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Second Party Opinion

Keliber's Green Financing Framework

Aug. 22, 2024

[Editor's Note: This SPO was completed on Nov. 11, 2023. It was published on Aug. 22, 2024, at the issuer's request.]

Location: Finland

Sector: Metals and mining

Alignment With Principles

Aligned = Conceptually aligned = Not aligned =

Green Loan Principles, LMA/LSTA/APLMA, 2023

See [Alignment Assessment](#) for more detail.

Primary contact

Catherine Baddeley

London

+44 207 176 0459

catherine.baddeley

@spglobal.com

**Medium
green**

Activities that represent significant steps towards a low-carbon climate resilient future but will require further improvements to be long-term low-carbon climate resilient solutions.

Our [Shades of Green Analytical Approach](#) >

Strengths

Keliber's investments in lithium mining and processing will facilitate a move toward electric vehicles (EVs), an important component of a low carbon climate resilient (LCCR) future. Lithium is an important component in the manufacture of batteries for EVs. In addition, according to the International Energy Agency (IEA), demand for minerals for use in EVs will increase by at least 30x by 2040. We view Keliber's investments and commitment that 100% of the end use of the lithium hydroxide produced will be for batteries in EVs as a step toward a LCCR future.

Weaknesses

No weakness to report.

Areas to watch


Keliber's lithium processing activities are currently partly reliant on natural gas. It is a limitation that Keliber will initially use natural gas for some on-site processes. However, electricity used will be low carbon, including from nuclear, solar, and wind, with the last two secured through power purchase agreements (PPAs). Natural gas may be replaced with biogas and partly hydrogen in the future. However, only preliminary plans are in place given the project's early stage.

Mining and processing are subject to environmental impacts. Keliber operates in line with Finland's environmental regulation and reports against its requirements. The company is working on a lifecycle assessment (LCA) including benchmarking of scope 3 emissions compared to other lithium production routes. This will supplement existing LCAs that have provided a benchmark for scope 1 and 2 emissions and thus do not fully capture the full scope of emissions.

Eligible Green Projects Assessment Summary

Eligible projects under Keliber's Green Financing Framework (the Framework) are assessed based on their environmental benefits and risks, using S&P Global Ratings' Shades of Green methodology.

Facilitating the growth of electrification with a focus on the transport sector

 **Medium green**

Investments in Keliber's assets dedicated to the future mining and processing of lithium, and the production of lithium hydroxide to be used in the batteries of EVs.

Issuer Sustainability Context

This section provides an analysis of the issuer's sustainability management and the embeddedness of the financing framework within its overall strategy.

Company Description

Keliber Oy is a mining and chemicals company located in Finland. The company aims to set up an integrated business model with both mining and processing capabilities to produce battery-grade lithium hydroxide for use in EVs. Keliber aims to directly supply the European market. Keliber's shareholders are Sibanye-Stillwater (about 79%), the Finnish Minerals Group (20%), a state-owned company aiming to develop a lithium-ion battery value chain, and a group of small Finnish investors (1%).

Sibanye-Stillwater operates as a precious metals mining company headquartered in South Africa, with operations also in the U.S., Zimbabwe, Canada, Australia, and Argentina. The company produces gold; platinum group metals, including palladium, platinum, and rhodium projects; and byproducts such as iridium, ruthenium, nickel, copper, and chrome. The Keliber project is still in development and hence is not yet generating revenue. Although Keliber's contribution to Sibanye-Stillwater's overall revenue will be limited, the project is expected to generate significant EBITDA and provide the group with diversification of revenue streams as it expands into battery metals.

Material Sustainability Factors

Climate transition risk

The mining of minerals and processing of metals are both energy intensive, particularly primary metals versus recycled metals. Moreover, the energy intensity of mining is increasing in many cases, since ore grades decline and generally require more processing. The energy transition also presents opportunities because it relies on metals like copper, lithium, cobalt, and nickel, which are essential for electrification and battery deployment. Under the Climate Act (423/2022), Finland has set a legally binding commitment to be carbon neutral by 2035, much sooner than the EU's commitment to reach carbon neutrality by 2050.

