# CLIMATE CHANGE REPORT

2021

CENTRAL ASIA METALS PLC

We have continued to make advances in the sustainability aspects of our business and are pleased to have developed our Climate Change Strategy during 2021.

# CHAIRMAN AND CEO STATEMENT

**NICK CLARKE**
Non-Executive Chairman

**NIGEL ROBINSON**
Chief Executive Officer

CAML's purpose is to produce base metals, which are essential for modern living, profitability in a safe and sustainable environment for all our stakeholders. It is this purpose that shapes our business model and our strategic decisions. 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 the business.

One of the most important advances for CAML during 2021 was the development of our Climate Change Strategy with a target to reduce Group greenhouse gas ('GHG') emissions by 50% by 2030 and to reach net zero by 2050. The strategy is based on five pillars comprising: producing metals which contribute positively to the energy transition; working towards decarbonisation; ensuring we are operationally resilient; focusing on our strategic and business resilience; and delivering clear and transparent climate-related reporting and disclosures.

Our initial reporting towards Task Force on Climate-Related Financial Disclosures ('TCFD') is contained within this 'CAML Climate Change Report 2021', coupled with information in both our 2021 Annual Report and 2021 Sustainability Report. As part of our decarbonisation efforts, we have secured solely renewable power for Sasa from H2 2021 onwards and are planning to develop a solar project at Kounrad.

As global pressure to decarbonise mounts and addressing climate change becomes increasingly urgent, we remain steadfast in our corporate purpose to produce base metals which are essential for modern living. Copper is one of the key metals required in the clean energy transition, with lead being required in hybrid and electric vehicles and zinc playing a significant role in extending the useful life of steel. We are committed to producing these materials in a responsible manner, whilst maintaining safe operations, maximising the value we create for our stakeholders and minimising our negative environmental and societal impacts. As always, we are grateful for the sustained support of our stakeholders in 2021, and continue to encourage open, transparent and constructive engagement as an important means of shaping our strategy. We welcome any feedback on our climate change approach as we continue to drive improvements and work towards increasingly ambitious goals.

## CAML'S CLIMATE-RELATED UN SUSTAINABLE DEVELOPMENT GOALS ('SDGS')


ENSURE ACCESS TO AFFORDABLE, RELIABLE, SUSTAINABLE AND MODERN ENERGY FOR ALL


TAKE URGENT ACTION TO COMBAT CLIMATE CHANGE AND ITS IMPACTS

## 2021 PERFORMANCE

**81,698t $CO_2e$**
Group carbon emissions

**17%**
Reduction in Group GHG emissions year on year

Developed Group Climate Change Strategy

Sasa negotiated to purchase solely renewable power

Board agreement to develop solar plant at Kounrad

# CLIMATE CHANGE - INITIAL REPORTING TOWARDS TCFD

TCFD was established in 2015 to improve and increase reporting of climate-related financial information and provides information to investors about the actions companies are taking to mitigate the risks of climate change, as well as providing increased clarity on the way in which they are governed.

We have adopted the TCFD framework and recommendations as a guide for our efforts to understand how climate change could impact a broad range of our business drivers. This provides a structured approach for us, to work towards embedding climate into our decision-making, and also enables us to learn from and apply best practice on reporting and disclosures. We see this as an opportunity to build on the work we have already done in this area, increase the quality of, and provide meaningful transparency in, our disclosures whilst taking the first steps on the roadmap of TCFD reporting. In doing so, we hope to ensure our stakeholders have a better understanding of CAML's operational and business resilience to climate change as well as how we are currently, and are planning to, incorporate the consideration of climate-related risks and opportunities into our business model.

## CORE ELEMENTS OF RECOMMENDED CLIMATE-RELATED FINANCIAL DISCLOSURES


**Governance**
The organisation's governance around climate-related risks and opportunities.

**Strategy**
The actual and potential impacts of climate-related risks and opportunities on the organisation's businesses, strategy and financial planning.

**Risk Management**
The processes used by the organisation to identify, assess, and manage climate-related risks.

**Metrics and Targets**
The metrics and targets used to assess and manage relevant climate-related risks and opportunities.

## OUR APPROACH

**Tackling climate change is one of the most important challenges of our time and we believe that every government, community, company and individual has a vital role to play in reducing carbon emissions and safeguarding the future of the planet.**

CAML's purpose is to produce base metals, which are essential for modern living, profitably in a safe and sustainable environment for all our stakeholders. It is this purpose that shapes our business model and our strategic decisions. As an organisation, we recognise the growing importance of understanding the impact of climate change on the environment and its potential impact on the business and have therefore developed a Climate Change Strategy in 2021.

Base metals, particularly copper which is used in wiring, electric motors, wind turbines and other technologies, are integral components of the clean energy transition and therefore CAML's most material way of supporting this global effort is by producing these metals which contribute positively to the energy transition.

