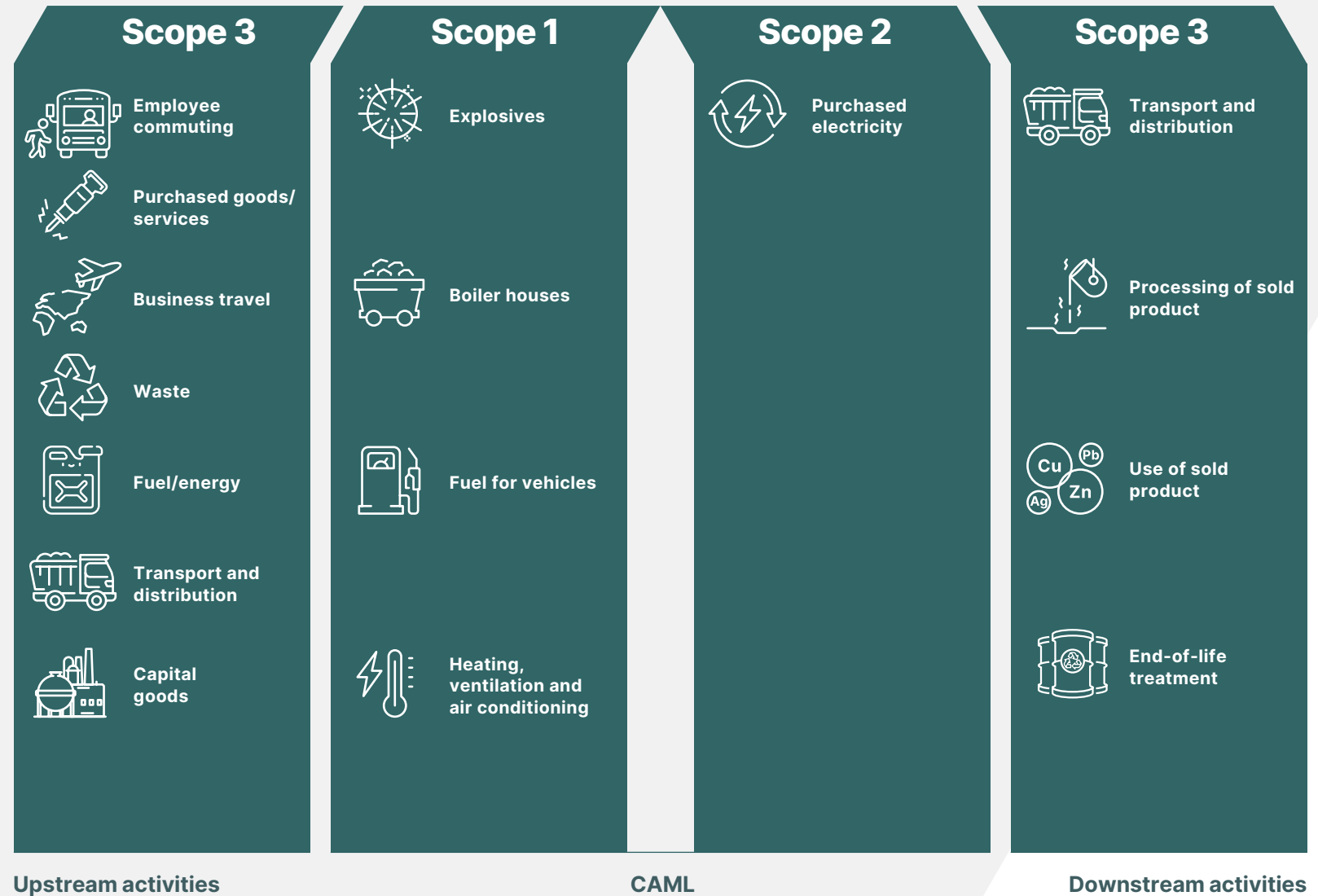


At CAML, our GHG emissions are classified into three scopes, each reflecting different aspects of our operations; energy consumption, purchased energy sources and the broader value chain.

Scope 1 emissions originate from activities controlled by CAML and occur onsite. These emissions include fuel from fleet mobile combustion, the combustion of explosive materials and the combustion of fossil fuels in our boiler houses for heating.

Scope 2 emissions arise from purchased electricity which is used in our operations.

Scope 3 emissions represent indirect GHG emissions that occur in our value chain but are not directly owned or controlled by CAML. These encompass all indirect emissions associated with the upstream and downstream activities of our operations. The activities are split into different categories that are summarised in the GHG Emissions Methodology Report available on our website.



Metrics and targets *continued*

**50%**

Reduction in Scope 1 and 2 emissions by 2030<sup>1</sup>

**Net zero**

by 2050

**GHG emissions reduction targets**

Within the constraints of our current assets, we recognise that the double materiality of climate risk means we have a responsibility to contribute to climate mitigation, as well as to manage risks potentially arising from our emissions footprint.

We further recognise that managing emissions has a role to play in how we grow the Company. For our existing assets, Kounrad and Sasa, we have set a target to reduce our Group Scope 1 and 2 emissions by 50% overall by 2030 compared to a 2020 base year. Additionally, we are committed to achieving net zero by 2050, and we will apply this commitment through our business development activities by ensuring that climate and carbon emissions are embedded in our decision-making processes.

**GHG emissions**

In alignment with our commitment to transparent reporting and sustainability, our operations follow the GHG Protocol. Using its standardised framework, we calculate Scope 1 and 2 emissions and, for the first time this year, our Scope 3 emissions provide a thorough assessment of our GHG impacts. This data is reported to senior management on a monthly basis and used to determine our progress in reaching our emissions reduction goals, thereby determining the efficacy of our Climate Change Strategy.

Demonstrating our commitment to a rigorous and comprehensive approach to sustainability data management at CAML, we hired a data analyst in 2023 to enhance our processes across the Group. We aim to strengthen our ability to capture, analyse and report data and improve its quality.

This proactive approach has enabled us to estimate and disclose our Scope 3 emissions for the first time in this report and we participate in the CDP Climate Change questionnaire. These initiatives collectively highlight our ongoing efforts to align with global sustainability standards and meet the highest reporting standards.