Pollution

Mining releases toxic elements into the air, water, or soil. Metals production sources these mined inputs but is generally less invasive owing to a smaller footprint. The management of waste and pollution is embedded within the operating plans for any assets in the industry, albeit with varying degrees of quality management, scrutiny, and risk around the world. Small breaches are usually managed through established legal or regulatory frameworks. On the other hand, large-scale incidents such as a tailing dam collapse can take a severe toll (sometimes with fatalities) on employees, communities, natural areas, and operations. At the very least, episodes of disruption can cause high remediation costs, given widespread damage, as well as reputation loss.

Waste and recycling

Mining utilizes and generates numerous dangerous substances, including mercury, sulfuric acid, arsenic, or lead, especially at the time of smelting and refining ore to extract minerals. These substances are harmful to the environment and living organisms, requiring strict practices regarding sourcing, transportation, storage, recycling, and disposal. The industry also generates considerable waste in the form of large volumes of untreated rock and processing residues. Companies keep tailings, a mixture of pulverized rock, water, and processing chemicals in large impoundments until fluids are recycled or evaporate. Wet storage facilities may experience leakages, with related contamination of water. Likewise, dry tailings may be major sources of dust until they are reclaimed, with typically vegetation planted to stabilize soils. Metals producers increasingly rely on scrap materials when their collection is economical, potentially advancing circular economy principles.

Biodiversity and resource use

Mining often implies the transformation of large areas of land at all phases of a mine's life, from planning and optimizing its footprint, to closure and land restoration. More specifically, mining involves the removal of vegetation and soil, the movement of considerable volumes of rock, the conversion of land plots into waste disposal sites, and sometimes the diversion of watercourses. The immigration of people seeking opportunities from the mine may put additional pressure on biodiversity, in the form of land clearing for housing settlements or hunting of wildlife. Land use issues are especially acute when a company extracts minerals with naturally low concentration, or mines nearing the end of their economic life. Mining disrupts ecosystems because it releases toxic elements into the air, water, or soil. Waste from mining and processing can also have further impacts on biodiversity if not managed effectively. In Keliber's case, mining operations will occur in an area previously used for peat production, with processing carried out in an existing industrial area. Given these are brownfield sites, Keliber's specific exposure to biodiversity risks is relatively low.

Physical climate risk

Mines typically rely on extensive infrastructure to extract and process resources. Such large and widespread fixed assets are highly exposed to acute physical climate risks, especially since extreme weather events, including heat waves and storms, are becoming more frequent and severe. Over time, both acute and chronic risks--such as changing temperature and precipitation patterns and increasing water stress--may shorten the useful life of vehicles and infrastructure. Disruption can be both on direct operations and throughout the value chain, since mining involves for instance extensive logistics, from fuels and equipment transportation to the mining site, to the shipment of resources for further processing or to their end consumers. Finland in particular is expected to see an increase in precipitation due to global warming, which could affect mining operations directly and throughout the value chain.

Workforce health and safety

According to the International Labor Organization, the mining industry is one of the most hazardous in the world. Metals production may also be dangerous because plants operate large machinery and processes at high temperatures. The impact on stakeholders may be extensive because safety incidents can involve significant operational disruptions, lengthy remediation, or human casualties, potentially creating friction with communities or triggering regulatory penalties. This is especially true for low-probability events like mine collapses, large equipment failures, or fugitive emissions.

Impact on communities

The sector's impact on communities is typically pronounced, since mine plans often incorporate sizable investments in infrastructure that can affect local living conditions. Such development can engender dissent, not least because they may occur in remote areas or conflict zones and mining concessions encroach on natural or agricultural land. Constantly depleting deposits requires exploring vast, new areas, potentially increasing friction with small communities, especially indigenous groups. Although metals fabricators are less acutely exposed to this, they often have a significant footprint and presence in the communities where they operate, necessitating long-standing relationships with employees, pensioners, and their families.