We have adopted the TCFD framework and recommendations as a guide for our efforts to understand how climate change could impact a broad range of our business drivers. This provides a structured approach to work towards embedding climate into our decision-making, and also enables us to learn from and apply best practice on reporting and disclosures. We see this as an opportunity to build on the work we have already done in this area, increase the quality of, and provide meaningful transparency in, our disclosures whilst taking the first steps on the roadmap of TCFD reporting. In doing so, we hope to provide our stakeholders with a better understanding of CAML's operational and business resilience to climate change as well as how we are currently, and are further planning to, incorporate climate-related risks and opportunities into our business model. This section of the 2021 Sustainability Report provides context towards the four key TCFD reporting aspects shown in the diagram opposite.

# CLIMATE CHANGE - PROGRESS TOWARDS TCFD (SUMMARY)

| RECOMMENDATION | DISCLOSURE TOPIC | ALIGNMENT STATUS |
|---|---|---|
| Governance | 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. |
| Strategy | Risks and opportunities | Our climate risk assessment resulted in a climate risk register, identifying risks and opportunities over the short, medium, and long term. As we work to deepen this analysis, we will further disclose key risks and opportunities. |
| | Impact on organisation | Applying the results of the climate risk assessment, we have developed a Climate Change Strategy to manage risks and act on opportunities. In 2022, scenario planning will deepen our understanding of the direct and indirect climate-related impacts to our business, financial planning, and strategy. |
| | Resilience of strategy | Following completion of our planned scenario analysis, we will be able to test our strategic resilience in a range of climate futures and develop new strategic responses as appropriate. |
| Risk Management | 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 establish 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. |
| Metrics & Targets | Climate-related metrics | 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 Strategy. |
| | Scope 1, 2, 3 | We report Scope 1 and 2 emissions, and are working towards reporting Scope 3 emissions for the 2023 operating year in 2024. |
| | Climate-related targets | We are targeting a 50% reduction in Scope 1 and 2 combined GHG emissions by 2030 from a 2020 base. We will continue to evaluate other potential targets, such as for Scope 3 or for risk and opportunity management. |

# GOVERNANCE

CAML's Board has ultimate responsibility for all sustainability matters in the Group. Our response to climate change and our overall approach to energy usage and climate change is governed in the same way as all our sustainability management practices.

Regular updates on sustainability, including climate-related matters, are given by the Committee and management via reports and presentations at most Board meetings. In addition, the Audit Committee and its Risk Committee monitors and manages risks, including new and emerging risks such as climate change, and co-ordinates with the Sustainability Committee in presenting these to the Board. These findings shape our decision-making process and strategy. An overview of our new initiatives, direction of travel, progress and priorities as we strive to align and enhance our governance and reporting framework with the recommendations of the TCFD is shown in the table on page 4.

As we advance our work on risk management and validate our Climate Strategy in 2022, we will further evaluate relevant and meaningful KPIs to support monitoring and measurement of progress towards climate risk management, at the Board and management levels. Our Remuneration Committee is also instrumental in our efforts in this area, with the setting of ESG targets as part of our long and short-term incentive plans to ensure management accountability for all aspects of the business' performance.

We recognise that this includes climate-related risks and opportunities and are evaluating how climate targets could be integrated into existing ESG and sustainability targets. Integration of these measures would demonstrate that Executive Director and senior management remuneration is intrinsically linked to climate and sustainability performance and aligned with the Group's long-term strategy and purpose.

**Management's role in assessing and managing climate-related risks and opportunities**

### CAML BOARD

Has ultimate responsibility for the Group's responses to climate change. It confirms the Group's Climate Change Strategy and regularly reviews any changes to the policy and progress on goals as presented by the Sustainability Committee and the Executive Committee.

### SUSTAINABILITY COMMITTEE

Manages and addresses, on behalf of the Board, material policies, processes, and strategies designed to manage climate-change risks and opportunities. Oversees the Executive Committee's approach to climate change and reviews goals proposed by the CEO and Executive Committee before presenting to the Board. Monitors progress on targets and notifies the Board of any deviations from established goals.

### AUDIT COMMITTEE

Reviews the Group's risk management framework and material risks, including those relating to climate change.

### REMUNERATION COMMITTEE

Sets KPIs and other performance-related metrics as well as ensures that remuneration arrangements incorporate sustainability considerations.

### CEO AND EXECUTIVE COMMITTEE

Delivers the goals of the approved Climate Change Strategy, drawing on third party research, stakeholder engagement, and input from the management team for delivery to the Sustainability Committee. Ensures the Group's business development strategy, decision-making, and risk management process includes climate-related considerations.

### RISK MANAGEMENT COMMITTEE

Supports the Executive Committee and the Audit Committee in ensuring that a robust risk management framework is in place. In collaboration with management and the Executive Committee, assesses mitigation of principal climate-change risks which could materially impact the business. In 2022, we hired an experienced and dedicated Group Internal Controls and Risk manager to bolster this effort.