1. Versus 2020

**Our roadmap**

**2020**

Sasa negotiated to acquire solely renewable power from its North Macedonian power provider, EVN, from 1 July 2021. This has been audited and verified by PwC and has reduced our Scope 2 emissions at Sasa down to zero.

**2021 and 2022**

During 2021 and 2022, Kounrad installed temperature sensors at the end of the raffinate drip system to ensure the raffinate is kept at optimal temperature to prohibit freezing in pipes. The results from the 2021-2022 winter period were positive and showed a decrease in coal consumption of 15% compared to 2021, which is attributed to the newly installed temperature sensors and a milder winter.

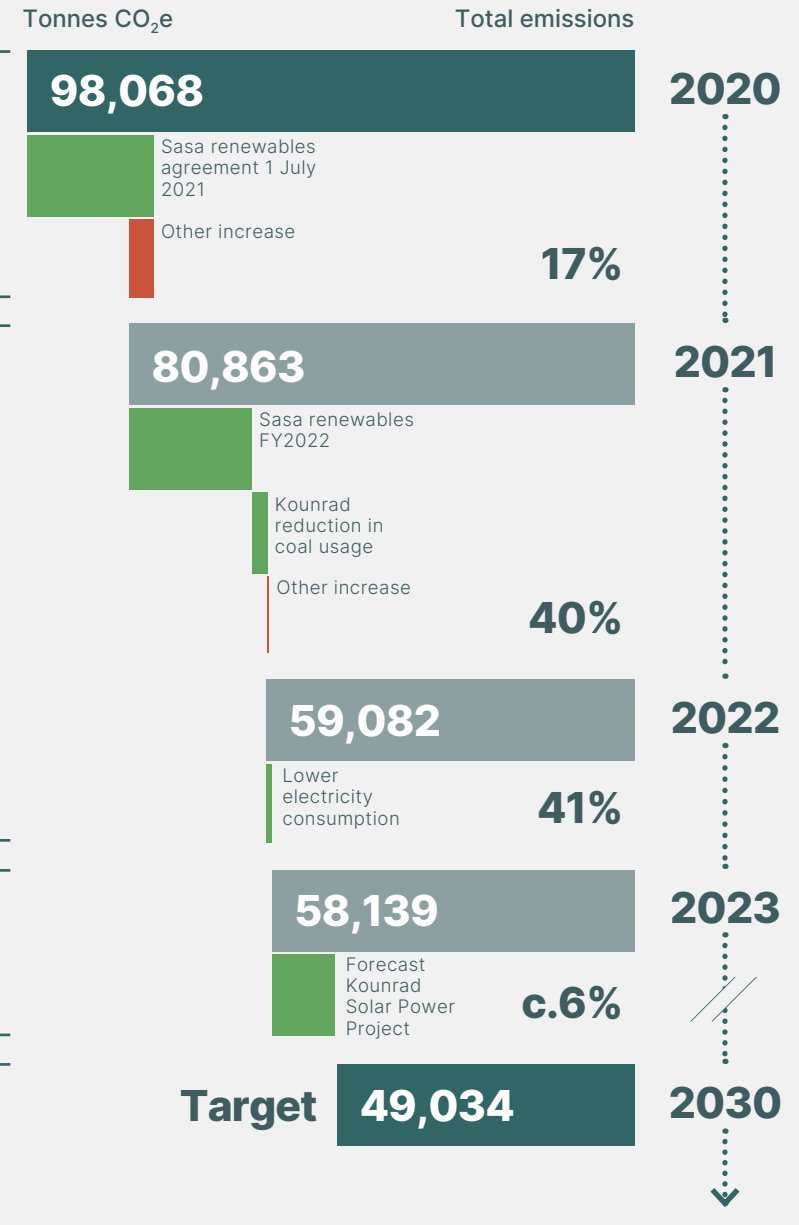
**2023**

In 2023, there was lower electricity consumption at Kounrad due to lower production during the year compared to the prior year, which saw a record production figure as well as lower consumption for water pumps.

**Target-2030**

Following completion of the Solar Power Project, expectation is it will replace 16-18% of Kounrad's energy and reduce the Groups Scope 1 and 2 GHG emissions by approximately 6% compared to our 2020 baseline.

**CAML Scope 1 and 2 GHG emissions**





Metrics and targets *continued*

**Scope 1 and 2 GHG emissions**

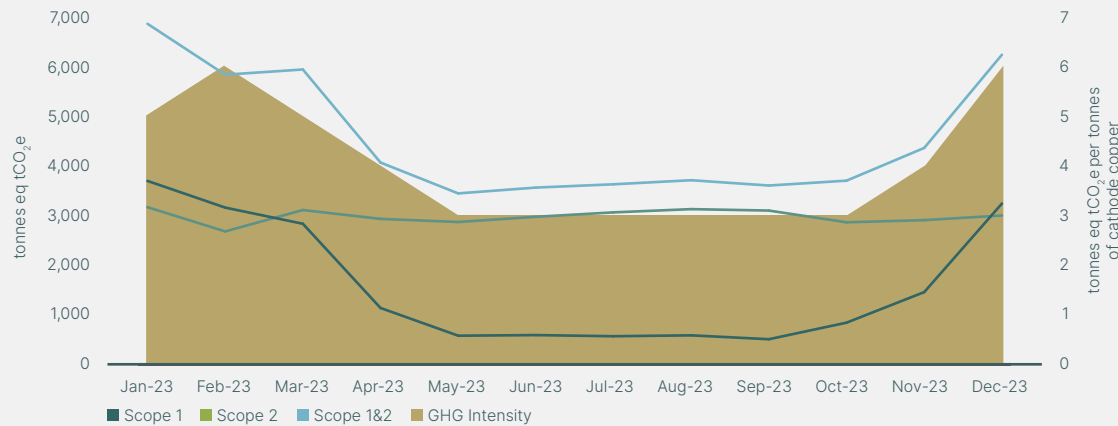
Group Scope 1 and 2 emissions continue to decrease from 2019, totalling 58,139tCO<sub>2</sub>e for 2023, a 2% reduction from 2022, primarily driven by lower electricity at Kounrad due to lower production of copper and lower usage of water pumps. However, due to the lower production compared to the record year in 2022, the Scope 1 and 2 GHG intensity has increased to 2.28tCO<sub>2</sub>e/tCuEq in 2023 (2022: 2.14tCO<sub>2</sub>e/tCuEq).

