



LKAB:S GREEN BOND FRAMEWORK

NOVEMBER 2019

LKAB:s Green Bond Framework

Introduction and background

LKAB is an international high-tech mining and mineral group with a market leading position in upgraded iron ore products and services. Sustainability is at the core of our business, and our ambition is to be one of the most innovative, resource efficient and responsible mining companies in the world. We take responsibility for our impact throughout the value chain, thus contributing to social development, people and the environment, which simultaneously increases LKAB's competitiveness and success. LKAB is wholly owned by the Swedish government and in accordance with our owner's requirements, LKAB aims to set an example and to be a leader in sustainable enterprise. LKAB recognises the Government's and Parliament's goal to achieve net zero emission in Sweden by 2045. Together with the Climate Act and the Climate policy council, this goal is part of Sweden's Climate policy framework. In this Green Bond Framework, we outline several solutions which are vital to achieve net-zero greenhouse gas emission, of which our most ambitious project HYBRIT, is a joint venture with the outline to produce the world's first fossil-free and ore-based steel by 2045.

LKAB's goal is to position itself as a broad, strong and sustainable company that remains competitive throughout different economic conditions. This will be achieved by developing our core business of high-grade iron ore products through operational excellence, sustainable innovation and by adding businesses which support long-term value creation. Strategic development will follow the lines of safety, autonomy, productivity and competence, while at the same time reducing the environmental impact and eliminating emissions of greenhouse gases throughout the value chain. To create new solutions for more sustainable and safer mines, with autonomous, smart and carbon-free vehicles at greater depths, LKAB has joined forces with several Swedish industrial companies to form SUM - Sustainable Underground Mining. The development phase of SUM will last until 2023, after which testing in current operations will begin. This to ensure the functionality of the measures taken and make mining deeper than at the present depths possible before 2030, thus ensuring opportunities for continued mining in our current underground mines.

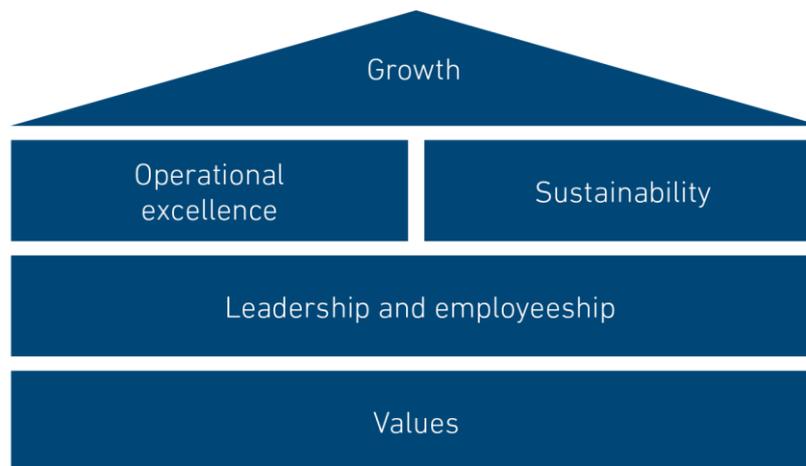


Fig 1. LKAB:s strategy is built upon our core values – committed, innovative and responsible.

Significant drivers in finalizing our business strategy include stakeholder dialogue, monitoring external developments, national legislation and the Sweden’s environmental quality objectives, as well as compliance with international guidelines on environmental aspects, human rights, labour practices and business ethics to ensure best practice. In addition, we work actively to contribute to the UN Sustainable Development Goals, also known as Agenda 2030. LKAB supports the Sustainable Development Goals, recognising that our core business and environmental work is more clearly linked to some of the goals.

Sustainability is central to our business strategy and by identifying and acting on risks and opportunities LKAB focuses on increasing positive impacts and decreasing negative impacts. To identify important areas where we can have the largest impact, LKAB continuously conducts stakeholder and materiality analysis. The material topics include, among others, resource efficiency, biodiversity, energy efficiency and greenhouse gas emissions. These reflect areas where LKAB focuses our efforts as well as our reporting.



Fig 2. LKAB updates the materiality analysis and the material topics continuously. In the process, stakeholder dialogue and monitoring are key to finding areas of risk and opportunity as well as best practice.