# CLIMATE CHANGE STRATEGY

In 2021, based on the results of our initial climate risk and opportunities identification and assessment, we developed a Climate Change Strategy. In 2022, we will validate this strategy through climate scenario analysis, and further development of risk assessments and mitigation options. In formulating our Climate Change Strategy, we have taken the following key aspects into account:

## OUR GEOGRAPHIES OF OPERATION

Kounrad is in the Karaganda region of Kazakhstan and Sasa is in North Macedonia. We currently receive grid power at both operations, a large portion of which is fossil-fuel-derived in North Macedonia and is solely coal-fired in Kazakhstan. Both countries have climate targets, which will support our efforts to reduce our emissions contributions, and we will also look to contribute to those efforts. We will continue to explore how we can progress our climate objectives whilst recognising the climate landscape and existing constraints of the countries we operate in.

## THE LIVES OF OUR ASSETS

We currently expect the lives of our operations to be until 2034 at Kounrad and to 2037 at Sasa. This introduces economic and practical constraints to progressing towards net zero for our current assets. We will therefore focus on identifying meaningful GHG emission reduction targets for Sasa and Kounrad, which should see us reduce our carbon footprint and thereby contribute to the global climate change effort. Additionally, we can commit to working towards net zero by 2050 by taking climate considerations into our long-term business development decisions.

## ENSURING OUR OBJECTIVES ARE DELIVERABLE

We will not over-promise and under-deliver, so our GHG reduction targets must be stretching, yet achievable. We support the UN's approach to the SDGs and firmly believe there are also other important sustainability priorities, such as those identified by our own stakeholders. As a relatively small company with limited financial means and many stakeholders with which 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 our stakeholders.

Incorporating these considerations, we have developed a climate change strategy with five pillars, which we integrate into many aspects of our business.

### 1

### PRODUCING METALS WHICH CONTRIBUTE POSITIVELY TO THE ENERGY TRANSITION

We produce copper, zinc and lead. Demand for copper is expected to increase due to its use in renewable energy technologies and electric vehicles. Zinc is used to galvanise steel and iron, which reduces corrosion and increases the lifespan of 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 electric vehicles.

### 2

### WORKING TOWARDS DECARBONISATION

We have implemented or are planning several decarbonisation initiatives, many of which are discussed later in this report. Our initiatives include a renewable Power Purchase Agreement (PPA), switching to a more efficient fossil fuel source and other energy efficiency initiatives. We are also exploring the use of electric vehicles at Sasa and the construction of a solar power plant at Kounrad.

### 3

### ENSURING WE ARE OPERATIONALLY RESILIENT

We have identified our physical risks for Sasa and Kounrad as well as some transition risks. These are incorporated into our Group-level risk register and we will continue to monitor these risks and our mitigation responses on a quarterly basis.

### 4

### FOCUSING ON OUR STRATEGIC AND BUSINESS RESILIENCE

We have incorporated shadow carbon pricing into our financial modelling, which helps us to future-proof our decision making. We consider climate change in our business development activities, such as undertaking physical and transition risk due diligence, considering our GHG statistics, and continuing to produce base metals that are essential for modern living.

### 5

### DELIVERING CLEAR AND TRANSPARENT CLIMATE-RELATED REPORTING AND DISCLOSURES

We understand that clear and transparent disclosures are crucial for our stakeholders and we are working towards further alignment with TCFD recommendations. For 2022, we plan to conduct TCFD-aligned scenario analysis to better understand our transition risks and opportunities in a range of possible climate futures. This will allow us to generate strategic and operational responses that will increase our resilience to climate change. We also plan to report our Scope 3 emissions for 2023 in 2024.

# RISK MANAGEMENT

## OUR PROCESS OF MANAGING RISKS

We identify and monitor our climate-related risks at the corporate and site level. At the site level, physical climate-related risks are incorporated into our risk register. Identified risks are discussed and reviewed on a quarterly basis as part of the site-based Sustainability Risk Committees. These committees included sustainability team members as well as site based risk coordinators (managers) and the Group Internal Controls and Risk Manager. Principal site and corporate level risks are assessed and reviewed by the Group Risk Committee. Thereafter, our process for managing climate-related risks is described in our 2021 Sustainability Report.

Within our business, there are several avenues by which climate-related risks and opportunities are identified, managed, and monitored. Initially, the Group 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.

The risks associated with climate change can be either physical risks or transition risks. Physical risks are caused by changing environmental conditions and can be chronic, such as changing precipitation patterns, or acute, such as flooding. 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.