Since our baseline year of 2020, we have achieved a considerable reduction in Scope 1 and 2 emissions of 41%, working well towards our target of a 50% reduction by 2030.

At Sasa, total emissions increased to 3,350tCO<sub>2</sub>e in 2023 (2022: 3,150tCO<sub>2</sub>e), representing a 6% increase year on year, predominantly due to higher fuel usage from the Central Decline activity. This has resulted in a GHG intensity at Sasa of 0.29tCO<sub>2</sub>e/tCuEq in 2023, an increase of 21% compared to 2022 (2022: 0.24tCO<sub>2</sub>e/tCuEq).

At Kounrad, Scope 1 and 2 emissions reduced by 2% to 54,789tCO<sub>2</sub>e as a result of lower production of copper during the year (2022: 55,932tCO<sub>2</sub>e).

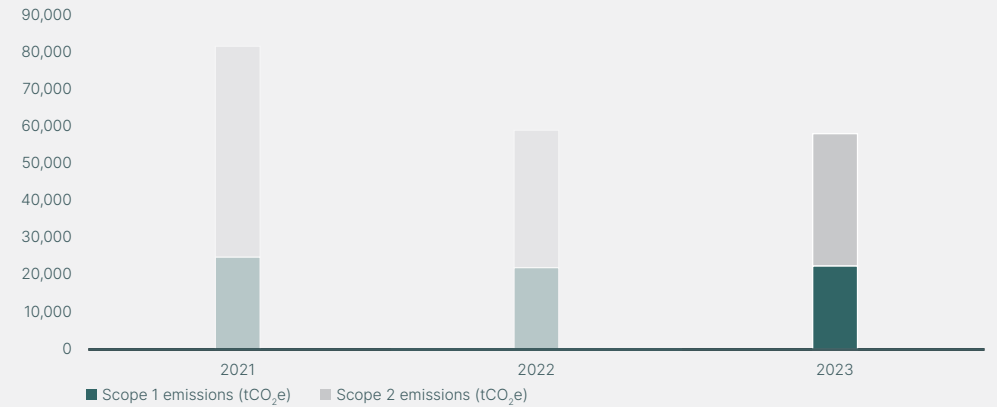
**GHG emissions and GHG intensity per tonne of copper cathode at Kounrad**



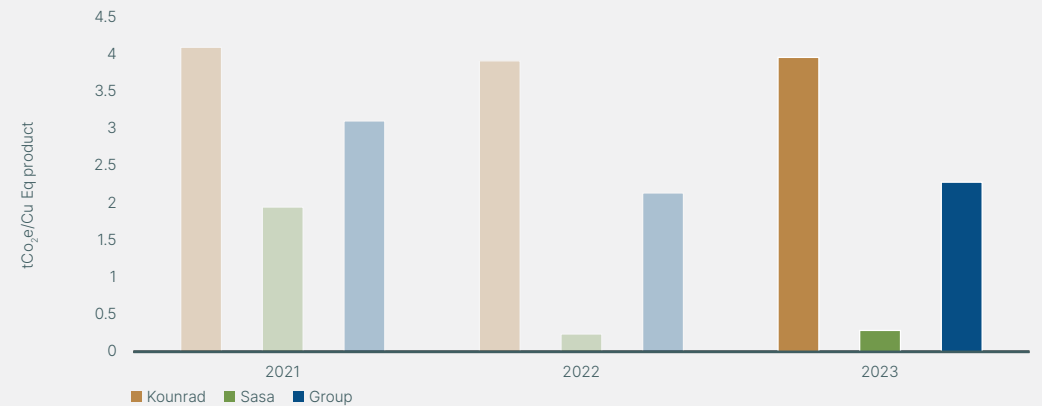
**Tonnes of Cu equivalent production**

**26,000t** 2021      **27,656t** 2022      **25,452t** 2023

**Group Scope 1 and 2 GHG emissions**



**Carbon emissions intensity<sup>1</sup>**



2023 reduction in Group Scope 1 and 2 GHG emissions since 2020

**41%**

2022: 40%

2023 emissions intensity

**2.28tCO<sub>2</sub>e**

2022: 2.14tCO<sub>2</sub>e

1. The graph shows Group-level and site-specific carbon emission intensity, calculated as the emission rate of CO<sub>2</sub> equivalent tonnes relative to a tonne of copper equivalent production for Kounrad and Sasa.

**Metrics and targets** *continued*

**Reporting Scope 3 emissions**

We are committed to playing our part to mitigate the impact of our value chain emissions, and we have taken the significant step of estimating Scope 3 emissions for the first time. This is an important move for the Company in allowing us to better understand impacts throughout our value chain while recognising that the nature of Scope 3 emissions largely remains outside our direct control. It also enables us to start to understand potential risks within our supply chain, which might impact our business.

**Our methodology**

Our methodology builds on the Scope 3 elements of the Greenhouse Gas Protocol Accounting and Reporting Standard, which were conceived as a means for businesses to understand the carbon intensity of their value chains and identify means to reduce that intensity, not for direct comparison between companies. The diversity of approach in methods and assumptions in data that has resulted renders comparisons between companies difficult.

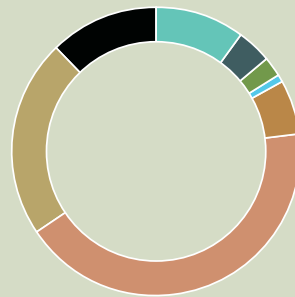
**Our scope**

These Scope 3 disclosures meet the reporting requirements established by the GHG Protocol. According to the GHG Protocol (2011) as amended, the calculation and reporting of an organisation's Scope 3 should follow the principles of relevance, completeness, consistency, transparency and accuracy. For more information, please refer to our GHG Emissions Methodology Report.