Issuer And Context Analysis

As a subsidiary of Sibanye-Stillwater, Keliber applies the policies of the Sibanye-Stillwater Group. As such our issuer sustainability context analysis focuses on the wider policies of Sibanye-Stillwater, taking into account the context of the Keliber project where relevant.

Keliber's investments in developing, operating, and maintaining assets related to the mining and processing of lithium, and production of lithium hydroxide, aim to address climate transition risk.

The end use of the lithium hydroxide is for EVs, which aids the electrification and decarbonization of the transportation sector. On the other hand, the Framework's projects are exposed to physical risk, given the fixed nature of the assets, other environmental risks, and social risks, including those related to workforce health and safety.

The Keliber project fits within its shareholder's objectives of contributing to building a sustainable battery value chain. Sibanye-Stillwater's business strategy includes diversifying away from gold and platinum-group metals into battery-metals mining and processing, primarily through acquisitions. Battery metals remain a small part of Sibanye-Stillwater's business, with Keliber being one of four assets that the company has interests in related to this objective. Furthermore, Finnish Minerals Group is a government-owned entity that aims to contribute to developing a responsible battery value chain in Finland. As part of the National Battery Strategy of Finland, the state has defined an objective of being a leading country in sustainable battery production and electrification by 2025, helping contribute toward less carbon-intensive transportation.

Sibanye-Stillwater will integrate Keliber into its greenhouse gas emission-reduction targets.

Due to the recent acquisition, Keliber is not yet integrated into Sibanye-Stillwater's greenhouse gas emission-reduction targets. Sibanye-Stillwater currently aims to achieve net zero by 2050, with a near-term target of reducing scope 1 and 2 emissions by 27% by 2025 compared to 2010 levels. It is positive that Sibanye-Stillwater has submitted this target to the Science Based Targets Initiative to receive validation. On the other hand, Sibanye-Stillwater's South African operations remain reliant on Eskom, the country's national utility provider, which primarily uses coal and has experienced a decreasing energy-availability factor. To reduce this exposure, Sibanye-Stillwater is commissioning private power projects to supplement some of its South African operations, which will reduce reliance on the country's coal-heavy power grid. The carbon-intensity of the grid in Finland is much lower than in South Africa and, although Keliber will partly rely on natural gas for some of its activities, its carbon intensity is expected to be significantly lower than that of Sibanye-Stillwater's other operations.

Physical risks are relevant to the Keliber project, given the fixed nature of the assets. Sibanye-Stillwater has performed a high-level analysis of its operations' exposure to physical climate risks, including applying a range of the Intergovernmental Panel on Climate Change's representative concentrative pathways (RCPs): RCP 2.6, RCP 4.5 and RCP 8.5. However, the quantified impact of these scenarios has not been reported. Furthermore, the design of the Keliber mine has taken into account a climate change scenario with an average temperature increase of between 1°C and 2°C, resulting in an increase in annual precipitation of 5%.

Keliber, through its mining and processing activities, is exposed to other environmental risks including those related to pollution, waste and recycling, biodiversity, and resource use. These risks are managed in line with the project's environmental permit. For more information, please see the section Analysis Of Eligible Projects on page 7.

Safety is a key consideration for the successful implementation of the project, since mining and processing activities introduce safety risks for Keliber's workers and contractors.