## PHYSICAL RISKS

In 2021, we engaged an external consultant to help us understand the physical risks that Sasa and Kounrad are exposed to. Physical hazards were analysed based on data from credible sources including The World Bank and the Water Risk Atlas from World Resources Institute, using the RCP4.5 and RCP8.5 scenarios. The impacts of the physical hazards were considered against production/revenue, capital cost, operating cost, health, safety and environment, and reputation and stakeholder management. Each physical risk was then assigned a risk score between 'none', which indicated a physical hazard was not relevant to a site, to 'high'.

Using the results of this physical risk assessment, we were able to add the identified physical risks to our Group risk register. Our team also developed the results of the risk assessment further; for example, acute precipitation events at Sasa could have an impact on our tailings storage facilities, or chronic precipitation changes could have implications for our overall water management processes. Risk owners were identified, and control and mitigation measures were established for all risks. We will continue to monitor our climate risks and our responses to them on a quarterly basis.

Landslides, which could be caused by extreme rainfall events or by prolonged rainfalls at Sasa, were identified as one potential physical risk. We have engineered several responses, such as modifying the geometries of several slopes and installing piles and retaining walls. We are also employing nature-based solutions by planting trees on a recultivated tailings storage facility, and planting 3,600 trees and 250 shrubs on bare lands and impacted areas along the Kamenica river. This also provided us an opportunity to complete river remediation and biodiversity improvement activities, contributing to broader sustainability objectives and the SDGs.

## TRANSITION RISKS

We also completed a preliminary assessment of transition risks and opportunities.

### Managing the risk posed by external carbon pricing

Within our Group risk register, we have identified carbon pricing as a transition risk; one of our responses was to start evaluating shadow carbon pricing to understand our exposure to future carbon pricing regulations. We now have the capability to embed external carbon pricing scenarios into our current financial models. This can aid our decision-making by translating emissions tonnage into financial cost, helping us to understand our operational exposure and resilience to future carbon pricing increases, and incentivising our emissions reduction activities. We have selected a preliminary shadow carbon price based on estimates from external sources, such as The World Bank and the EU carbon price.

The World Bank estimates a carbon price of between $50-100/ $tCO_2e$; therefore, for this source, we have assumed a carbon price of $75/$tCO_2e$. In February 2022, the EU carbon price was EUR 97/$tCO_2e$. Going forward, we will be applying our shadow carbon price to the net present value ('NPV') of assets we appraise. In doing so, we will ensure our assets are resilient to further external carbon pricing increases.

As part of our scenario analysis exercise, we will consider other ranges of carbon pricing that we should evaluate in our decision-making, based on different global transition scenarios.

# METRICS AND TARGETS

## 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 to the business 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-level Scope 1 and 2 emissions by 50% overall by 2030 as 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.

## EMISSIONS REDUCTIONS INITIATIVES

To achieve our decarbonisation target of 50% by 2030, we have developed a preliminary set of initiatives that should support decarbonisation through the lives of the asset.

These initiatives focus initially on renewable energy acquisition or generation and fuel improvements. In 2022, we have continued to explore and understand the potential of these initiatives and will continue identifying other opportunities.

Initiatives include:

### RENEWABLE POWER FOR:

#### Sasa

Sasa recently negotiated to acquire solely renewable power from its North Macedonian power provider, EVN, from 1 July 2021. Auditing of renewable energy consumption and associated GHG emission reduction claims is in its infancy in North Macedonia, and the reduction in emissions will be based on EVN's auditing procedures. This should result in an annualised c.94% reduction in Sasa's Scope 2 emissions, or approximately 35% overall for the Group.

#### Kounrad

Page 9 outlines the Kounrad Solar Project, advancing into detailed engineering design. This project could replace 22% of Kounrad's energy, reducing overall Group emissions by approximately 7%.

### REDUCING COAL CONSUMPTION

A detailed review of fuel sources which could potentially replace coal has been undertaken for Kounrad. None of the proposed alternatives are being considered due to a combination of limited GHG reduction potential coupled with significant operating and capital cost implications. However, the study did identify potential opportunities to reduce coal consumption. The impact on our Group-level emissions could potentially be 1%.

### EVALUATING FUEL SWITCH

The Sasa team, alongside mobile plant contractors Epiroc, is undertaking an analysis into the practical and financial implications of purchasing electric underground machines for drilling, loading, and hauling of ore. Further details will be provided in due course.