Our approach prioritises the principles of completeness and consistency, often providing greater insights and relevance for users of this information. We anticipate ongoing improvements in our Scope 3 disclosure over time, aiming to minimise the need for such trade-offs.



**2023 Scope 3 emissions, category contributors (tonnes CO<sub>2</sub>e)**



Scope 3 emissions can be categorised into various upstream and downstream categories, and the results for CAML are as follows:

Scope 3 emissions	tonnes CO <sub>2</sub> e year	Emissions
<b>Upstream</b>		
Purchased goods and services	27,115	10%
Capital goods	11,415	4%
Fuel- and energy-related activities	6,382	2%
Upstream transportation and distribution	1,993	1%
Waste generated in operations	390	-%
Business travel	281	-%
Employee commuting	240	-%
<b>Downstream</b>		
Downstream transportation and distribution	16,025	6%
Processing of sold products	115,647	43%
Use of sold products	61,223	22%
End-of-life treatment of sold products	31,412	12%
<b>Total Scope 3</b>	<b>272,123</b>	<b>100%</b>



## Metrics and targets *continued*

### Upstream emissions

Estimated upstream emissions constitute approximately 17% of our Scope 3 emissions. These emissions encompass the GHGs associated with the extraction, production and transportation of raw materials essential for our operations and processes before they reach the point of use or consumption in a specific process or product. At CAML, our upstream emissions primarily arise from our purchased goods and services (10%) and our capital goods (4%). For our operations, the procurement of raw materials incurs the most significant upstream emissions, including machinery, explosives, reagents, carbon steel, etc. These emissions are estimated using a spend-based approach, categorising costs into their respective industries and applying an industry-specific emissions figures.

### Downstream emissions

Estimated downstream emissions comprise approximately 83% of our Scope 3 emissions and incorporate the GHGs produced during the distribution, consumption and disposal phases of a product's life cycle, after its production and prior to the end of its useful life. The most significant components of this are the processing of sold products (43%) and the use of sold products (22%).

Among our Scope 3 emissions, the smelting of zinc from our concentrate into the final metal by our customers accounts for the most significant portion. This related to 40,201 tonnes of our zinc concentrate processed to obtain the final product and an emission factor of 2.14tCO<sub>2</sub>e/tCuEq and amounts to 85,837 tonnes of CO<sub>2</sub> emissions. Additionally, the final use of our sold

products significantly contributes to overall Scope 3 emissions, principally lead, with 27,794 tonnes of metal in concentrate produced primarily for batteries, amounting to 28,683 tonnes of CO<sub>2</sub> emissions. These emissions are estimated using an average data method, applying an industry-specific emissions figure.

### Looking forward

Having estimated and reported our Scope 3 emissions for the first time, our next step is to prioritise engagement with our main suppliers to gain a deeper understanding of our upstream emissions. Our goal is to identify areas for improvements in our processes and explore potential reduction.

In the medium-term, our focus will be on continuing to improve our data set reducing reliance on industry proxy data from third-party sources and transitioning towards using more first-party data sources, where feasible for certain aspects of our calculation.

Subsequently, we will pursue reductions in our Scope 3 emissions through initiatives including the recent completion of the Kounrad Solar Power Project, which has the ability to reduce our transmission and distribution losses for energy activities.

Additionally, we seek to collaborate with partners across our value chain to accelerate the development of technologies aimed at reducing emissions from the processing and utilisation of our products.

 + See CAML's GHG Emissions Methodology Report for more detail.

### Supplier engagement on environmental impact

Supplier engagement will play a pivotal role in reducing GHG emissions. By collaborating closely with key suppliers, we aim to share a commitment to sustainability and drive collective action towards emission reduction goals. This engagement includes encouraging suppliers to adopt cleaner production methods, optimise energy efficiency and implement technologies that minimise emissions throughout the supply chain. Additionally, mining companies can work with suppliers to assess the environmental footprint of raw materials and prioritise the sourcing of materials with lower carbon intensity. Through ongoing dialogue and collaboration, we can influence suppliers to implement best practices in environmental management.

Moreover, supplier engagement serves as a catalyst for innovation, facilitating the development and adoption of new technologies and practices aimed at reducing emissions. Furthermore, supplier engagement promotes transparency and accountability, as suppliers are encouraged to disclose their emissions data and progress towards emission reduction targets.





# ENERGY MANAGEMENT

## Our approach

As a Group, we have always operated a firm policy of strict cost control. Energy efficiency is a key component in cost minimisation, given its significant contribution to operating expenditure. By monitoring both costs and energy intensity on an ongoing basis, we assess the robustness of our energy-efficiency strategies at our operations, as well as their related carbon intensity. We ensure that energy is used responsibly and provide appropriate training to our employees in this regard. We apply energy-saving measures and work to improve the energy performance of all our technological processes wherever possible. Both operations are required to continually review and assess the potential for further energy efficiencies.

The Company adheres to various energy regulations in its countries of operations, which include the Law on Energy Conservation and Energy Efficiency Improvement at Kounrad and the Law on Energy, the Law on Energy and Energy Efficiency, Long Term strategy for Climate Action and the Law on Climate Action (Draft) at Sasa.

At Sasa, we also operate in accordance with the relevant European Union Framework Directives, as these have largely been adapted into North Macedonian Law.

## Energy usage

Total energy consumption remained relatively flat in 2023 at 675,720 gigajoules (2022: 673,511 gigajoules). Electricity usage accounted for 55% of the total energy consumed and 24% of this was from renewable sources (2022: 23%).