Sibanye-Stillwater manages workforce health and safety risk through its health and safety policy. Contractors are treated in the same way as employees, and the company has built a compliance portal to check that legal, medical, and training documentation for its contractors is up to date. Although Sibanye-Stillwater has a goal of no harm, its combined lost time/injury frequency rate remains higher than average for the mining sector, excluding coal. On the other hand, Finland has strong health and safety regulations, and the mine requires a safety permit from the Finnish Safety and Chemicals Agency. Furthermore, Keliber's project execution plan outlines the management of safety risks, including for contractors. One of the key safety issues for employees and contractors is the inhalation of fine particles (silica). This is tackled through the company's health and safety measures, specifically its dust management plan. An appeal has been lodged against the project concerning occupational safety related to the toxicity of beryllium in the Keliber ores. According to the issuer this is also addressed within the project's dust management plan, and the level of beryllium in the ore has since been determined to be low. We view as positive that appeals appear to be managed in a transparent manner. Furthermore, the risk of opposition from local communities is limited. In particular, the mining occurring in Kaustinen is not near to any houses and the processing plant in Kokkola is in an industrial area. As such, no local communities will be relocated for the project to be developed.

Alignment Assessment

This section provides an analysis of the framework's alignment to Green Bond/Loan principles.

Alignment With Principles

Aligned = ✓ Conceptually aligned = ○ Not aligned = ✗

✓ Green Loan Principles, LMA/LSTA/APLMA, 2023

✓ Use of proceeds

The issuer commits to allocate the net proceeds issued under the Framework exclusively to facilitating the growth of electrification, with a focus on the transport sector. The Analysis of Eligible Projects section contains more information on our analysis of the environmental benefits of the expected use of proceeds.

Keliber articulates climate change mitigation as the objective of the project. The project will focus on the development, operation, and maintenance of Keliber's assets dedicated to the future mining and processing of lithium and production of lithium hydroxide. In addition, Keliber has outlined that where refinancing occurs, a look-back period of 24 months will be applied, which we view as in line with market practice.

✓ Process for project evaluation and selection

Keliber describes its process for project evaluation and selection in the Framework. Keliber identified that the end use of the lithium hydroxide produced by the project enables the EU Taxonomy's climate change environmental objectives, such as the manufacture of batteries, which contributes to climate change mitigation. In addition, the entity communicates that the project has been selected and evaluated by the management board of Sibanye-Stillwater as part of its strategy to diversify into the battery metals sector. Keliber commits to reviewing and managing the social and environmental risks associated with the project according to Sibanye-Stillwater's suite of environmental, social, and governance policies, as well as local regulatory frameworks such as Finland's Environmental Impact Assessment Act.

✓ Management of proceeds

Keliber commits to managing and earmarking future green loan funds using a separate bank account. In addition, unallocated proceeds may be temporarily invested in overnight or other short-term investment in cash and cash equivalents. Furthermore, all of Keliber's assets relate to the mining and processing of lithium, and we understand Keliber does not intend to diversify into different types of assets or activities in the future. As such, we believe the risk of the funds being allocated to projects that are not in line with the eligibility criteria stated is limited.

✓ Reporting

Keliber commits to publishing an annual green loan report, reporting on the allocation of proceeds and the environmental impact of green projects financed under the Framework, until full allocation of the proceeds. The impact report will include the environmental objectives the project contributes to, in addition to the actual and estimated metrics. Furthermore, we view as positive that Keliber intends to publish the methodologies as well as the assumptions and baselines used to determine the impact indicators on a best-estimate basis. The annual allocation report will also be subject to an external review, which we view as positive.

Analysis Of Eligible Projects

This section provides details of our analysis of eligible projects, based on their environmental benefits and risks, using the Shades of Green methodology.

Keliber expects to allocate 100% of the proceeds of financial instruments issued under the Framework to a single project category: facilitating the growth of electrification with a focus on the transport sector.

Given the early stage of the Keliber project, we expect most of the proceeds will be allocated to new financing. However, refinancing activities are also possible under the Framework.

Overall Shades of Green assessment

Based on the project category shades of green detailed below, and consideration of the environmental ambitions reflected in the Framework, we assess it as Medium green.