### TREE PLANTING

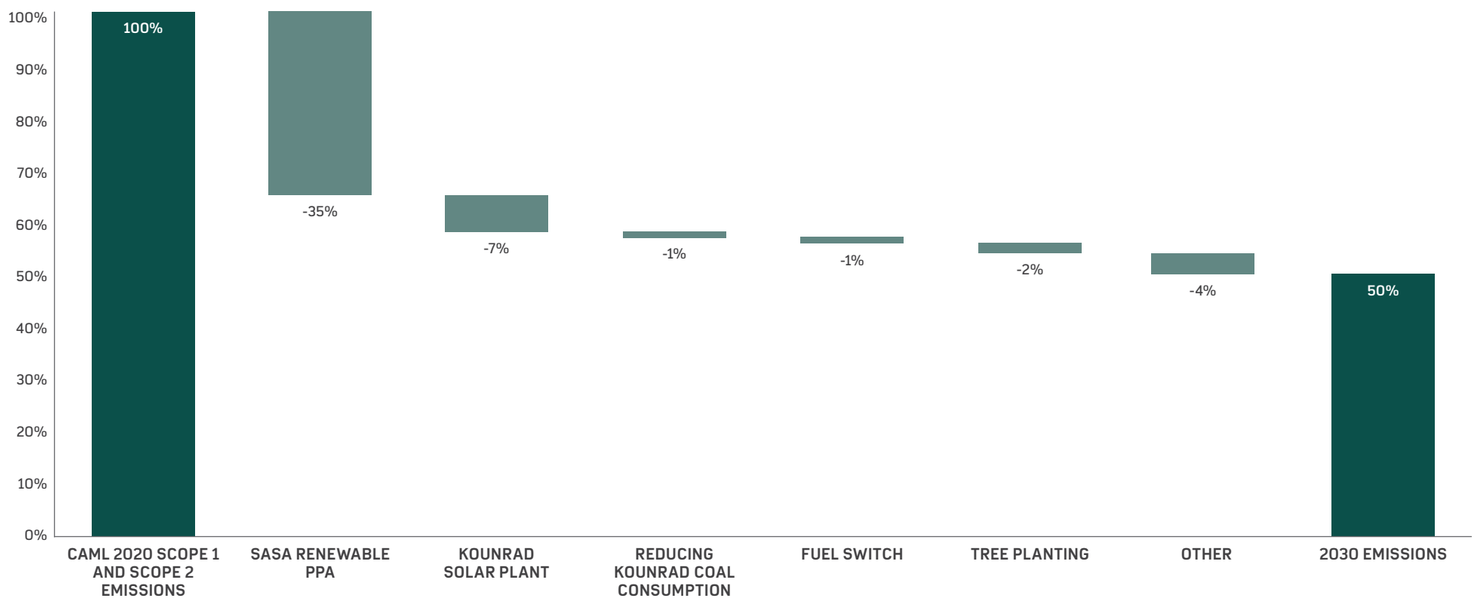
Our team is investigating the planting of trees both in the UK and in North Macedonia. In particular, we are working to identify areas, ideally in North Macedonia, where we could plant trees to offset Sasa's Scope 1 emissions on an annualised basis (approximately 3,000 $CO_2e$) over the life of the trees, equivalent to 0.175t $CO_2e$ per tree.

## NEXT STEPS

In 2022, we intend to conduct scenario analysis to improve our understanding of the transition risks posed in several different climate futures. Though our Group risk register already contains some transition risks, this process will allow us to understand and identify additional risks and infer the probability and impact these risks could have in each scenario. This will allow us to develop appropriate responses and strategies to ensure our resilience in the face of an unknown climate future.

Additionally, we will be identifying the opportunities that climate change could bring, such as technological changes, so that we can recognise and capitalise on these.

We have committed to estimating our Scope 3 emissions during 2023, with a view to reporting those in 2024.



# KOUNRAD SOLAR PROJECT

**RELATED CLIMATE STRATEGY PILLARS**

**2**

**WORKING TOWARDS DECARBONISATION**

**4**

**FOCUSING ON OUR STRATEGIC AND BUSINESS RESILIENCE**

The Kazakh economy is heavily dependent on the oil and gas industry and the production of coal for cost-effective industrial and manufacturing processes. Currently, the renewable power industry is in its infancy in Kazakhstan and tariffs for the largely fossil-fuel-based power are low. This may create economic barriers to entry for new renewable energy producers.

The Kazakh government has stated its target to increase renewable power as a proportion of overall power to 15% by 2030. At the Conference of the Parties 26 ('COP26') in Glasgow, Kazakhstan also pledged to reach carbon neutrality by 2060 and also signed an agreement to phase out inefficient fossil fuel subsidies. On 1 January 2022, the Kazakh government lifted a government-enforced cap on liquified gas, which lends action towards these climate objectives. However, large-scale civil unrest resulted, with significant injury to people and extensive property damage in some regions.

The complexity of the situation for the Kazakh government highlights the challenges that climate action will bring for regions that are heavily dependent on fossil fuels and fossil fuel subsidies. Implementing climate agendas has significant socioeconomic implications which must be considered. Governments will need to rely on private sector support and tangible action to progress with climate action and enable a just economy-wide transition to low carbon.

We have been working on a scoping study for renewable electricity generation at Kounrad. We assessed the site's solar and wind potential by modelling installed capacity, power generation and the financial costs and project economics involved. We also investigated the predictability of power generation and the technical competencies required to manage each source.