A short description of HYBRIT, SUM and other innovative projects is found below. More in-depth information about these project as well as material topics, LKAB's contribution to the SDG's and LKAB's objectives for sustainable development can be found in LKAB's Annual and Sustainability report that is available on www.lkab.com.

Short description of some innovative LKAB projects:

HYBRIT: SSAB, LKAB and Vattenfall, are the key stakeholders behind the HYBRIT initiative. HYBRIT is one of the most ambitious and most transformative initiatives to tackle climate change. The aim with HYBRIT is to accelerate transition to low-carbon pathways in line with the goals of the Paris Agreement. The HYBRIT initiative began in 2016. By using fossil free electricity and hydrogen instead of coke and coal in steel production, the emissions of carbon dioxide will be replaced with water. The initiative has the potential to reduce Sweden's total carbon dioxide emissions by 10 percent. LKAB invests and spend R&D resources to directly support the HYBRIT project as well as in LKAB's own production process to facilitate a carbon dioxide free value chain from raw materials to finished steel.

SUM: With Sustainable Underground Mining, the aim is to set a new world standard for underground mining at large debts. The project is necessary for LKAB to meet the goal of a fossil-free mining operation by 2045. Large investments and extensive R&D expenditures will be done in order to electrify the mining operation as well as making the operation more energy efficient.

GGBS: Ground Granulated Blast furnace Slag is used to make durable concrete structures in combination with ordinary Portland cement. The steel slag is rapidly cooled down before it is granulated to a fine glass looking sand product. The product is grinded to a fine powder that will replace cement. GGBS can replace up to 70% of Portland cement in concrete constructions hence substantially reducing the carbon trace compared to lime.

ReeMAP: This project includes R&D and investments to process waste material from LKAB's mining operation in order to commercially extract rare earth metals (REE) and phosphor products e.g. fertilisers (MAP). The project is another example of LKAB's ambition to promote a circular economy.

IORE: The electrified transportation system for heavy transports including IORE locomotives with electrical generators is another step towards a fossil free production process by 2045. The IORE-engine transforms kinetic energy to electrical power when the train brakes. Since the mining areas are above sea level and the train sets are loaded with iron ore pellets and fines, speed is controlled through braking down to the ports. On the subsequent way back to the mine the carts are empty, this relationship has the potential to create an almost energy neutral transport system under optimal conditions.

LKAB's Environmental Impact

We recognise that climate change is one of the big problems of our time. Mining and processing iron ore uses a lot of energy and give rise to greenhouse gases. Although LKAB's magnetite ore has an advantage over our competitors' more energy intensive processes for hematite¹ ore, we have clear goals to reduce energy consumption and the use of fossil energy in our production. As part of LKAB's efforts, we take part in several collaborative initiatives, with the aim to drastically reduce greenhouse gas emissions. These efforts include, but are not limited to, steel making without the use of coal through HYBRIT, and fossil free iron-ore extraction through SUM. This constitutes vital parts of the **future of mining**.

It is LKAB's clear aim to invest in these key areas in order to contribute to Sweden's goal for net zero greenhouse gas emissions by 2045. Furthermore, mining activities entail local environmental impacts on the surrounding landscape and community. To minimise this impact LKAB works to increase recycling, to reduce discharges into water, to safeguard the good quality of our surrounding watercourses and to reduce emissions into the air e.g. sulphur, nitrogen and particles. In accordance with LKAB's Land use Guidelines (2015) we also work to reduce our impact on the landscape and to minimise our impact on biodiversity. We aim to ecologically remediate old industrial sites, landfills and mine areas thus helping a biodiverse nature to flourish.

¹ Hematite and magnetite are two different types of Iron ore. LKAB primarily mines magnetite. When manufacturing pellets, magnetite has advantages compared to the hematite ore used by most of our competitors. This is because more than half of the energy requirement that is needed when heating the pellets is provided by means of the magnetite oxidising to form hematite. This means that emissions of carbon dioxide are reduced to approx. a seventh compare to the sintering of fines, and to approx. a third compared to hematite pellets.