Green project categories

Facilitating the growth of electrification with a focus on the transport sector

Assessment

 Medium green

Description

Proceeds will be allocated toward investments in the development, construction, and maintenance of assets dedicated to the future processing of lithium and the production of lithium hydroxide. The assets comprise:

- The Syväjärvi and Rapasaari mine sites located in Kaustinen;
- The Päiväneva concentrator facility located in Kaustinen; and
- The lithium hydroxide refinery located in Kokkola, Finland.

Eligibility of the lithium hydroxide product will be limited to the volumes produced to promote electrification through the manufacture of batteries for EVs.

Analytical considerations

- **Keliber will allocate the proceeds issued under the Framework to the development, operation, and maintenance of assets dedicated to the future mining, processing, and production of lithium hydroxide.** 100% of the end use of the lithium hydroxide is expected to be directed toward EV batteries, which we expect to be a key component of an LCCR future, therefore supporting our Medium green assessment. However, mining and processing activities remain highly exposed to environmental risks, and Keliber's operations are still partly reliant on fossil fuels such as natural gas. Consequently, this exposure constrains us from an assessment of Dark green.
- **According to a study Keliber commissioned, the refining process of lithium drives more than 50% of scope 1 and 2 carbon emissions.** Keliber used a consultancy firm to assess the scope 1 and 2 carbon emissions associated with production at the mine site, refining facility, and transportation between these facilities and to compare emissions versus other common lithium process routes. The results of the that study also showed Keliber has the lowest carbon intensity compared to the other routes, primarily thanks to short transportation distances. Furthermore, Keliber has conducted an additional life cycle assessment that includes scope 3 emissions; however, this does not include benchmarking compared to other lithium extraction and refining methods. A further consultant has now been identified to carry out such benchmarking including scope 3 emissions. This will enable further clarity on how Keliber's overall environmental footprint compares to that of peers when considering the full value chain.
- **Use of fossil fuels poses some transition risk in relation to the project.** Keliber depends on natural gas to power some of its on-site processes, with the remaining energy coming from the Finnish grid, about 43% of which comes from renewable sources. We

Medium green

Activities that represent significant steps towards a low-carbon climate resilient future but will require further improvements to be long-term low-carbon climate resilient solutions.













Our [Shades of Green Analytical Approach](#) >

Second Party Opinion: Keliber's Green Financing Framework

view as positive that Keliber has plans to use nuclear, solar, and wind power for its electricity needs; the last two will be secured through PPAs. In addition, a possible switch from natural gas to biogas and hydrogen may be implemented due to minimal investments required to upgrade processes using natural gas to use other fuel sources. However, given the early stage of the project and current limitations in the supply of biogas, only preliminary plans are in place.

- **Waste management is important to manage the environmental impact of the mining sector.** Keliber complies with Sibanye-Stillwater's Group Tailings Management System, which we positively note is in line with the Global Industry Standard on Tailings Management, which is a voluntary standard. Furthermore, the main waste component of the processing is analcime sand, which can be used as a construction material given its chemically inactive properties. The company expects this waste stream will be used to build a nearby harbor, showing elements of a circular economy, which we view as positive.
- **Although the mining sector is generally exposed to biodiversity risks, Keliber's assets are located in less exposed areas.** The company's mining activity will take place in areas currently used for peat production, which is not considered highly exposed to biodiversity risks. Similarly, its processing plants will be located in industrial areas, also with low exposure to such risks. In addition, Keliber is subject to local regulation to preserve protected species in the area and prevent any negative impact in compliance with Finland's Environmental Impact Assessment Act on soil, water, air climate, flora, organisms, and biological diversity. Therefore, we view Keliber as appropriately managing its biodiversity risks.
- **Keliber manages water risks well.** The company is subject to comprehensive local regulation, has an environmental permit, and will report regularly on compliance with regulatory requirements. The water management plan comprises site hydrological and hydrogeological characterization, mine inflow assessment, water quality and source term characterization, water and loading balance modelling, and water infrastructure basic engineering (including water abstraction, transport, treatment, and discharge). In addition, Keliber will specify limits for water inflow and outflow, as well as control the level of sulfate and solid construction waste in water, in line with the thresholds under its environmental permit. This will help manage water pollution in the area and limit the impact on the community and biodiversity.
- **Keliber has undergone a physical climate risk assessment; however, this remains focused on flood risk related to the mine site.** Specifically, it considered a scenario with a 1°C-2°C increase in temperature and a 5% increase in precipitation at the mine site. However, other physical risks such as increased heat, which is expected in Finland, have not been assessed.
- **Not all end uses of lithium hydroxide are aligned with an LCCR.** Keliber can't contractually control where its customers use the product. However, this risk is low, since lithium hydroxide is typically used in batteries for EVs rather than for hybrid vehicles. Furthermore, Keliber is not pursuing customer relationships with other users of its product, such as those manufacturing portable devices, further supporting our Medium green shade.