We have concluded that a 4.77 megawatt ('MW') solar energy plant is an opportunity for us to:

- → Replace 22% of our Kounrad electricity consumption, which will marginally reduce our cash cost per lb and therefore modestly improve our profitability
- → Reduce our Group GHG (Scope 1 and Scope 2) emissions profile by an estimated 7%
- → Reduce our exposure to external carbon pricing risk
- → Improve our reputation with Kazakh authorities and with other local and international stakeholders and shareholders
- → Contribute to the SDGs

Our Board has approved the development of this solar project and the Kounrad team has been instructed to commence detailed engineering design. The plant location has been decided and a preferred contractor identified.

# ENERGY USAGE AND EMISSIONS MONITORING

## OUR APPROACH

**The environmental teams at both operations carry out calculations and analysis of GHG emissions which are reported to senior management on a monthly basis.**

**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 contributions 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.**

A report which assesses the effectiveness of energy efficiency measures implemented at our operations is prepared annually. Energy efficiency audits have been undertaken at both operations during 2021 and consideration is being given to determine how further energy-saving measures can be identified.

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 look to operate in accordance with the relevant European Union Framework Directives.

### SASA

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. Whilst a large proportion of the available grid power in North Macedonia is coal-fired (and therefore reflected in Scope 2 emissions), Sasa recently negotiated to acquire solely renewable power from its provider, EVN, from 1 July 2021. As a result of this mid-year development, 49% of Sasa's power purchased in 2021 was renewable, representing a substantial increase from 6% in 2020.

Notwithstanding this material improvement in GHG emissions, reducing electricity consumption remains a top priority. It should be noted that energy consumption is expected to rise during the construction and operational phases of the Cut and Fill Project.

### KOUNRAD

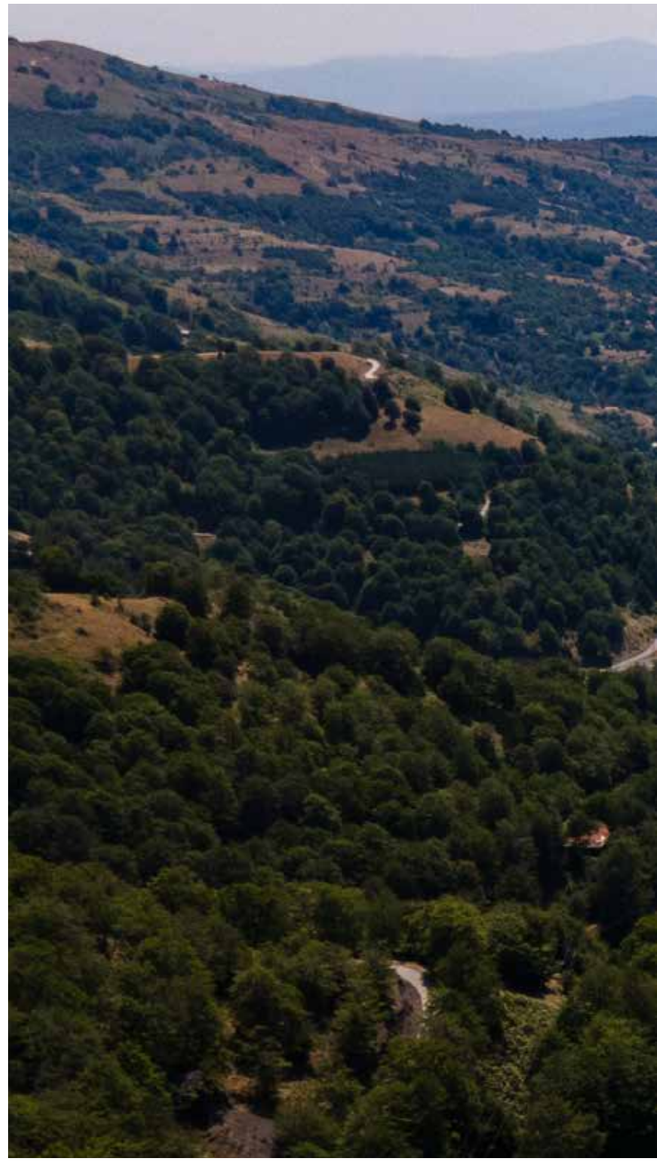
Scope 1 emissions at Kounrad predominantly reflect an essential part of our processing, which requires the heating of leaching and copper-bearing solutions in winter with coal-fired boilers to prevent freezing. A detailed review of fuel sources has been conducted and is discussed in 'Emissions reductions initiatives'.

Kounrad's EMS includes monitoring the efficiency of boiler treatment plants and the quality of incoming fuel. A recent initiative to increase efficiencies included modifications to the pump and pond network, which should reduce heat loss by feeding the solution directly from one pond to the SX heat exchangers, rather than from a series of settlement ponds.