Summary

LKAB strives to generate prosperity by being one of the most resource efficient and environmentally conscious mining companies in the world. As part of this aspiration, we work with quality improvement measures throughout the group and train our employees, as well as our suppliers to enhance knowledge, inspire and motivate participation in our social, environment, energy efficiency and electrification efforts. At a minimum, we comply with applicable laws, regulations and other requirements within the environmental and energy field in the countries we operate. However, we aim higher and take responsibility for continuously improving environmental and energy performance on several fronts, both in our own company and for a sustainable mining and steel industry.

We believe that the mining industry in general, and LKAB in particular, have an important role to play in advancing sustainable development globally. LKAB strives to ensure safe and efficient mining operations for tomorrow, to act as a responsible and sustainable role model, as well as to act as a contributor in the transition towards a fossil fuel free and digital society. As cities grow and standards of living and technological development increase, metals and minerals are needed for the ongoing development. To ensure that the societal gains of mining exceed the costs, LKAB aims to develop new technology, effective digital processes and new methods of mining, processing and logistics – both by ourselves and in partnership with others. Cooperation and dialogue with our stakeholders and business partners ensure that our operations consider views and potential improvements – not just locally, but also regionally and globally.

This Green Bonds Framework has been developed in alignment with the Green Bond Principles 2018. It is LKAB's intention to follow best practices in the market as the standards develop.

1. Use of proceeds

“Eligible Assets” means a selected pool of assets within EU28 and Norway, funded in whole or in part, by LKAB or subsidiaries belonging to LKAB that promote the transition to fossil free and climate resilient growth and a sustainable economy as determined by LKAB and that are in line with LKAB’s environmental policy.

Eligible Assets include projects that target:

- a) climate change mitigation
- b) climate change adaptation
- c) natural resource conservation
- d) biodiversity conservation
- e) and pollution prevention and control.

The net proceeds from Green Bonds issued by LKAB can be used to a) finance the acquisition, development and construction of new Eligible Assets, b) finance renovation and upgrade of existing Eligible Assets and/or c) refinance Eligible Assets.

Eligible Assets can be related to capital expenditures and environmentally related R&D throughout the complete value chain².

Eligible Asset categories:

LKAB will include information about the specific projects and under which category the project has been approved by the Green Bond Committee. Our ambition is also to report expected and actual environmental impacts per investment and per category. This is dependent on data availability and competitiveness or confidentially considerations in the Green Bond Investor Reports.

1. Pollution prevention and control

Expenditures included should lead to either of the following outcomes in LKAB’s businesses and processes;

- *Significantly reduced emissions of greenhouse gases*
- *Significantly reduced harmful emissions other than greenhouse gases*
- *Soil remediation measures to site-specific guideline values*
- *Waste prevention, waste reduction or waste recycling*
- *Reduction of the amount of waste / emissions through product development in our value chain*

HYBRIT, SUM and GGBS are examples of investments in this category.

In order to approve projects primarily aiming to prevent local pollution, the project must achieve environmental goals that go beyond the strict national legislative requirement and/or

² See Project examples under section 1 “Introduction and background”.

involves technological innovation to meet new, strict requirements and is above the market practice in the mining sector.

At least fifty percent (50%) of investments in this category will consist of investments in HYBRIT and SUM.

Projects in this category will not increase the usage of fossil-fuel based energy to reduce “harmful emissions other than greenhouse gases”. Projects included based on “significantly reduced emissions” will have a comment on expected and/or actual reduction in the investor report.

2. Eco-efficient and/or circular economy adapted products, production technologies and processes

Expenditures should through innovation or process or product development lead to one of the alternatives below;

- *A significantly more environmentally sustainable production or products*
- *The use of manufactured products that lead to better environmental performance than existing alternatives with the same function. (Benchmark)*

ReeMAP is an example of investments in this category.

Projects included based on “significantly more environmentally sustainable” will have a comment on expected and/or actual improvements in the investor report.

3. Clean transportation

Expenditures should lead to the use of transportation with;

- *Zero tail-pipe emissions of fossil CO₂ or,*
- *That run with 100% electrical power or,*
- *Infrastructure for clean energy vehicles*

Investments in IORE-trains and 100% electrified loading machines are examples of investments in this category, investments in vehicles that are less than 100% electrified is not eligible as a green bond project.