S&P Global Ratings' Shades of Green

Assessments					
 Dark green	 Medium green	 Light green	 Yellow	 Orange	 Red
Description					
Activities that correspond to the long-term vision of an LCCR future.	Activities that represent significant steps toward an LCCR future but will require further improvements to be long-term LCCR solutions.	Activities representing transition steps in the near-term that avoid emissions lock-in but do not represent long-term LCCR solutions.	Activities that do not have a material impact on the transition to an LCCR future, or, Activities that have some potential inconsistency with the transition to an LCCR future, albeit tempered by existing transition measures.	Activities that are not currently consistent with the transition to an LCCR future. These include activities with moderate potential for emissions lock-in and risk of stranded assets.	Activities that are inconsistent with, and likely to impede, the transition required to achieve the long-term LCCR future. These activities have the highest emissions intensity, with the most potential for emissions lock-in and risk of stranded assets.
Example projects					
 Solar power plants	 Energy efficient buildings	 Hybrid road vehicles	 Health care services	 Conventional steel production	 New oil exploration

Note: For us to consider use of proceeds aligned with ICMA Principles for a green project, we require project categories directly funded by the financing to be assigned one of the three green Shades.

LCCR--Low-carbon climate resilient. An LCCR future is a future aligned with the Paris Agreement; where the global average temperature increase is held below 2 degrees Celsius (2 C), with efforts to limit it to 1.5 C, above pre-industrial levels, while building resilience to the adverse impact of climate change and achieving sustainable outcomes across both climate and non-climate environmental objectives. Long term and near term--For the purpose of this analysis, we consider the long term to be beyond the middle of the 21st century and the near term to be within the next decade. Emissions lock-in--Where an activity delays or prevents the transition to low-carbon alternatives by perpetuating assets or processes (often fossil fuel use and its corresponding greenhouse gas emissions) that are not aligned with, or cannot adapt to, an LCCR future. Stranded assets--Assets that have suffered from unanticipated or premature write-downs, devaluations, or conversion to liabilities (as defined by the University of Oxford).

Related Research

- [Analytical Approach: Second Party Opinions: Use of Proceeds](#), July 27, 2023
- [FAQ: Applying Our Integrated Analytical Approach for Use-of-Proceeds Second Party Opinions](#), July 27, 2023
- [Analytical Approach: Shades of Green Assessments](#), July 27, 2023
- [S&P Global Ratings ESG Materiality Maps](#), May 18, 2022

Analytical Contacts

Primary contact

Catherine Baddeley
London
+44 20 7176 0459
catherine.baddeley
@spglobal.com

Secondary contacts

Salaheddine Soumir
Paris
+33 14-420-7217
salaheddine.soumir
@spglobal.com

Irina Velieva
Stockholm
irina.velieva
@spglobal.com

Carina Waag
Oslo
carina.waag
@spglobal.com

Second Party Opinion: Keliber's Green Financing Framework

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