With no mining operations at Kounrad, we do not use a significant diesel-fuelled mobile fleet to drill, blast or haul. Thus, there is limited opportunity to reduce Scope 1 emissions from electrical vehicles.

An energy efficiency audit was conducted in 2021; however, due to the relatively young age of the operation's equipment, no material savings were identified.

In the Karaganda region of Kazakhstan, most grid power is coal-fired, which is reflected in the Scope 2 emissions. As part of our Climate Change Strategy, the development of a solar project at Kounrad has been approved by the CAML Board.



# 2021 PERFORMANCE

## Energy usage

Total energy consumption stayed broadly the same in 2021 versus 2020 at 694,441 GJ in 2021 (2020: 695,620 GJ). Electricity consumption accounted for 53% of total energy consumed, although 11% of the Group's total energy consumption was from renewable sources.

2021 electricity usage at Sasa stayed broadly the same as 2020 (155,969 GJ in 2021 vs 157,853 GJ in 2020). At Kounrad, electricity usage increased by 3% to 209,935 GJ (2020: 203,242 GJ), due to a higher iron content solution in 2021 compared to 2020, which reduced the current efficiency rate.

## Emissions

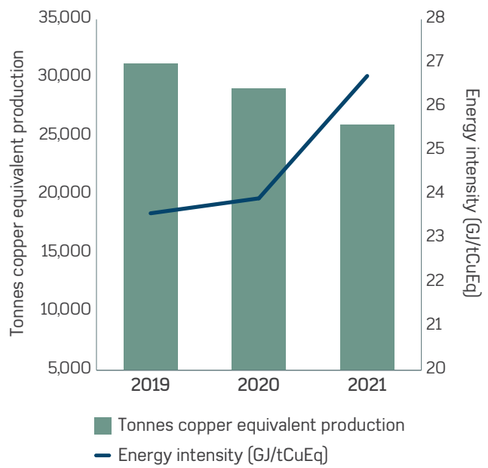
Scope 1 and 2 emissions from the Sasa and Kounrad are calculated and reported annually. Emissions were calculated using the methodology of the GHG Protocol and this methodology was supplemented by country and sector-specific information.

Group-level Scope 1 and 2 emissions continue to decrease from 2019. Scope 1 and 2 emissions totalled 81,698 $tCO_2e$ for 2021, a 17% reduction from 2020, primarily driven by the Sasa renewable energy PPA. Scope 1 and 2 GHG intensity also continued to show improvement from 2019, with a reduction to 3.14 $tCO_2e$/tCuEq in 2021.

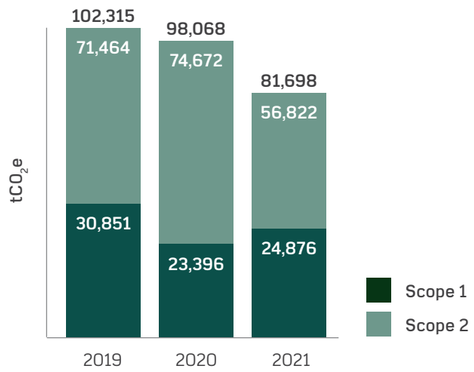
At Sasa, total emissions decreased from 42,682 $tCO_2e$ in 2020 to 24,101 $tCO_2e$ in 2021, representing a 44% reduction year on year, due largely to the 47% reduction in Scope 2 emissions. Despite reduced tonnage in copper-equivalent production in 2021 due to the relationship of the copper price to the lead and zinc prices, we succeeded in reducing our GHG intensity compared to both 2020 and 2019.

At Kounrad, total emissions were 57,597 $tCO_2e$, a slight increase from 2020, and this is largely due to an increase in iron content of the Western Dump ore, leading to higher electricity usage and therefore elevated Scope 2 emissions.

### Energy intensity against copper equivalent production




### Group Scope 1 and Scope 2 GHG emissions




**2021 Group carbon emissions intensity**

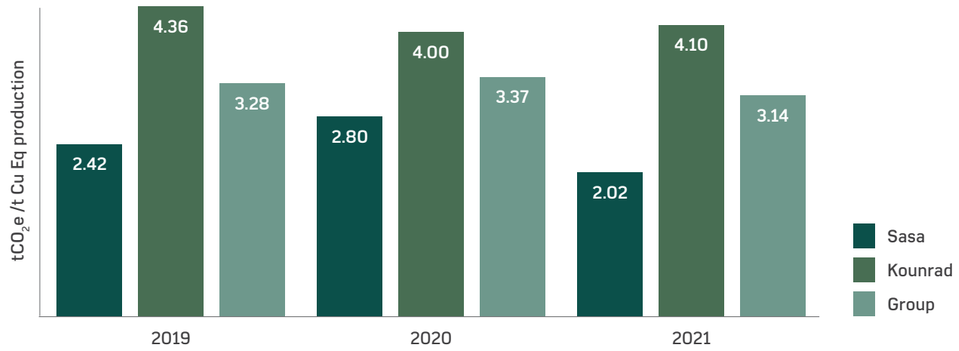
**3.14$tCO_2e$**

(2020: 3.37 $tCO_2e$)