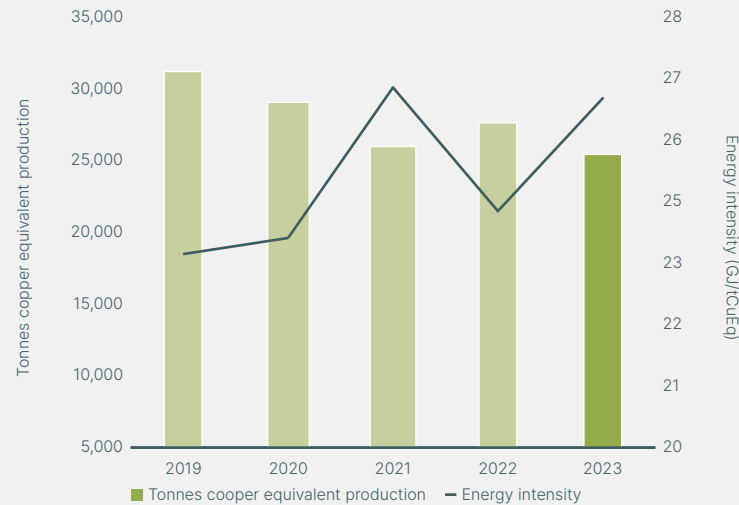
## Energy reduction initiatives

Energy reduction initiatives form an important part of our work towards decarbonisation, and we are continually exploring ways of further improving efficiency across our operations. Reducing electricity consumption remains a top priority. It should be noted that energy consumption at Sasa is expected to rise during the construction and operational phases of the capital projects.

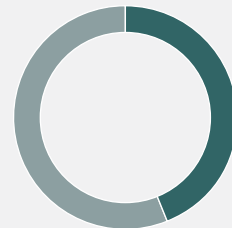
During 2023, Sasa has continued to work on a number of specific energy-efficiency programmes, for more information see the case study on page 24.

An energy efficiency audit was conducted at Kounrad in 2021. Due to the relatively young age of the operation's equipment, no material savings were identified. However, we have implemented an initiative at Kounrad to reduce coal consumption involving the installation of temperature sensors to prohibit freezing in pipes.

## Energy intensity against copper equivalent production



## 2023 Group electricity sources<sup>1</sup>



- Electricity from renewables **44%**
- Electricity from non-renewables **56%**

1. 55% of the the Group's total energy was purchased as grid electricity.





## CASE STUDY



# Advancing climate responsibility through enhanced energy efficiency at Sasa

In line with our commitment to achieving a 50% reduction in Scope 1 and 2 emissions by 2030, Sasa continued to implement practical measures to enhance energy efficiency throughout 2023. Reducing energy consumption wherever feasible is an important contributor to the 'decarbonisation' pillar of our Climate Change Strategy.

Initiatives included the replacement of three compressors with more efficient models, anticipating annual energy savings of 600 megawatt-hours. Additionally, air-water thermal pumps were strategically installed in four locations, utilising heat from the new compressors for improved site-wide heat regulation, with a projected annual energy saving of 477.6 megawatt-hours.

We upgraded outdoor lighting to more energy-efficient options, with an expected saving of 10.7 megawatt-hours annually. Additionally, thermostatic regulators were installed in the safety building and processing plant offices for further energy efficiency.

We expanded the use of the Honeywell energy-monitoring system in 2023, covering additional facilities and identifying initiatives for 2024, including solar lights installation, heat pumps in workshops and efficiency upgrades in the crushing plant.

By proactively integrating energy efficiency initiatives into our operations at Sasa, we not only realise tangible energy and cost savings but also align with CAML's broader climate responsibility goals.

While our current initiatives will reduce Sasa's energy usage by approximately 2%, we are committed to pursuing further reductions in line with Pillar 2 of our Climate Change Strategy.



**Energy consumption**

		2023	2022	2021
<b>Group</b>				
Total fuel consumption from non-renewable sources	GJ	<b>303,411</b>	300,011	328,536
Coal	GJ	<b>247,160</b>	247,154	276,921
Diesel/petroleum	GJ	<b>56,251</b>	52,857	51,615
Total electricity consumption	GJ	<b>372,309</b>	373,500	365,904
Electricity from renewables	GJ	<b>162,489</b>	155,669	85,526
Electricity from non-renewables	GJ	<b>209,820</b>	217,831	280,378
Total energy consumption	GJ	<b>675,720</b>	673,511	694,440
Tonnes of Cu equivalent production	t Cu Eq	<b>25,452</b>	27,656	26,000
Energy intensity	GJ/t Cu Eq	<b>26.55</b>	24.35	26.71
<b>Kounrad</b>				
Total fuel consumption from non-renewable sources	GJ	<b>261,476</b>	260,657	291,609
Coal	GJ	<b>247,160</b>	247,154	276,921
Diesel/petroleum	GJ	<b>14,316</b>	13,503	14,688
Total electricity consumption	GJ	<b>212,373</b>	217,831	209,935
Electricity from renewables	GJ	<b>2,553</b>	–	–
Electricity from non-renewables	GJ	<b>209,820</b>	217,831	209,935
Total energy consumption	GJ	<b>473,849</b>	478,488	501,544
Tonnes of Cu equivalent production	t Cu Eq	<b>13,816</b>	14,254	14,041
Energy intensity	GJ/t Cu Eq	<b>34.30</b>	33.57	35.72
<b>Sasa</b>				
Total fuel consumption from non-renewable sources	GJ	<b>41,935</b>	39,354	36,927
Coal	GJ	–	–	–
Diesel/petroleum	GJ	<b>41,935</b>	39,354	36,927
Total electricity consumption	GJ	<b>159,936</b>	155,669	155,969
Electricity from renewables	GJ	<b>159,936</b>	155,669	85,526
Electricity from non-renewables	GJ	–	–	70,443
Total energy consumption	GJ	<b>201,871</b>	195,023	192,896
Tonnes of Cu equivalent production	t Cu Eq	<b>11,636</b>	13,402	11,959
Energy intensity	GJ/t Cu Eq	<b>17.35</b>	14.55	16.13