4. Environmentally sustainable management of living natural resources and land use

Expenditures should be composed of measures that promote either of the following outcomes;

- *Environmentally sustainable forestry, including afforestation or reforestation,*
- *Preservation or restoration of natural landscapes*
- *Biological diversity within the categories of rehabilitation and compensation in accordance with the "Mitigation Hierarchy"³.*

Investments in Ecological remediation and Compensation areas for biological diversity are examples of projects in this category.

5. Renewable energy

Expenditures should lead to either of the following outcomes;

- *The replacement of fossil fuels with renewable or carbon dioxide free energy, including electricity*
- *Investments in systems / plants using biofuels*
- *Fossil fuel-free energy production*

BIO-furnaces is an example of projects in this category.

6. Green buildings

Expenditures should meet either of following thresholds;

- *The Building meets or will meet a certification of "Miljöbyggnad Silver" or equivalent.*
- *The Refurbishment of buildings will lead to energy improvement to a level of 30%.*

Building investments because of urban transformation is examples of projects in this category

³ Definition; The "Mitigation Hierarchy" mean that we 1) design facilities to minimise the impact on sensitive areas.2) Take all reasonable significant measures to alleviate damage in order to minimise the impact on soil and water.3) Plan for ecological restoration of mining environments that have been closed. 4) Strive to compensate for residual damage to biodiversity after measures to alleviate damage have been taken.

7. Sustainable water and wastewater management

Expenditures should lead to either of the following outcomes;

- *Clean water through wastewater treatment*
- *Reduced impact on natural watercourses from LKAB related emissions*
- *Flooding mitigation*

Water purification and handling of wastewater are examples of projects in this category.

In order for projects to be approved they must achieve environmental goals and meet new, strict requirements above the market practice in the mining sector.

Projects in this category will not increase the usage of fossil-fuel based energy to reduce “harmful emissions other than greenhouse gases”.

8. Climate change adaptation

Expenditures should be allocated to projects which serve to better handle the consequences of climate change, such as extreme weather (e.g. adaptation to precipitation variations in amounts and patterns, thunderstorms etc.) or improve information support systems, early warning systems or climate observation.

Water management projects such as clarification ponds and adaptation of electric infrastructure are examples of projects in this category.

In order to be approved the projects must achieve environmental goals and meet new, strict requirements above the market practice in the mining sector. Projects in this category will not increase the usage of fossil-fuel based energy to reduce “harmful emissions other than greenhouse gases”.

LKAB’s Green Bonds will not finance fossil-fuel based energy generation projects. For the avoidance of doubt, investments to facilitate the use of waste heat from fossil processes qualify as eligible green assets.

LKAB’s Green Bonds can be used to finance new assets and to refinance Eligible Assets in accordance with this Green Bonds Framework⁴. The look-back period for refinancing is two years. The split of Green Bond proceeds between the financing of new assets and refinancing will be included in LKAB’s annual Green Bond Investor Report (see section 5).

2. Process for project evaluation and selection

LKAB has established a Green Bond Committee consisting of the Heads of Sustainability, Environment, Energy, Research & Development and Treasury as well as representatives from other relevant departments, and specialists when needed. The Green Bond Committee evaluates potential Eligible Assets and decides in consensus on any and all assets that meet the requirements of this Framework to be financed with proceeds from LKAB’s Green Bonds. The Green Bond Committee will in their screening process for each project,

⁴ New projects are defined as planned projects, ongoing projects or projects that have been finalized up to one year before the approval by the Green Bond Committee and thereafter.

indifferent to category, ensure that the investment does not lead to lock in effects. Only projects where there is a high likelihood that the net, long-term environmental effects are positive will be approved. The Green Bond Committee will document and keep a record of its decisions.