### Tonnes of Cu Equivalent Production

| | 2019 | 2020 | 2021 |
|---|---|---|---|
| Copper equivalent production (tonnes) | 31,233 | 29,068 | **26,000** |

### Carbon emissions intensity[1]




1 The graph shows Group-level and site-specific carbon emission intensity, calculated as the emission rate of $CO_2$ equivalent tonnes relative to a tonne of copper equivalent production for Kounrad and Sasa.

# APPENDIX

## ENERGY CONSUMPTION

| | Unit | 2021 | 2020 | 2019 |
|---|---|---|---|---|
| **Group** | | | | |
| Fuel consumption from non–renewable sources[1] | GJ | 328,537 | 334,467 | 392,467 |
| Coal | GJ | 276,921 | 285,160 | 337,935 |
| Diesel/petroleum | GJ | 51,615 | 49,365 | 54,532 |
| Electricity consumption | GJ | 365,904 | 361,095 | 343,960 |
| Total energy consumption | GJ | 694,441 | 695,620 | 736,427 |
| Tonnes of Cu equivalent production | t Cu Eq | 26,000 | 29,082 | 31,233 |
| Energy intensity | GJ/t Cu Eq | 26.71 | 23.92 | 23.58 |
| | | | | |
| **Sasa** | | | | |
| Fuel consumption from non–renewable sources | GJ | 36,927 | 36,071 | 37,758 |
| Coal | GJ | – | – | – |
| Diesel/petroleum | GJ | 36,927 | 36,071 | 37,758 |
| Electricity consumption | GJ | 155,969 | 157,853 | 154,343 |
| Total energy consumption | GJ | 192,897 | 193,924 | 192,101 |
| Tonnes of Cu equivalent production | t Cu Eq | 11,959 | 15,924 | 17,462 |
| Energy intensity | GJ/t Cu Eq | 16.13 | 12.74 | 11.00 |
| | | | | |
| **Kounrad** | | | | |
| Fuel consumption from non–renewable sources: | GJ | 291,609 | 298,454 | 354,709 |
| Coal | GJ | 276,921 | 285,160 | 337,935 |
| Diesel/petroleum | GJ | 14,668 | 13,294 | 16,774 |
| Electricity consumption | GJ | 209,935 | 203,242 | 189,617 |
| Total energy consumption | GJ | 501,544 | 203,242 | 189,617 |
| Tonnes of Cu equivalent production | t Cu Eq | 14,041 | 13,855 | 13,771 |
| Energy intensity | GJ/t Cu Eq | 35.72 | 36.00 | 39.53 |

## EMISSIONS[1]

| | Unit | 2021 | 2020 | 2019 |
|---|---|---|---|---|
| **Group** | | | | |
| Scope 1 emissions | $tCO_2e$ | 24,876 | 23,396 | 30,851 |
| Scope 2 emissions | $tCO_2e$ | 56,822 | 74,672 | 71,464 |
| Total emissions | $tCO_2e$ | 81,698 | 98,068 | 102,315 |
| Tonnes Cu equivalent production | t | 26,000 | 29,068 | 31,233 |
| GHG intensity | $tCO_2e$/t Cu Eq | 3.14 | 3.37 | 3.28 |
| | | | | |
| **Sasa** | | | | |
| Scope 1 emissions | $tCO_2e$ | 2,968 | 2,561 | 3,034 |
| Scope 2 emissions | $tCO_2e$ | 21,133 | 40,121 | 39,229 |
| Total emissions | $tCO_2e$ | 24,101 | 42,682 | 42,263 |
| Tonnes Cu equivalent production | t | 11,959 | 15,213 | 17,462 |
| GHG intensity | $tCO_2e$/t Cu Eq | 2.02 | 2.81 | 2.42 |
| | | | | |
| **Kounrad** | | | | |
| Scope 1 emissions | $tCO_2e$ | 21,908 | 20,835 | 27,817 |
| Scope 2 emissions | $tCO_2e$ | 35,689 | 34,551 | 32,235 |
| Total emissions | $tCO_2e$ | 57,597 | 55,386 | 60,052 |
| Tonnes Cu equivalent production | t | 14,041 | 13,855 | 13,771 |
| GHG intensity | $tCO_2e$/t Cu Eq | 4.10 | 4.00 | 4.36 |

1 Gases included in the calculation: $CO_2$, $CH_4$, $N_2O$, HFCs, PFCs, $SF_6$, $NF_3$.

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