Appendix continued

Scope 1 and 2 GHG emissions<sup>1</sup>

		2023	2022	2021
<b>Group</b>				
Scope 1 emissions	tCO <sub>2</sub> e	<b>22,470</b>	22,051	24,876
Scope 2 emissions	tCO <sub>2</sub> e	<b>35,669</b>	37,031	55,987
Total emissions	tCO <sub>2</sub> e	<b>58,139</b>	59,082	80,863
Tonnes Cu equivalent production	t	<b>25,452</b>	27,656	26,000
GHG intensity	tCO <sub>2</sub> e/t Cu Eq	<b>2.28</b>	2.14	3.11
<b>Kounrad</b>				
Scope 1 emissions	tCO <sub>2</sub> e	<b>19,120</b>	18,901	21,908
Scope 2 emissions	tCO <sub>2</sub> e	<b>35,669</b>	37,031	35,689
Total emissions	tCO <sub>2</sub> e	<b>54,789</b>	55,932	57,596
Tonnes Cu equivalent production	t	<b>13,816</b>	14,254	14,041
GHG intensity	tCO <sub>2</sub> e/t Cu Eq	<b>3.97</b>	3.92	4.10
<b>Sasa</b>				
Scope 1 emissions	tCO <sub>2</sub> e	<b>3,350</b>	3,150	2,968
Scope 2 emissions	tCO <sub>2</sub> e	<b>–</b>	–	20,298
Total emissions	tCO <sub>2</sub> e	<b>3,350</b>	3,150	23,266
Tonnes Cu equivalent production	t	<b>11,636</b>	13,348	11,959
GHG intensity	tCO <sub>2</sub> e/t Cu Eq	<b>0.29</b>	0.24	1.95

1. Gases included in the calculation: CO<sub>2</sub>, CH<sub>4</sub>, N<sub>2</sub>O, HFCs, PFCs, SF<sub>6</sub>, NF<sub>3</sub>.

Scope 1 and 2 GHG emissions context

**Kounrad** – Scope 1 emissions at Kounrad predominantly reflect an essential part of our processing, which requires the heating of leaching and copper-bearing solutions in winter with coal-fired boilers to prevent freezing.

**Sasa** – is an underground mine where ore is transported to the surface by shaft and trucks. Scope 1 emissions reflect the site’s fuel consumption, together with explosives and other consumables. The processing plant is a standard froth flotation system, operated by grid power.

**Calculation** – emissions were calculated using the methodology of the GHG Protocol, and this methodology was supplemented by country and sector-specific information.

Group Scope 3 emissions

				2023	2022	2021
Upstream	Category 1	Purchased goods and services	tCO <sub>2</sub> e	<b>27,115</b>	23,443	–
	Category 2	Capital goods	tCO <sub>2</sub> e	<b>11,415</b>	7,863	–
	Category 3	Fuel- and energy-related activities	tCO <sub>2</sub> e	<b>6,382</b>	6,562	–
	Category 4	Upstream transportation and distribution	tCO <sub>2</sub> e	<b>1,993</b>	1,805	–
	Category 5	Waste generated in operations	tCO <sub>2</sub> e	<b>390</b>	395	–
	Category 6	Business travel	tCO <sub>2</sub> e	<b>281</b>	262	–
	Category 7	Employee commuting	tCO <sub>2</sub> e	<b>240</b>	254	–
	Category 8	Upstream leased assets	tCO <sub>2</sub> e	<b>N/A</b>	N/A	–
Downstream	Category 9	Downstream transportation and distribution	tCO <sub>2</sub> e	<b>16,025</b>	11,948	–
	Category 10	Processing of sold products	tCO <sub>2</sub> e	<b>115,647</b>	120,010	–
	Category 11	Use of sold products	tCO <sub>2</sub> e	<b>61,223</b>	62,422	–
	Category 12	End-of-life treatment of sold products	tCO <sub>2</sub> e	<b>31,412</b>	32,957	–
	Category 13	Downstream leased assets	tCO <sub>2</sub> e	<b>N/A</b>	N/A	–
	Category 14	Investments	tCO <sub>2</sub> e	<b>N/A</b>	N/A	–
	Category 15	Investments	tCO <sub>2</sub> e	<b>N/A</b>	N/A	–
<b>Total Scope 3</b>				<b>272,123</b>	267,921	–

# CAML's approach to scenario planning

In 2022 CAML started scenario planning, supported by CRS. After reviewing TCFD requirements and best practices emerging from peers, three reference scenarios were chosen: Net Zero 2050 ('NZ2050'), Net Zero 2090 ('NZ2090'), and High Physical Risk ('HPR').

These scenarios are based on data and guidance on Shared Socio-economic Pathways ('SSPs') and Representative Concentration Pathways ('RCPs') developed by the Integrated Pollution and Prevention Control ('IPCC'). These scenarios incorporate variables like global trends and overarching driving forces, then build in specific contextual factors relevant to our operations, commodities and stakeholder groups. Key parameters underlying these scenarios include:

- ▶ The NZ2050 scenario uses a combination of SSP 1 and RCP 1.9 to envision ambitious and coordinated climate action. This scenario can be summarised with the key words 'Sustainable Behaviour'
- ▶ The NZ2090 scenario uses a combination of SSP 4 and RCP 2.6 to envision a turbulent progression towards net zero at a slower rate than NZ2050. This scenario can be summarised using the key word 'Inequality'
- ▶ The HPR scenario uses a combination of SSP 5 and RCP 8.5 to envision a pessimistic scenario with no serious climate policy resulting in extremely high physical risks. This scenario can be summarised with the key words 'High Resource Consumption'

The intention behind using these scenarios is to stress-test CAML's strategy and activities against a range of physical and transition risks in a manner that is aligned with TCFD recommendations. In the NZ2050 and NZ2090 scenarios, CAML is stress-tested against conditions that may arise in the transition to a low carbon economy. Additionally, the High Physical Risk Scenario stress-tests CAML against high physical risk.

Sasa and Kounrad and associated offsite infrastructure and supply chain routes were all systematically assessed for vulnerabilities from climate-induced physical risks. Ten physical hazards were modelled for relevant 50 km by 50 km grids for four time periods: baseline (1981-2010), short-term (2011-2040), mid-term (2041-2070) and long-term (2071-2100).

To assess the impact of physical risks on CAML, climate data for the HPR RCP 8.5 scenario were used. However, it should be noted that RCP 8.5 data is suitable for use across all scenarios because most physical risks are already 'baked in' for the short term, such that the differences in risk profile for the three scenarios are negligible in the period up to and including the year 2040.

In terms of transition risks and opportunities, the following aspects are systematically evaluated for all three scenarios, namely:

- ▶ Strength and ambition of climate-related policy/legislation
- ▶ Changes in capital allocation
- ▶ Changes in business models
- ▶ Potential for supply chain disruptions
- ▶ Changes in labour availability
- ▶ Potential for opposition/unrest in local communities where we operate.