At least 50% of the green bond proceeds will be allocated to a portfolio of investments that will be part of the future of mining, i.e. the carbon dioxide free value chain from raw materials to finished steel according to the best knowledge and forecasting available today. This includes investments in:

Category 1: Pollution prevention and control

- Hybrit
- SUM

Category 2: Eco-efficient and/or circular economy adapted products, production technologies and processes

- ReeMAP

Category 3: Clean transportation

- IORE-trains

Category 4: Environmentally sustainable management of living natural resources and land use

- Ecological remediation and compensation areas for biological diversity
- Environmental protection and restoration of land

Category 5: Renewable energy

- BIO-furnaces
- Fossil fuel-free energy production

Category 7: Sustainable water and wastewater management

- Water purification and handling of wastewater

Investments that do NOT meet this requirement include:

Category 1: Pollution prevention and control

- Any processes/investments where there is a fossil component such as GGBS

Category 6: Green buildings

- Buildings that only meet Miljöbyggnad silver

If, for any reason, a financed Eligible Asset no longer meets the eligibility criteria or no longer needs funding, it will be removed from the pool of projects financed with proceeds from LKAB's Green Bonds.

3. Management of proceeds

The net proceeds from the issue of Green Bonds shall be credited to a segregated Green Account with the purpose of financing LKAB's Eligible Assets as defined in section 2 above. If Green Bonds are outstanding and proceeds from issues are available on the Green Account, LKAB shall, at the end of every fiscal quarter, deduct funds from the Green Account in an amount equal to disbursements for the financing of Eligible Assets made during such quarter.

The legal documentation for each individual Green Bond issued by LKAB shall provide a reference to this Green Bonds Framework. The ambition is to use the proceeds within one year and no later than two years from the time of issuance of the Green Bonds.

Until disbursement to Eligible Assets, the Green Account balance will be placed in the liquidity reserve and managed in accordance with LKAB Finance Policy and Investment Guidelines for the liquidity portfolio. The financial and ethical guidelines stipulate that investments in the liquidity portfolio should be in short dated money market instruments or bonds or bank account holdings. Allowed issuers of such instrument should qualify under the ethical guidelines⁵.

4. Reporting

To enable investors to get insight into the prioritization of Eligible Assets and follow the allocation of Green Bond proceeds, LKAB will provide an annual Green Bond Investor Report which will include:

- a) the total amount of Green Bonds issued and outstanding;
- b) a description of the portfolio of approved Eligible Assets that qualify for financing by the net proceeds from Green Bonds;
- c) a specification of Eligible Assets financed including allocated and disbursed amounts to each asset and a description of their main environmental impacts;
- d) information about the allocation of Green Bond proceeds between the financing of new assets and refinancing
- e) information about any unallocated balance standing to the credit of the Green Account.

LKAB recognises the importance of transparency and impact reporting. Our ambition is to include information about the Eligible Assets' expected/actual environmental impacts and improvements achieved in the Green Bond Investor Reports subject to data availability and competitiveness or confidentiality considerations. Indicative environmental impact measurement to be reported on include GWh, tonnes of CO₂, nitrogen, sulphur or dust, and kg of e.g. heavy metals.

³ Extract from LKAB Investment Guidelines:

"Investments should be made in such a way that a long-term sustainable development of global society is an absolute aim for LKAB. LKAB's different capital market portfolios do not invest in companies that violate international conventions and norms such as the UN Global Compact, ILO Conventions, International Environmental Conventions and OECD Guidelines for Multinational Enterprises. Investments must not be made in companies that with a clear aim operate in countries subject to UN sanctions or in companies that are on the EU Commission's corruption list.

Investments must not be made in companies that have significant activities in alcohol, games, tobacco, war materials or in pornography. The term "significant activities" is defined as 5% of sales whether it is production or distribution. Investments may not be made at all in companies that produce controversial weapons, i.e. nuclear weapons, chemical weapons, biological weapons, cluster bombs and personal mines. Nor can direct investments be made in companies whose operations consist of the extraction of fossil fuels (oil, coal, gas)."

The investment guidelines only allow bank holdings, money market papers and short dated bonds in the liquidity portfolio. Banks as well as issuers of any instrument in the portfolio should be compliant with the guidelines.

5. External reviews

The internal tracking method, the allocation of funds from the Green Bond and the Green Bond Investor Report will be verified through a limited assurance by an external auditor, appointed by LKAB, with the relevant expertise and experience.

LKAB will have its Green Bonds Framework reviewed by a recognized Second Party Opinion provider, who will issue an independent Second Party Opinion.

The Green Bonds Framework, Second Party Opinion as well as the opinion of the external auditor will be made publicly available on LKAB's web page.