Importantly, our scenario analysis was not a standalone effort but has been comprehensively integrated into our broader risk management and strategy processes. The findings were communicated through various channels, aligning with TCFD's emphasis on disclosure to stakeholders, including internal teams, board members, investors and the wider public. This proactive and integrated approach ensured that climate considerations were deeply embedded within the Group's organisational framework.

The table on page 27 captures the key findings from this comprehensive scenario planning exercise conducted in 2022. In order to raise awareness across the organisation and fully capture inputs from multiple perspectives, both senior management, as well as key technical engineers in charge of the Sasa and Kounrad sites, were involved in the workshops facilitated by CRS.

1. IPCC scenarios are typically described as combinations of SSPs and RCPs. RCPs are complex analytical models that describe how global warming will progress in response to GHG concentrations in the atmosphere. SSPs, on the other hand, describe how different socio-economic factors, such as demographics, technological development and economic growth could interact, plausibly resulting in higher or lower GHG concentrations. In combination, SSPs and RCPs can be used to describe a wide range of plausible pathways for scenario development and exploration.





## CAML's approach to scenario planning *continued*

### Selected scenarios with key risks and opportunities identified during scenario planning

	<b>Net Zero 2050</b>	<b>Net Zero 2090</b>	<b>High Physical Risk</b>
<b>Description</b>	<p>An orderly transition scenario with high transition risk and low physical risk.</p> <p>Broadly, this scenario describes a future with a rapid global energy transition, with extensive policy and financial support for both developed and developing countries.</p> <p>With rapid sustainable changes, the physical risks of climate change are the most limited of all three scenarios.</p>	<p>A disorderly transition scenario with moderate-to-high transition risk and low-to-moderate physical risk.</p> <p>This scenario describes a world of inequality where developed countries have the resources to transition, albeit on a slower timescale than in NZ2050. Developing countries, however, see more challenges in balancing development and green transition.</p> <p>With the slower rate of progress, this scenario has greater physical risk than in NZ2050. However, this scenario also has more volatile transition risks as different countries implement uncoordinated policies resulting in a chaotic business environment.</p>	<p>Based on the RCP8.5 pathway, this scenario is characterised by high physical risks and low transition risks.</p> <p>This pessimistic scenario envisions a future where developing countries achieve improved health and education, leading to lifestyles that are more resource- and consumption-heavy, as in developed countries.</p> <p>The increased demand for energy also signifies a climate future with minimal or no climate action; high emissions and significant levels of warming could also result from the breach of climatic tipping points.</p>
<b>Underlying SSP and RCP</b>	<b>SSP 1 and RCP 1.9</b>	<b>SSP 4 and RCP 2.6</b>	<b>SSP 5 and RCP 8.5</b>
<b>Expected temperature in 2050</b>	<b>1.6°C</b>	<b>1.8°C</b>	<b>2.5°C</b>
<b>Physical risks identified</b>	<p>With rapid sustainable changes, the physical risks of climate change are the most limited of all three scenarios; the scenario does not detail specific physical risks but implies that their scale and impact are significantly reduced due to the proactive measures taken.</p>	<p>Due to the slower pace of global transition efforts, there will be an increase in physical risks; physical risks are more pronounced than in NZ2050, reflecting the consequences of a delayed and uneven approach to addressing climate change.</p>	<p>High emissions and significant warming are central to this scenario, indicating extensive physical risks due to climate change; these risks are amplified by the reliance on fossil fuels and the potential breach of climatic tipping points, leading to severe and widespread impacts on the environment and human societies.</p>
<b>Transition risks identified</b>	<p>Policy and regulatory risks due to the reliance on strong policy and regulatory support, with carbon pricing posing a significant risk.</p> <p>CAML may face direct exposure through its emissions profile and indirect exposure via channels such as fuel carbon taxes and supplier pricing, with more stringent disclosure and permitting standards that CAML will need to adhere to.</p> <p>Reputational risks related to emission reduction performance, both in comparison to past performance and against peers, represent another major risk factor.</p>	<p>Policy and regulatory risks, although carbon pricing may not reach the levels seen in NZ2050; significant costs could arise directly from CAML's emissions profile and indirectly through supply chain impacts.</p> <p>Stricter regulatory disclosure requirements necessitate CAML to develop comprehensive transition and adaptation plans to manage both types of risks.</p> <p>Market transition risks emphasise the need for climate resilience in CAML's growth strategy, with due diligence processes incorporating climate-related considerations to address both transition and physical risks.</p> <p>Supply chain disruptions are expected to impact CAML, similar to other scenarios but potentially exacerbated by the disorderly nature of the transition.</p>	<p>While transition risks are considered low in this scenario, market -related transition risks, such as those affecting supply chains and insurance, are highlighted due to the adverse effects of physical hazards.</p> <p>CAML expects supply chain disruptions caused by physical hazards, affecting the reliability and efficiency of operations.</p> <p>The insurance landscape is also likely to change in terms of the availability and affordability of insurance products given growing impacts from increased physical hazards. Some locations could even be deemed uninsurable.</p>
<b>Opportunities identified</b>	<p>Technology is a key for the Company under this scenario; technological advancements and innovations offer a pathway to reduce energy needs alongside CAML's exposure to emissions-related policy and regulation, potentially leading to reputational benefits.</p>	<p>The emphasis on developing transition and adaptation plans suggests there is an opportunity for CAML to innovate and adapt its operations and strategy to mitigate transition and physical risks to maintain or gain competitive advantage in the market.</p> <p>This may involve investing in resilience, diversifying supply chains and integrating climate considerations into business planning and growth strategies to navigate the disorderly transition landscape effectively.</p>	<p>The scenario underscores the importance of embedding climate resilience into CAML's growth strategies, including mergers and acquisitions, to navigate the high physical risks effectively.</p> <p>Ensuring climate-related considerations are embedded in due diligence processes.</p> <p>Adapting business operations and strategies to withstand and respond to the physical hazards anticipated in this scenario.</p> <p>Managing reputational risks by addressing investor concerns and demonstrating proactive measures to mitigate these risks.</p>

## CAML's approach to scenario planning *continued*

### CAML's response to climate-related risks and opportunities identified during scenario planning

CAML approaches resilience in a twofold manner: 1) by identifying and mitigating foreseeable critical risks; and 2) by developing internal capabilities to remain agile in an increasingly turbulent business environment.

CAML's current operations have a planned lifetime that is expected to end before 2040; this means the short-term physical risks are of primary concern for immediate mitigation. However, medium-term and long-term risks will be incorporated into strategic considerations when looking into expansion and growth at other locations in future. Looking at transition risks, CAML faces some potential stakeholder pressure to decarbonise, with its reputation at stake. On the other hand, CAML's products are critical inputs in the global clean energy transition, which presents an opportunity based on the continued (and likely growing) demand for these materials in the coming decades.

CAML, therefore, applies the insights from scenario planning into three workstreams covering:

- ▶ Decarbonisation efforts (Pillar 2 of our Climate Change Strategy)
- ▶ Operational resilience (Pillar 3 of our Climate Change Strategy)
- ▶ Business resilience (Pillar 4 of our Climate Change Strategy)

These actions align with three pillars from our climate strategy and are supported by action on opportunities (Pillar 1) and ensuring we continue to deliver clear and transparent reporting (Pillar 5). See table to the right for actions identified and executed, arising from integrating the results of scenario planning into our Climate Change Strategy.

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<b>Pillar 2</b> <b>Decarbonisation Roadmap</b> 	<b>Pillar 3</b> <b>Building Operational Resilience</b> 	<b>Pillar 4</b> <b>Building Business Resilience</b> 
<ul style="list-style-type: none"> <li>▶ CAML has committed to a 2050 net zero target and introduced an interim target in 2020 to achieve a 50% reduction in Scope 1 and 2 emissions by 2030, compared to a 2020 base year. In 2023, we already achieved a 41% reduction in group carbon emissions.</li> <li>▶ CAML secured 100% renewable grid power from its North Macedonian power provider. This has been assured by independent third-party PwC for 2023.</li> <li>▶ Completed construction of our Solar Power Project at Kounrad in Kazakhstan in 2023, which is expected to achieve a 10% reduction in Scope 1 and 2 emissions for this site alone.</li> <li>▶ Installed a number of smart sensors on the Western Dumps at Kounrad to reduce coal use.</li> <li>▶ An energy monitoring system has been installed at Sasa for the processing plant; additional sensors installed at the paste backfill plant, management buildings and crushing plant. These efforts have helped us to identify a number of energy-saving measures.</li> <li>▶ 44% of the Group's electricity usage in 2023 came from renewable sources.</li> </ul>	<ul style="list-style-type: none"> <li>▶ As part of the scenario planning exercise in 2022, engaged with key technical stakeholders at both sites to raise awareness of the emerging physical risks that they have to manage.</li> <li>▶ Key operational risks have also been incorporated into risk management framework.</li> <li>▶ Set up a number of mitigation measures at Sasa plant to reduce the risk impact from wildfires.</li> <li>▶ Further developed a water management plan at Sasa plant to achieve an interim goal of 75% surface water consumption reduction by 2026.</li> <li>▶ In 2023, a key progress step was completion of our Scope 3 emissions inventory. Our goal is to start engaging with suppliers in our value chains to manage and monitor Scope 3 emissions in 2024.</li> </ul>	<ul style="list-style-type: none"> <li>▶ Completed first climate scenario planning exercise in 2022 with the active involvement of senior management and identified a number of strategic risks and opportunities to incorporate into strategic planning.</li> <li>▶ CAML's key products are copper, zinc and lead, all of which are critical materials that are expected to remain in high demand during the clean energy transition, specifically in the deployment of renewable energy infrastructure and storage solutions. CAML's business is therefore expected to be resilient during the transition, even benefitting from the increased demand for these metals.</li> <li>▶ We are considering implementing a shadow carbon price for future-orientated financial planning, and to build our resilience to policy shocks, such as the EU's proposed carbon tariffs for imports expected to roll out in 2026 (see EU Carbon Border Adjustment Mechanisms).</li> </ul>



# GLOSSARY

<b>Board</b>	CAML Board of Directors
<b>CAML</b>	Central Asia Metals Plc (the 'Company')
<b>CDP</b>	Carbon Disclosure Project
<b>Cu</b>	Copper
<b>EV</b>	Electric Vehicle
<b>ESG</b>	Environmental, Social and Governance
<b>GHG</b>	Greenhouse Gas
<b>H1</b>	First Half
<b>H2</b>	Second Half
<b>GISTM</b>	Global Industry Standard on Tailings Management
<b>GJ</b>	Gigajoule
<b>GRI</b>	Global Reporting Initiative
<b>KZT</b>	Kazakhstan Tenge
<b>LTIP</b>	Long-Term Incentive Plan
<b>MKD</b>	Macedonian Denar
<b>Pb</b>	Lead
<b>PB plant</b>	The Paste Backfill plant is used to return tailings from our processing plant to refill underground mined voids
<b>Scope 1</b>	Scope 1 emissions are direct emissions from owned or controlled sources
<b>Scope 2</b>	Scope 2 emissions are indirect emissions from the generation of purchased energy
<b>Scope 3</b>	Scope 3 emissions are indirect emissions that occur in the upstream and downstream activities of an organisation
<b>STIP</b>	Short-Term Incentive Plan
<b>SX-EW</b>	Solvent Extraction and Electrowinning
<b>tCO<sub>2</sub>e</b>	Tonnes of Carbon Dioxide Equivalent
<b>t</b>	Tonnes
<b>TCFD</b>	Task Force on Climate-related Financial Disclosures
<b>tCuEq</b>	Tonnes of Copper Equivalent Production
<b>TSF</b>	Tailings Storage Facility
<b>UNDP</b>	United Nations Development Programme
<b>UNFCCC</b>	United Nations Framework Convention on Climate Change
<b>SDGs</b>	United Nations Sustainability Development Goals
<b>Zn</b>	Zinc



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